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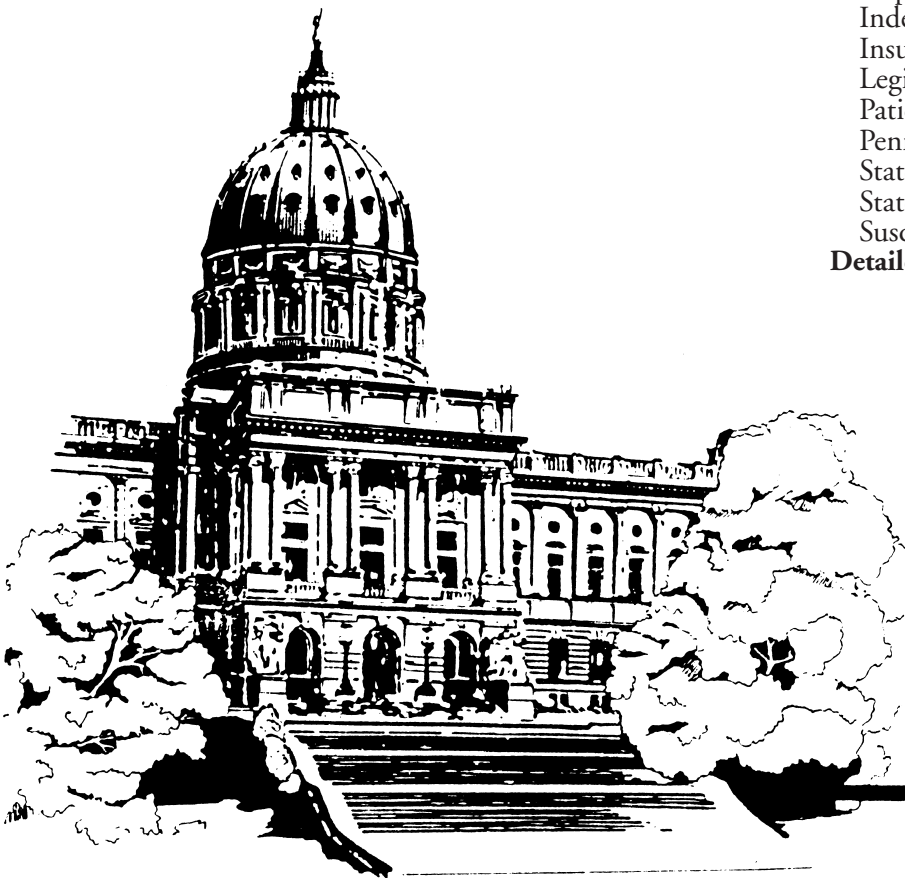
# PENNSYLVANIA BULLETIN

Volume 40  
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The Governor  
The Courts  
Department of Banking  
Department of Environmental Protection  
Department of General Services  
Department of Health  
Department of Public Welfare  
Independent Regulatory Review Commission  
Insurance Department  
Legislative Reference Bureau  
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Susquehanna River Basin Commission

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**Latest Pennsylvania Code Reporters  
(Master Transmittal Sheets):**

**No. 431, October 2010**

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# READER'S GUIDE TO THE PENNSYLVANIA BULLETIN AND PENNSYLVANIA CODE

## *Pennsylvania Bulletin*

The *Pennsylvania Bulletin* is the official gazette of the Commonwealth of Pennsylvania. It is published every week and includes a table of contents. A cumulative subject matter index is published quarterly.

The *Pennsylvania Bulletin* serves several purposes. First, it is the temporary supplement to the *Pennsylvania Code*, which is the official codification of agency rules and regulations and other statutorily authorized documents. Changes in the codified text, whether by adoption, amendment, repeal or emergency action must be published in the *Pennsylvania Bulletin*. Further, agencies proposing changes to the codified text do so in the *Pennsylvania Bulletin*.

Second, the *Pennsylvania Bulletin* also publishes: Governor's Executive Orders; State Contract Notices; Summaries of Enacted Statutes; Statewide and Local Court Rules; Attorney General Opinions; Motor Carrier Applications before the Public Utility Commission; Applications and Actions before the Department of Environmental Protection; Orders of the Independent Regulatory Review Commission; and other documents authorized by law.

The text of certain documents published in the *Pennsylvania Bulletin* is the only valid and enforceable text. Courts are required to take judicial notice of the *Pennsylvania Bulletin*.

### **Adoption, Amendment or Repeal of Regulations**

Generally an agency wishing to adopt, amend or repeal regulations must first publish in the *Pennsylvania Bulletin* a Notice of Proposed Rulemaking. There are limited instances where the agency may omit the proposal step; they still must publish the adopted version.

The Notice of Proposed Rulemaking contains the full text of the change, the agency contact person, a fiscal note required by law and background for the action.

The agency then allows sufficient time for public comment before taking final action. An adopted proposal must be published in the *Pennsylvania*

*Bulletin* before it can take effect. If the agency wishes to adopt changes to the Notice of Proposed Rulemaking to enlarge the scope, they must re-propose.

### **Citation to the *Pennsylvania Bulletin***

Cite material in the *Pennsylvania Bulletin* by volume number and page number. Example: Volume 1, *Pennsylvania Bulletin*, page 801 (short form: 1 Pa.B. 801).

### ***Pennsylvania Code***

The *Pennsylvania Code* is the official codification of rules and regulations issued by Commonwealth agencies and other statutorily authorized documents. The *Pennsylvania Bulletin* is the temporary supplement to the *Pennsylvania Code*, printing changes as soon as they occur. These changes are then permanently codified by the *Pennsylvania Code Reporter*, a monthly, loose-leaf supplement.

The *Pennsylvania Code* is cited by title number and section number. Example: Title 10 *Pennsylvania Code*, § 1.1 (short form: 10 Pa.Code § 1.1).

Under the *Pennsylvania Code* codification system, each regulation is assigned a unique number by title and section. Titles roughly parallel the organization of Commonwealth government. Title 1 *Pennsylvania Code* lists every agency and its corresponding *Code* title location.

### **How to Find Documents**

Search for your area of interest in the *Pennsylvania Code*.

The *Pennsylvania Code* contains, as Finding Aids, subject indexes for the complete *Code* and for each individual title, a list of Statutes Used As Authority for Adopting Rules and a list of annotated cases. Source Notes give you the history of the documents. To see if there have been recent changes, not yet codified, check the List of *Pennsylvania Code* Chapters Affected in the most recent issue of the *Pennsylvania Bulletin*.

The *Pennsylvania Bulletin* also publishes a quarterly List of Pennsylvania Code Sections Affected which lists the regulations in numerical order, followed by the citation to the *Pennsylvania Bulletin* in which the change occurred.

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### Printing Format

Material proposed to be added to an existing rule or regulation is printed in **bold face** and material proposed to be deleted from such a rule or regulation is enclosed in brackets [ ] and printed in **bold face**. Asterisks indicate ellipsis of *Pennsylvania Code* text retained without change. Proposed new or additional regulations are printed in ordinary style face.

### Fiscal Notes

Section 612 of The Administrative Code of 1929 (71 P. S. § 232) requires that the Office of Budget prepare a fiscal note for regulatory actions and administrative procedures of the administrative departments, boards, commissions or authorities receiving money from the State Treasury stating whether the proposed action or procedure causes a loss of revenue or an increase in the cost of programs for the Commonwealth or its political subdivisions; that the fiscal note be published in the *Pennsylvania Bulletin* at the same time as the proposed change is advertised; and that the fiscal note shall provide the following information: (1) the designation of the fund out of which the appropriation providing for expenditures under the action or procedure shall be made; (2) the probable cost for the fiscal year the program is implemented; (3) projected cost estimate of the program for each of the five succeeding fiscal years; (4) fiscal history of the program for which expenditures are to be made; (5) probable loss of revenue for the fiscal year of its implementation; (6) projected loss of revenue from the program for each of the five succeeding fiscal years; (7) line item, if any, of the General Appropriation Act or other appropriation act out of which expenditures or losses of Commonwealth funds shall occur as a result of the action or procedures; (8) recommendation, if any, of the Secretary of the Budget and the reasons therefor.

The required information is published in the foregoing order immediately following the proposed change to which it relates; the omission of an item indicates that the agency text of the fiscal note states that there is no information available with respect thereto. In items (3) and (6) information is set forth for the first through fifth fiscal years; in that order, following the year the program is implemented, which is stated. In item (4) information is set forth for the current and two immediately preceding years, in that order. In item (8) the recommendation, if any, made by the Secretary of Budget is published with the fiscal note. See 4 Pa. Code § 7.231 *et seq.* Where “no fiscal impact” is published, the statement means no additional cost or revenue loss to the Commonwealth or its local political subdivision is intended.

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## List of Pa. Code Chapters Affected

The following numerical guide is a list of the chapters of each title of the *Pennsylvania Code* affected by documents published in the *Pennsylvania Bulletin* during 2010.

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# THE GOVERNOR

## Proclamation of Disaster Emergency

September 30, 2010

*Whereas*, heavy and continuous rainfall began on September 30, 2010 and has impacted the entire Commonwealth of Pennsylvania with severe weather conditions; and

*Whereas*, the heavy and continuous rainfall is likely to result in moderate to major river and creek flooding, flash flooding, and other adverse impacts upon the population of the Commonwealth; and

*Whereas*, the heavy and continuous rainfall may result in individuals trapped in high fast moving water, critical infrastructure flooding, including human services facilities such as hospitals, nursing homes and personal care homes, and a significant threat to high risk dams and bridges; and

*Whereas*, these severe weather conditions may prompt affected county and municipal governments to declare local disaster emergencies or flood emergencies to exist; and

*Whereas*, the emergency situation may become of such magnitude or severity as to render essential the Commonwealth's supplementation of county and municipal efforts and resources and the activation of all applicable state, county and municipal emergency response plans.

*Now, Therefore*, pursuant to the provision of Subsection 7301(c) of the Emergency Management Services Code (35 Pa.C.S. §§ 7101 et seq., as amended), I do hereby proclaim the existence of a disaster emergency in the Commonwealth and authorize and direct that the Pennsylvania Emergency Management Agency Director or his designee assume command and control of all statewide emergency operations and that all Commonwealth departments and agencies, under the direction of the Pennsylvania Emergency Management Agency Director or his designee, utilize all available resources and personnel as is deemed necessary to cope with the magnitude and severity of this emergency situation.

*Further*, I hereby transfer up to \$5 million in unused appropriated funds to the Pennsylvania Emergency Management Agency. The aforementioned funds shall be used for disaster-related expenses that may be incurred by various state agencies and departments. These funds shall be credited to a special account established by the Office of the Budget. All Commonwealth agencies purchasing supplies or services in response to this emergency are authorized to utilize the emergency procurement procedures set forth in Section 516 of the Commonwealth Procurement Code, 62 Pa.C.S. § 516. This Proclamation shall serve as the written determination of the basis for the emergency under Section 516; the time consuming bid and contract procedures and formalities normally prescribed by law shall be waived for the duration of the Proclamation, mandatory constitutional requirements excepted; and

*Further*, I hereby authorize the Secretary of Transportation to use all available equipment, resources, and personnel of the Department, in whatever manner he deems necessary, to ensure that all interstate and other federal and state highways in the Commonwealth are cleared of debris and any other obstructions resulting from this severe storm and to ensure that highways, bridges, roadbeds, and related facilities and structures, including Federal-aid highways, that have sustained damage in the disaster affected areas are immediately repaired, maintained, reconstructed, or replaced or that new construction is undertaken where necessary. In addition, I hereby waive any laws or regulations that would restrict the application and use of the Department's equipment, resources, and personnel to assist local jurisdictions in clearing and removal of debris and any other obstructions from non state-owned highways. This assistance to local jurisdictions may be provided solely at the discretion of the Secretary of Transportation. However, this assistance does not apply to privately owned

highways, roads, streets, or other types of property; and I hereby authorize the Secretary of Transportation, in his sole discretion, to waive any provision of the Vehicle Code or any other law or regulation, which he is authorized by law to administer or enforce as may be necessary to respond to this impending emergency; and

*Further*, if investigations made on my behalf determine that the Commonwealth is in need of greater flexibility in truck driver regulations to accommodate truck drivers in the finding and transporting of fuel or other commodities across the state to provide emergency relief during this emergency, I direct the state Department of Transportation to hereby waive any laws or federal regulations related to drivers of commercial vehicles; and

*Further*, pursuant to the powers vested in me by the Constitution and laws of this Commonwealth, I hereby authorize the Adjutant General of Pennsylvania to use her discretion in placing on state active duty for the duration of the emergency disaster proclamation such individuals and units of the Pennsylvania National Guard as requested by the Pennsylvania Emergency Management Agency to alleviate the potential danger to public health and safety caused by the aforementioned emergency; and

*Further*, I hereby authorize the Commissioner of the Pennsylvania State Police to use all available resources and personnel of the Department, in whatever manner that he deems necessary, to aid in the recovery aspects related to all interstate as well as other federal and state highways in the Commonwealth to address the emergency resulting from the heavy and continuous rainfall and potential river flooding; and

*Further*, I direct that the emergency response and recovery aspects of the Commonwealth and all applicable county, municipal, and other disaster response plans be activated and that all state, county, and municipal actions taken to implement those plans be coordinated through the Pennsylvania Emergency Management Agency; and

*Still Further*, I hereby urge the governing bodies and executive officers of all political subdivisions affected by this emergency to act as necessary to meet the current exigencies as legally authorized under this Proclamation, namely, by the employment of temporary workers, by the rental of equipment, and by entering into such contracts and agreements as may be required to meet the emergency, all without regard to those time consuming procedures and formalities normally prescribed by law, mandatory constitutional requirements excepted.

*Given* under my hand and the Seal of the Governor, at the City of Harrisburg, this thirtieth day of September in the year of our Lord two thousand ten, and of the Commonwealth the two hundred and thirty-fifth.



Governor

[Pa.B. Doc. No. 10-1959. Filed for public inspection October 15, 2010, 9:00 a.m.]

# THE COURTS

## Title 210—APPELLATE PROCEDURE

### PART III. APPEALS FROM THE COURT OF JUDICIAL DISCIPLINE

[ 210 PA. CODE CH. 101 ]

#### Amendment of Rule 5 of the Rules Governing Appeals from the Court of Judicial Discipline; No. 503 Supreme Court Rules

##### Order

*Per Curiam*

*And Now*, this 30th day of September, 2010, upon the recommendation of the Court of Judicial Discipline; the proposal having been submitted without publication pursuant to Pa.R.J.A. No. 103(a)(3) in the interest of efficient administration:

*It Is Ordered* pursuant to Article V, Section 10 of the Constitution of Pennsylvania that Rule 5 of the Rules Governing Appeals from the Court of Judicial Discipline is amended in the following form.

This *Order* shall be processed in accordance with Pa.R.J.A. No. 103(b), and shall be effective in 30 days.

##### Annex A

#### TITLE 210. APPELLATE PROCEDURE

#### PART III. APPEALS FROM THE COURT OF JUDICIAL DISCIPLINE

#### CHAPTER 101. APPEALS FROM THE COURT OF JUDICIAL DISCIPLINE

#### APPEALS GENERALLY

##### § 101.5. Briefing.

(a) Within thirty (30) days of the filing of the record as required in Section 101.4(a), the appellant shall file ten (10) copies of the appellant's brief with the Reviewing Court, **shall serve one (1) copy on the Court of Judicial Discipline** and shall serve two (2) copies on the appellee.

(b) Within thirty (30) days of the filing of appellant's brief, the appellee shall file ten (10) copies of the appellee's reply brief with the Reviewing Court, **shall serve one (1) copy on the Court of Judicial Discipline** and shall serve two (2) copies on the appellant.

[Pa.B. Doc. No. 10-1960. Filed for public inspection October 15, 2010, 9:00 a.m.]

## Title 234—RULES OF CRIMINAL PROCEDURE

[ 234 PA. CODE CH. 5 ]

#### Proposed Amendments to Pa.R.Crim.P. 541

The Criminal Procedural Rules Committee is planning to recommend that the Supreme Court of Pennsylvania amend Rule 541 to (1) require the issuing authority to address bail when accepting a defendant's waiver of the

preliminary hearing, and (2) preclude subsequent challenges to the *prima facie* case when the preliminary hearing was waived. This proposal has not been submitted for review by the Supreme Court of Pennsylvania.

The following explanatory Report highlights the Committee's considerations in formulating this proposal. Please note that the Committee's Reports should not be confused with the official Committee Comments to the rules. Also note that the Supreme Court does not adopt the Committee's Comments or the contents of the explanatory Reports.

The text of the proposed amendments to the rule precedes the Report. Additions are shown in bold; deletions are in bold and brackets.

We request that interested persons submit suggestions, comments, or objections concerning this proposal in writing to the Committee through counsel,

Anne T. Panfil, Counsel  
Supreme Court of Pennsylvania  
Criminal Procedural Rules Committee  
601 Commonwealth Avenue, Suite 6200  
Harrisburg, PA 17106-2635

fax: (717) 231-9520  
e-mail: criminalrules@pacourts.us

no later than Friday, November 12, 2010.

*By the Criminal Procedural Rules Committee*

RISA VETRI FERMAN,  
*Chair*

##### Annex A

#### TITLE 234. RULES OF CRIMINAL PROCEDURE CHAPTER 5. PRETRIAL PROCEDURES IN COURT CASES

#### PART D. Proceedings in Court Cases Before Issuing Authorities

##### Rule 541. Waiver of Preliminary Hearing.

(A) The defendant who is represented by counsel may waive the preliminary hearing at the preliminary arraignment or at any time thereafter.

(B) The defendant who is not represented by counsel at the preliminary arraignment may not at that time waive the preliminary hearing.

(C) If the defendant waives the preliminary hearing and consents to be bound over to court, [ **the** ]

**(1) the defendant thereafter is precluded from raising the sufficiency of the Commonwealth's prima facie case. If the defendant waives the preliminary hearing by way of an agreement and the agreement is not accomplished, the defendant may challenge the sufficiency of the Commonwealth's prima facie case.**

**(2) The defendant and defense attorney, if any, shall certify in writing that**

**(a) the issuing authority told the defendant of the right to have a preliminary hearing, [ and that ]**

**(b) the defendant understands that by waiving the right to have a preliminary hearing, he or she is thereafter precluded from raising challenges to the sufficiency of the prima facie case, and**

(c) the defendant voluntarily waives the hearing and consents to be bound over to court.

(D) Once a preliminary hearing is waived and the case bound over to the court of common pleas, if the right to a preliminary hearing is subsequently reinstated, the preliminary hearing shall be held at the court of common pleas unless the parties agree, with the consent of the common pleas judge, that the preliminary hearing be held before the issuing authority.

**(E) When the defendant waives the preliminary hearing, the case shall proceed as provided in Rule 543(C).**

#### Comment

While the rule continues to require a written certification incorporating the contents set forth in paragraph (C), the form of certification was deleted in 1985 because it is no longer necessary to control the specific form of written certification.

Under paragraph (B), it is intended that the defendant who elects to proceed *pro se* may waive the preliminary hearing at a time subsequent to the preliminary arraignment.

**Paragraph (C)(1) is intended to address the recurring issue that arises when a defendant waives the preliminary hearing in exchange for a *quid pro quo* benefit, such as a reduction in bail or withdrawal of charges, and thereafter, the defendant challenges the sufficiency of the Commonwealth's *prima facie* case through pre-trial means such as *habeas corpus* hearings. Furthermore, paragraph (C)(2) recognizes that by waiving the preliminary hearing, the defendant and defense counsel are acknowledging that sufficient evidence exists to make out a *prima facie* case, and by prohibiting a subsequent and unwaranted challenge, promotes judicial economy.**

**Nothing in this rule is intended to preclude a waiver of the preliminary hearing by way of agreement in which both parties agree to the preservation of the defendant's ability to raise the sufficiency of the Commonwealth's *prima facie* case at a subsequent proceeding.**

**Paragraph (E) was added in 2010 to clarify that bail must be set at the time of the waiver of the preliminary hearing in those cases, such as those initiated by summons, in which no preliminary arraignment has been held.**

**Official Note:** Rule 140A adopted April 26, 1979, effective July 1, 1979; amended November 9, 1984, effective January 2, 1985; renumbered Rule 541 and amended March 1, 2000, effective April 1, 2001; amended February 12, 2010, effective April 1, 2010; **amended 2010, effective 2010.**

#### Committee Explanatory Reports:

Final Report explaining the March 1, 2000 reorganization and renumbering of the rules published with the Court's Order at 30 Pa.B. 1477 (March 18, 2000).

Final Report explaining the February 12, 2010 amendments adding new paragraph (D) concerning reinstatement of a waived preliminary hearing published with the Court's Order at 40 Pa.B. 1068 (February 27, 2010).

**Report explaining the proposed amendments to paragraph (C) related to the effects of the waiver of the preliminary hearing and new paragraphs (E) related to setting bail published at 40 Pa.B. 5901 (October 16, 2010).**

## REPORT

### *Proposed Amendments to Pa.R.Crim.P. 541*

#### Waiver of Preliminary Hearing

Over the past few years, the Committee has studied several issues related to Rule 541 (Waiver of Preliminary Hearing). The Committee has developed proposed amendments to address two of these issues: (1) a requirement that the issuing authority address bail when accepting a defendant's waiver of the preliminary hearing; and (2) a preclusion of subsequent challenges to the sufficiency of the Commonwealth's *prima facie* case when the defendant waived the preliminary hearing.

#### I. Addressing Bail at Time of Waiver

The Committee initiated its review of Rule 541 related to expanding the methods by which the preliminary hearing might be waived. Rule 541 currently provides that a represented defendant may waive the preliminary hearing at the preliminary arraignment or at any time thereafter and that an unrepresented defendant may not waive at the preliminary arraignment but may do so at any time subsequent to the preliminary arraignment. In either case, the rule contemplates that the defendant must be present before the issuing authority in order to waive the preliminary hearing. As discussed in more detail below, the Committee reviewed proposals that would have permitted options for waiving the preliminary without the defendant being present.

The Committee noted that one of the main obstacles to most of the proposed methods was the need to set bail in cases that were not initiated by an arrest with the subsequent preliminary arraignment at which bail would be set. More significantly, it was reported that some jurisdictions did not permit defendants to waive the preliminary hearing when the case was initiated by summons because there is no provision in Rule 541 addressing the imposition of bail and, in summons cases, bail is ordinarily set at the preliminary hearing.

The Committee concluded that the best way to address this issue is to have bail set at the time that the waiver of the preliminary hearing is entered. The Committee based this conclusion on an analogy with the provision in Rule 543(C) that requires bail to be set when the defendant is held for court after the preliminary hearing since, after a defendant waives the preliminary hearing, the case is also held for court.

A proposal to this effect was published for comment at 37 Pa.B. 1026 (March 3, 2007). At that time, all of the publication comments received approved the change but also raised different suggestions for permitting waiver of the preliminary hearing without requiring the defendant to be present. As a result, the Committee did not proceed with the proposal at that time and undertook a study of these additional suggestions. The post-publication suggestions for changes by which the preliminary hearing may be waived that the Committee reviewed included one that would have permitted a counseled defendant to waive the preliminary hearing by mail. Other suggestions (1) would have permitted an uncounseled defendant to waive the preliminary hearing at the preliminary arraignment, and (2) would have permitted a counseled defendant to waive his or her presence at the preliminary hearing while permitting the defendant's attorney to participate in the preliminary hearing.

Ultimately, the Committee rejected these suggestions as unworkable due to the difficulty in ensuring that all appropriate certifications and documents required by

Rule 541 are executed properly, and, therefore, decided to include in the proposal only the provisions related to setting bail.<sup>1</sup>

Therefore, the Committee is proposing to add new language as paragraph (E) of Rule 541 stating, "When the defendant waives the preliminary hearing, the case shall proceed pursuant to Rule 543(C)." In other words, the issuing authority would set bail, if it had not already been set, at the time that the defendant presents himself or herself to waive the preliminary hearing. This would be consistent with the longstanding policy under the rules that, in a case initiated by summons, the defendant may not be required to appear for a preliminary arraignment. It is contemplated that bail would be set at the time of the waiver of the preliminary hearing in a manner similar to that which occurs when a defendant's bail is set at a preliminary arraignment following arrest.

## II. Waiver and Subsequent Challenges to the *Prima Facie* Showing

The other issue that has come to the Committee's attention is the problem that arises after a defendant, who is represented by counsel, waives the preliminary hearing, and subsequently challenges the Commonwealth's establishment of a *prima facie* case. The Committee considered that a knowing waiver of the preliminary hearing pursuant Rule 541 is a tacit acknowledgment that the Commonwealth can establish a *prima facie* case and an agreement to move the case to the court of common pleas. In some cases, however, a defendant who enters an agreement to waive the preliminary hearing will later file motions challenging the sufficiency of the Commonwealth's evidence to support a *prima facie* case. Because the rules do not provide for an explicit statement of the effect of a waiver, courts often reach different decisions about whether defendants have the right to a *habeas corpus* hearing on these claims. The Committee concluded that this lack of definition encourages "gamesmanship" and places an undue burden on the Commonwealth, law enforcement, witnesses, and victims, as well as being an inefficient use of judicial resources. In view of these considerations, the Committee agreed Rule 541 should be amended to prohibit specifically prohibit a later challenge to the preliminary hearing.

<sup>1</sup> The provisions described below in Part II related to the preclusion of subsequent challenges to the *prima facie* case after the preliminary hearing also are included in this proposal.

Originally, the Committee contemplated that this proposed amendment be limited to the situation in which a defendant is represented by counsel at the time of waiver. However, some members argued that no distinction existed between counseled and uncounseled defendants with regard to the ability to waive the preliminary hearing. They noted that a defendant may act *pro se* in the entry of waivers of much more significant weight, such as the waiver of right to counsel or the entry of a guilty plea. The Committee is therefore proposing that a new paragraph (C)(1) be added to the rule that would make it clear that a waiver by the defendant, whether with counsel or *pro se*, precludes a later challenge to the *prima facie* showing.

However, there would be one exception to this preclusion. The members acknowledge that often the waiver of the preliminary hearing was made as part of an agreement in which the defendant receives a *quid pro quo*, such as an agreement to be released on bail, in exchange for the waiver. Additionally, there are cases in which both sides agree to a waiver of the preliminary hearing while recognizing that the defendant will preserve his or her ability to challenge the sufficiency of the evidence or other issues at subsequent proceedings. The Committee does not intend that these types of agreements be precluded by the proposed amendments and so has included language in new paragraph (C)(1) stating that, when the waiver is by agreement, a failure to abide by the agreement will restore the defendant's ability to raise challenges to the *prima facie* case.

In developing this proposal, it was noted that, in procedures such as entry of a plea or waiver of counsel, a colloquy is required to ensure that the plea or waiver is entered knowingly. Current Rule 541(C) provides similar protection by requiring a written certification by the defendant and counsel, if any, that the issuing authority has advised the defendant of the right to have a preliminary hearing and that the defendant is waiving the hearing voluntarily and consents to be bound over to court. Paragraph (C) would be amended to include, as part of the certification, the defendant understands that a waiver of the preliminary hearing also will preclude later challenges to the sufficiency of the *prima facie* case.

[Pa.B. Doc. No. 10-1961. Filed for public inspection October 15, 2010, 9:00 a.m.]

# RULES AND REGULATIONS

## Title 22—EDUCATION

### STATE BOARD OF EDUCATION

[ 22 PA. CODE CH. 4 ]

#### Academic Standards and Assessment; Reading, Writing, Speaking and Listening and Mathematics

The State Board of Education (Board) amends Chapter 4 (relating to academic standards and assessment) and adds Appendix B to read as set forth in Annex A.

This final-omitted rulemaking amends the current academic standards in Reading, Writing, Speaking and Listening and Mathematics. The Board acts under authority of the Public School Code of 1949 (code) (24 P.S. §§ 1-101—27-2702).

#### *Purpose*

The final-omitted rulemaking amends the Commonwealth's current academic standards in Reading, Writing, Speaking and Listening and Mathematics. Through this final-omitted rulemaking, the Commonwealth adopts a uniform set of academic standards in English language arts and mathematics developed through the Common Core State Standards Initiative—an effort coordinated by the National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) to provide a clear framework to prepare the Nation's children for college and the workforce.

Furthermore, the final-omitted rulemaking maximizes the Commonwealth's prospects for success in receiving funding under Phase 2 of the Race to the Top (RTTT) Fund Program initiated by the United States Department of Education as part of its administration of the State Fiscal Stabilization Fund established under Title XIV of the American Recovery and Reinvestment Act of 2009. See 74 FR 59688 (November 18, 2009) and 75 FR 19496 (April 14, 2010). Under the RTTT Fund Program, a state must adopt Common Core standards by August 2, 2010, to maximize its score in this competitive grant program. If successful, the Commonwealth would receive funding of up to approximately \$400 million to advance a comprehensive school reform agenda. (*Editor's Note:* The United States Department of Education announced Phase II RTTT results on August 24, 2010. While the Commonwealth received full credit for developing and adopting common standards, the Commonwealth was not selected for an RTTT grant.)

In 2008 and 2009, the Board was in the process of updating its academic standards when the Common Core academic standards initiative emerged in 2009 as a policy goal of the NGA, CCSSO and more than 45 states and territories. Common Core is a voluntary, state-led process intended to improve the rigor of academic standards Nationwide and ensure comparability of student achievement measurement across states. The Commonwealth was one of four states Nationally that suspended an ongoing project to revise state-level standards to join in the Common Core effort to achieve a uniform approach to the development of academic standards.

Released on June 2, 2010, the regulations the Board adopted move the standards revision process forward using the Common Core State Standards in English Language Arts and Mathematics. Since the release, and

as of July 9, 2010, 23 states have adopted the Common Core standards and the NGA expects that approximately 40 states will take action by September 2010. These kindergarten through 12th grade standards draw from best practices Nationally (including the Commonwealth's nearly 20-year history of standards-based education reform) and international benchmarking to set learning goals aligned with expectations for success in college, career and the global economy. Under this final-omitted rulemaking, students enrolled in public schools (including public charter schools) in this Commonwealth will be expected to demonstrate achievement on these standards beginning in the 2013-14 school year.

#### *Background*

In January 1999, the Board adopted regulations requiring school districts to align local curriculum, instruction and assessments with academic standards in Chapter 4 established by the same regulations. The Board adopted the academic standards for Reading, Writing, Speaking and Listening and Mathematics simultaneously with the adoption of its Chapter 4 regulations. See 29 Pa.B. 399 (January 16, 1999).

In § 4.12(i) of that final-form rulemaking, the Board made the following commitment:

Every 3 years, the Board will review the State academic standards and State assessments under this section to determine if they are appropriate, clear, specific and challenging, and will make revisions as necessary by revising this chapter.

The Board continued to adopt standards in additional subjects. By July 2006, the Board published standards in 12 content areas. In 2007, the Board moved to initiate its review of these standards, beginning again with Reading, Writing, Speaking and Listening and Mathematics. Working in partnership with the Department of Education (Department), the Board engaged Capital Area Intermediate Unit 15 to coordinate the standards review process. The result of this work was the proposed standards revision adopted by the Board in April 2009.

Following action by the Governor and then-Secretary of Education Zahorchak on June 4, 2009, the Board withdrew its proposed standards on September 9, 2009, to join the Common Core initiative. When commitment to adopting common standards emerged as a major criterion in the United States Department of Education's RTTT competition (see 74 FR 59688, 59711, 59712, 59732—59735, 59808, 59809), the Board adopted the following stance relative to the Commonwealth's Phase 1 application (January 19, 2010) and consideration of Common Core:

The Board is strongly committed to considering and adopting rigorous academic standards in both math and reading that are consistent with the principles outlined in the [Common Core] memorandum of understanding. The Board's plans to adopt the Common Core are conditioned on two assumptions:

(1) the State Board will be provided ample opportunity to conduct a thorough and public vetting of the Common Core that will support successful implementation at scale, and

(2) the Common Core will be no less rigorous than the revised state-level standards the State Board was in the process of adopting.



Over the past 6 months, the Board has conducted a deliberative and transparent analysis of the Common Core to satisfy the first condition and to gain assurance on the second. This process included the following:

- Commissioning an independent study by Professor Suzanne Lane of the University of Pittsburgh's School of Education to compare the public draft of the Common Core released Nationally on March 10, 2010, with the proposed State-level revisions previously referenced. Dr. Lane's study revealed comparable levels of rigor and relatively similar content alignment between the Common Core and the Commonwealth standards (Lane, 2010).

- To engage the public and specifically education stakeholders in deliberations around Common Core, the Board devoted a portion of its May 6, 2010, public meeting to a presentation of the results of Dr. Lane's study. Dr. Lane addressed the Board and provided detailed tables comparing both sets of standards.

- The Board held a series of regional public roundtables to present study results and gather feedback (May 21, Pittsburgh; May 27, State College; June 9, Philadelphia). Roundtable dates and locations were publicized in Sunshine Act notices and a written communication from the Board to education stakeholders, including Intermediate Unit Executive Directors.

- The Board provided the House and Senate Education Committees with regular, biweekly updates on Common Core. In addition, the Board's Executive Director testified before the Senate Education Committee on May 4, 2010, at a public hearing.

- The Common Core standards were posted on the Board's web site for public review and comment. The standards are also posted at [www.corestandards.org](http://www.corestandards.org).

Consistent with commitments outlined in the Commonwealth's RTTT Fund applications, including the application submitted June 2, 2010, the Board made written public notice of its intent to adopt Common Core 2 weeks prior to its July 1, 2010, meeting. This meeting included three additional opportunities for public comment.

#### *Requirements of the Final-Omitted Rulemaking*

The standards describe what students should know and be able to do at all grade levels and prior to high school graduation in both English language arts and mathematics. The standards are organized as follows:

#### *English language arts*

*Reading.* Through "a staircase of increasing complexity," Common Core asks students to develop reading comprehension skills tied to expectations for college and work. Common Core suggests a "diverse array of classic and contemporary literature as well as challenging informational texts in a range of subjects" as resources for teachers, without mandating a set reading list. The standards do, however, prescribe "certain critical types of content for all students, including classic myths and stories from around the world, foundational U.S. documents, seminal works of American literature, and the writings of Shakespeare."

*Writing.* Common Core asks students to demonstrate their ability to marshal evidence and demonstrate "sound reasoning" in developing clear and convincing written arguments. Research skills are embedded across the Common Core, but "most prominently in the writing strand since a written analysis and presentation of findings is so often critical." Alongside the standards, Common Core provides "annotated samples of student

writing [to] help establish adequate performance levels in writing arguments, informational/explanatory texts, and narratives in the various grades."

*Speaking and listening.* Common Core requires students to present "increasingly complex information, ideas, and evidence through listening and speaking as well as through media." The standards emphasize the importance of demonstrating these skills in a variety of settings as authentic postsecondary preparation.

*Language.* The English language strand emphasizes steadily-increasing command of vocabulary "through a mix of conversations, direct instruction, and reading."

*Media and technology.* Reflecting the wide use of electronic media and other technology in every facet of 21st century life, media and technology skills "are integrated throughout the standards."

#### *Mathematics*

The standards begin (grades K through 5) with emphasis on "whole numbers, addition, subtraction, multiplication, division, fractions and decimals"—content that is essential to "help[ing] young students build the foundation to successfully apply more demanding math concepts and procedures, and move into applications." These standards build on both State-level and international evidence to offer a clear, grade-by-grade progression to more complex math, including fractions, negative numbers, and geometry and do so by maintaining a continuous progression from grade to grade. By the end of elementary school, students will be able to perform "hands on learning in geometry, algebra and probability and statistics" and be on course for 8th grade algebra.

Common Core standards at the high school level emphasize the importance of "practice [in] applying mathematical ways of thinking to real world issues and challenges." This attention is critical to ensuring rigorous and relevant instruction that helps students draw connections between their study and a range of post-high school demands. The standards also "emphasize mathematical modeling—the use of mathematics and statistics to analyze empirical situations, understand them better, and improve decisions."

Both sets of standards provide a basis for success in all academic areas, not just language arts and mathematics classrooms. Importantly, the standards are not curriculum or a prescribed series of activities; rather, school entities, with support from the Department, will use the standards to develop local school curriculum that will meet local students' needs. The Department uses academic standards as the foundation for a set of assessment anchors that identify core content assessed through the Pennsylvania System of School Assessment. The Common Core standards will be integrated in the design of State assessment over a period of 3 school years.

To ensure adequate support for schools in integrating the new standards, the final-omitted rulemaking requires the Department to collaborate with education stakeholders in the design of an implementation plan.

#### *Affected Parties*

The final-omitted rulemaking will principally affect the students and professional employees of the public schools of this Commonwealth (including intermediate units, area vocational-technical schools, public charter and alternative schools).

*Cost and Paperwork Estimates*

Costs are estimated to be negligible for several reasons, including the fact that curriculum design, instruction, assessment and professional development are routine activities of schools. Professional development, for example, is required by the code, supported through State funds and budgeted annually at the local level. Common Core will not result in new costs for professional development; rather, time and resources currently devoted to professional development around the current standards will gradually be refocused toward the Common Core.

Additional considerations informing this estimate include the following:

- The Common Core standards are well-aligned with the Commonwealth's current standards, eliminating the need for wholesale revision of school curriculum.
- The Department developed a comprehensive online library of instructional resources available to districts at no cost. The Standards Aligned System website ([www.pdesas.org](http://www.pdesas.org)) will be populated with standards, assessments and teaching tools—all fully-aligned with the Common Core.
- The final-omitted rulemaking provides for a 3-year phase-in to reach full implementation of Common Core. This time line provides districts and schools with important flexibility in managing the transition.
- Finally, Common Core may reduce paperwork associated with transferring students as the initiative will improve the uniformity of school curriculum across states.

*Effective Date*

This final-omitted rulemaking is effective upon publication in the *Pennsylvania Bulletin*.

*Sunset Date*

It is the policy of the Board to review academic standards on a regular basis; thus, a sunset date is not necessary.

*Contact Person*

Interested persons may contact Adam Schott, Executive Director, State Board of Education, 333 Market Street, Harrisburg, PA 17126-0333, (717) 783-6808, [adschott@state.pa.us](mailto:adschott@state.pa.us).

*Final-Omitted Rulemaking*

The Board promulgated these regulations as a final-omitted rulemaking. The Board believes these regulations meet the criteria in section 204(3) of the act of July 31, 1968 (P. L. 769, No. 240) (45 P. S. § 1204(3)), known as the Commonwealth Documents Law (CDL), based on the following considerations:

Under the RTTT Fund program, states must adopt Common Core as released on June 2, 2010; deletions are not permitted. See 75 FR 19496, 19498, 19499 (April 14, 2010) ("Common set of K-12 standards means a set of content standards that define what students must know and be able to do and that are *substantially identical* across all States in a consortium" (emphasis added)). Though states may add additional standards, Common Core must comprise at least 85% of a state's academic standards in both English language arts and mathematics. Specifically, "a State may supplement the common standards with additional standards, provided that the additional standards do not exceed 15% of the State's total standards for that content area." See 75 FR 19496, 19499. These parameters inform the Board's determination to promulgate the regulations as a final-omitted

rulemaking since public comment could not substantially influence the content of the standards. Should the Board adopt additional, State-specific standards through the 15% allowance, it would do so through proposed rulemaking to ensure significant stakeholder voice in the design of the package.

The Federal guidance for the RTTT Fund competition, which incentivizes state-level adoption of Common Core by August 2, 2010, is another consideration informing the Board's decision to pursue final-omitted rulemaking. To receive maximum points in the selection process prescribed by the United States Department of Education's Final Section Criterion (B)(1)(ii)(b) for Phase 2 applicants, a state must demonstrate adoption of a common set of K-12 standards by August 2, 2010. See 74 FR 59688, 59802 and 75 FR 19496, 19503. See also 74 FR 59688, 59689, 59783. To demonstrate its timely adoption of Common Core standards, a Phase 2 applicant may amend its June 1, 2010, application submission through August 2, 2010, "by submitting evidence of adopting common standards after June 1, 2010." See 74 FR 59688, 59802 n. 12. See also 75 FR 19496, 19501, 19503 n. 5.

The issue of timing is critical: state RTTT applications are evaluated based on a 500-point evaluation, with state-level commitment to "developing and adopting common standards" accounting for 40 of these points. See [http://www2.ed.gov/programs/racetothetop/scoring\\_rubric.pdf](http://www2.ed.gov/programs/racetothetop/scoring_rubric.pdf) (RTTT Fund Scoring Rubric). Delaware, the top-ranked state in Phase 1 of the competition, outscored the Commonwealth by 26.2 points, with six highly-competitive state applications separating Delaware and the Commonwealth. See <http://www2.ed.gov/programs/racetothetop/phase1-applications/score-summary.pdf> (RTTT Fund Phase 1 Final Results). Action by the Board finally adopting Common Core before August 2, 2010, is critical to the success of the Commonwealth's \$399.9 million application for funding in the highly-competitive second phase of this initiative. Inasmuch as the final Common Core standards were not released until June 2, 2010, and must be finally adopted by the Board by August 2, 2010, to meet the final selection criteria prescribed by the RTTT Fund program, it was impractical for the Board to engage in proposed rulemaking to consider whether to adopt the Common Core standards.

For these reasons, the Board finds and concludes that proposed rulemaking in advance of adoption of the Common Core academic standards would be impracticable, unnecessary and contrary to the public interest.

*Regulatory Review*

Under section 5.1(c) of the Regulatory Review Act (71 P. S. § 745.5a(c)), on July 16, 2010, the Board submitted a copy of the final-omitted rulemaking and a copy of a Regulatory Analysis Form to the Independent Regulatory Review Commission (IRRC) and to the Chairpersons of the House and Senate Committees on Education. On the same date, the regulations were submitted to the Office of Attorney General for review and approval under the Commonwealth Attorneys Act (71 P. S. §§ 732-101—732-506).

Under section 5.1(j.2) of the Regulatory Review Act, on August 18, 2010, the final-omitted rulemaking was deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on August 19, 2010, and approved the final-omitted rulemaking.

*Findings*

The Board finds that:

(1) Notice of proposed rulemaking is impracticable, unnecessary and contrary to the public interest under section 204(3) of the CDL and the regulation thereunder, 1 Pa. Code § 7.4(3).

(2) The amendment of the regulations in the manner provided in this final-omitted rulemaking is necessary and appropriate for administration of the code.

*Order*

The Board, acting under the authority of the code, orders that:

(a) The regulations of the Board, 22 Pa. Code Chapter 4, are amended by amending §§ 4.3, 4.11, 4.12 and by adding Appendix B to read as set forth in Annex A, with ellipses referring to the existing text of the regulations.

(b) The Board will submit this order and Annex A to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form as required by law.

(c) The Executive Director of the Board shall certify this order and Annex A and deposit them with the Legislative Reference Bureau as required by law.

(d) This order is effective upon publication in the *Pennsylvania Bulletin*. Appendix B will take effect on July 1, 2013.

ADAM A. SCHOTT,  
*Executive Director*

*(Editor's Note: For the text of the order of the Independent Regulatory Review Commission relating to this document, see 40 Pa.B. 5106 (September 4, 2010).)*

**Fiscal Note:** 6-322. (1) General Fund; (2) Implementing Year 2010-11 is \$250,000; (3) 1st Succeeding Year 2011-12 is \$250,000; 2nd Succeeding Year 2012-13 is \$250,000; 3rd Succeeding Year 2013-14 is \$0; 4th Succeeding Year 2014-15 is \$0; 5th Succeeding Year 2015-16 is \$0;

	<i>Basic Education</i>	<i>PA Assessment</i>	<i>Teacher Professional Development</i>
(4) 2009-10 Program—	\$4,871,339,000	\$38,000,000	\$25,000,000
2008-09 Program—	\$5,226,142,000	\$44,600,000	\$39,698,000
2007-08 Program—	\$4,951,429,000	\$31,619,000	\$30,367,000

(7) PA Assessment; (8) recommends adoption. Funds in the Department's PA Assessment appropriation will cover this cost.

**Annex A**

**TITLE 22. EDUCATION**

**PART I. STATE BOARD OF EDUCATION**

**Subpart A. MISCELLANEOUS PROVISIONS**

**CHAPTER 4. ACADEMIC STANDARDS AND ASSESSMENT**

**GENERAL PROVISIONS**

**§ 4.3. Definitions.**

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

\* \* \* \* \*

*Common Core State Standards*—Academic standards for English language arts and mathematics developed through a Nationwide, state-led process coordinated by the National Governors Association and the Council of Chief State School Officers and in collaboration with teachers, content experts and other education stakeholders. The standards define the knowledge and skills students should have within their K-12 education careers so that they will graduate high school able to succeed in entry-level, credit-bearing academic college courses and in workforce training programs.

\* \* \* \* \*

**ACADEMIC STANDARDS AND PLANNING**

**§ 4.11. Purpose of public education.**

\* \* \* \* \*

(g) Public schools provide instruction throughout the curriculum so that students may develop knowledge and skills in the following areas:

- (1) Reading, writing, speaking, listening and English language arts.
- (2) Mathematics.
- (3) Science and technology.
- (4) Environment and ecology.
- (5) Social studies (civics and government, geography, economics and history).
- (6) Arts and humanities.
- (7) Career education and work.
- (8) Health, safety and physical education.
- (9) Family and consumer science.

\* \* \* \* \*

**§ 4.12. Academic standards.**

(a) School entities may develop, expand or improve existing academic standards in the following content areas:

- (1) *Science and technology.* Study of the natural world and facts, principles, theories and laws in the areas of biology, chemistry, physics and earth sciences. Technology is the application of science to enable societal development, including food and fiber production, manufacturing, building, transportation and communication. Science and technology share the use of the senses, science processes, inquiry, investigation, analysis and problem solving strategies.
- (2) *Environment and ecology.* Understanding the components of ecological systems and their interrelationships with social systems and technologies. These components incorporate the disciplines of resource management, agricultural diversity, government and the impact of human actions on natural systems. This interaction leads to the study of watersheds, threatened and endangered species, pest management and the development of laws and regulations.
- (3) *Social studies.*

(i) *History.* Study of the record of human experience including important events; interactions of culture, race and ideas; the nature of prejudice; change and continuity in political systems; effects of technology; importance of global-international perspectives; and the integration of geography, economics and civics studies on major developments in the history of the Commonwealth, the United States and the world.

(ii) *Geography*. Study of relationships among people, places and environments, of geographic tools and methods, characteristics of place, concept of region and physical processes.

(iii) *Civics and government*. Study of United States constitutional democracy, its values and principles, study of the Constitution of the Commonwealth and government including the study of principles, operations and documents of government, the rights and responsibilities of citizenship, how governments work and international relations.

(iv) *Economics*. Study of how individuals and societies choose to use resources to produce, distribute and consumer goods and services. Knowledge of how economies work, economic reasoning and basic economic concepts, economic decision making, economic systems, the Commonwealth and the United States economy and international trade.

(4) *Arts and humanities*. Study of dance, theatre, music, visual arts, language and literature including forms of expression, historical and cultural context, critical and aesthetic judgment and production, performance or exhibition of work.

(5) *Career education and work*. Understanding career options in relationship to individual interests, aptitudes and skills including the relationship between changes in society, technology, government and economy and their effect on individuals and careers. Development of knowledge and skill in job-seeking and job-retaining skills and, for students completing vocational-technical programs, the skills to succeed in the occupation for which they are prepared.

(6) *Health, safety and physical education*. Study of concepts and skills which affect personal, family and community health and safety, nutrition, physical fitness, movement concepts and strategies, safety in physical activity settings, and leadership and cooperation in physical activities.

(7) *Family and consumer science*. Understanding the role of consumers as a foundation for managing available resources to provide for personal and family needs and to provide basic knowledge of child health and child care skills.

(8) *Through June 30, 2013: Reading, writing, speaking and listening*.

(i) *Reading*. The application of phonemic awareness, phonics and word study, vocabulary, fluency and text comprehension in reading critically across subject areas; the interpretation and analysis of literary expression with analysis of the origins and structures of the English language and learning how to search a variety of texts to conduct research.

(ii) *Writing*. Narrative, informational and persuasive formal writing for an audience, including spelling and editing skills; and informal writing to capture and organize information for individual use.

(iii) *Speaking and listening*. Participation in conversation and formal speaking presentations.

(iv) Beginning July 1, 2013, following full implementation of a transition plan to be developed by the Department in collaboration with education stakeholders, academic standards will be based on the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects.

States may supplement the Common Core State Standards with additional, State-specific academic standards.

(9) *Mathematics*. The understanding of fundamental ideas and the development of proficient mathematical skills in numbers, computation, measurement, statistics and data analysis, probability and predictions, algebra and functions, geometry, trigonometry and concepts of calculus. Using this content, students will learn to think, reason and communicate mathematically. Students will learn to model real-world situations by creating appropriate representations of numerical quantities and plan and implement problem-solving strategies to answer the question in the context of the situation. Beginning July 1, 2013, following implementation of a transition plan to be developed by the Department in collaboration with education stakeholders, academic standards will be based on the Common Core State Standards for Mathematics. States may supplement the Common Core State Standards with additional, State-specific academic standards.

\* \* \* \* \*

**APPENDIX B**

**Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects**

*Table of Contents*

*Introduction*

*Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects K-5*

College and Career Readiness Anchor Standards for Reading

- Reading Standards for Literature K-5
- Reading Standards for Informational Text K-5
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College and Career Readiness Anchor Standards for Writing

Writing Standards K-5

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- Language Standards K-5
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Standard 10: Range, Quality, and Complexity of Student Reading K-5

Staying on Topic Within a Grade and Across Grades

*Standards for English Language Arts 6-12*

College and Career Readiness Anchor Standards for Reading

- Reading Standards for Literature 6-12
- Reading Standards for Informational Text 6-12

College and Career Readiness Anchor Standards for Writing

Writing Standards 6-12

College and Career Readiness Anchor Standards for Speaking and Listening

Speaking and Listening Standards 6-12

College and Career Readiness Anchor Standards for Language

Language Standards 6-12

Language Progressive Skills, by Grade

Standard 10: Range, Quality, and Complexity of Student Reading 6-12

*Standards for Literacy in History/Social Studies, Science, and Technical Subjects*

College and Career Readiness Anchor Standards for Reading

Reading Standards for Literacy in History/Social Studies 6-12

Reading Standards for Literacy in Science and Technical Subjects 6-12

College and Career Readiness Anchor Standards for Writing

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12

### Introduction

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (“the Standards”) are the culmination of an extended, broad-based effort to fulfill the charge issued by the states to create the next generation of K-12 standards in order to help ensure that all students are college and career ready in literacy no later than the end of high school.

The present work, led by the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA), builds on the foundation laid by states in their decades-long work on crafting high-quality education standards. The Standards also draw on the most important international models as well as research and input from numerous sources, including state departments of education, scholars, assessment developers, professional organizations, educators from kindergarten through college, and parents, students, and other members of the public. In their design and content, refined through successive drafts and numerous rounds of feedback, the Standards represent a synthesis of the best elements of standards-related work to date and an important advance over that previous work.

As specified by CCSSO and NGA, the Standards are (1) research and evidence based, (2) aligned with college and work expectations, (3) rigorous, and (4) internationally benchmarked. A particular standard was included in the document only when the best available evidence indicated that its mastery was essential for college and career readiness in a twenty-first-century, globally competitive society. The Standards are intended to be a living work: as new and better evidence emerges, the Standards will be revised accordingly.

The Standards are an extension of a prior initiative led by CCSSO and NGA to develop College and Career Readiness (CCR) standards in reading, writing, speaking, listening, and language as well as in mathematics. The CCR Reading, Writing, and Speaking and Listening Standards, released in draft form in September 2009, serve, in revised form, as the backbone for the present document. Grade-specific K-12 standards in reading, writing, speaking, listening, and language translate the broad (and, for the earliest grades, seemingly distant) aims of the CCR standards into age- and attainment-appropriate terms.

The Standards set requirements not only for English language arts (ELA) but also for literacy in history/social

studies, science, and technical subjects. Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too must the Standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines. Literacy standards for grade 6 and above are predicated on teachers of ELA, history/social studies, science, and technical subjects using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields. It is important to note that the 6-12 literacy standards in history/social studies, science, and technical subjects are not meant to replace content standards in those areas but rather to supplement them. States may incorporate these standards into their standards for those subjects or adopt them as content area literacy standards.

As a natural outgrowth of meeting the charge to define college and career readiness, the Standards also lay out a vision of what it means to be a literate person in the twenty-first century. Indeed, the skills and understandings students are expected to demonstrate have wide applicability outside the classroom or workplace. Students who meet the Standards readily undertake the close, attentive reading that is at the heart of understanding and enjoying complex works of literature. They habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and digitally. They actively seek the wide, deep, and thoughtful engagement with high-quality literary and informational texts that builds knowledge, enlarges experience, and broadens worldviews. They reflexively demonstrate the cogent reasoning and use of evidence that is essential to both private deliberation and responsible citizenship in a democratic republic. In short, students who meet the Standards develop the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in language.

June 2, 2010

### Key Design Considerations

#### *CCR and grade-specific standards*

The CCR standards anchor the document and define general, cross-disciplinary literacy expectations that must be met for students to be prepared to enter college and workforce training programs ready to succeed. The K-12 grade-specific standards define end-of-year expectations and a cumulative progression designed to enable students to meet college and career readiness expectations no later than the end of high school. The CCR and high school (grades 9–12) standards work in tandem to define the college and career readiness line—the former providing broad standards, the latter providing additional specificity. Hence, both should be considered when developing college and career readiness assessments.

Students advancing through the grades are expected to meet each year’s grade-specific standards, retain or further develop skills and understandings mastered in preceding grades, and work steadily toward meeting the more general expectations described by the CCR standards.

#### *Grade levels for K-8; grade bands for 9-10 and 11-12*

The Standards use individual grade levels in kindergarten through grade 8 to provide useful specificity; the Standards use two-year bands in grades 9-12 to allow schools, districts, and states flexibility in high school course design.

*A focus on results rather than means*

By emphasizing required achievements, the Standards leave room for teachers, curriculum developers, and states to determine how those goals should be reached and what additional topics should be addressed. Thus, the Standards do not mandate such things as a particular writing process or the full range of metacognitive strategies that students may need to monitor and direct their thinking and learning. Teachers are thus free to provide students with whatever tools and knowledge their professional judgment and experience identify as most helpful for meeting the goals set out in the Standards.

*An integrated model of literacy*

Although the Standards are divided into Reading, Writing, Speaking and Listening, and Language strands for conceptual clarity, the processes of communication are closely connected, as reflected throughout this document. For example, Writing standard 9 requires that students be able to write about what they read. Likewise, Speaking and Listening standard 4 sets the expectation that students will share findings from their research.

*Research and media skills blended into the Standards as a whole*

To be ready for college, workforce training, and life in a technological society, students need the ability to gather, comprehend, evaluate, synthesize, and report on information and ideas, to conduct original research in order to answer questions or solve problems, and to analyze and create a high volume and extensive range of print and nonprint texts in media forms old and new. The need to conduct research and to produce and consume media is embedded into every aspect of today's curriculum. In like fashion, research and media skills and understandings are embedded throughout the Standards rather than treated in a separate section.

*Shared responsibility for students' literacy development*

The Standards insist that instruction in reading, writing, speaking, listening, and language be a shared responsibility within the school. The K-5 standards include expectations for reading, writing, speaking, listening, and language applicable to a range of subjects, including but not limited to ELA. The grades 6-12 standards are divided into two sections, one for ELA and the other for history/social studies, science, and technical subjects. This division reflects the unique, time-honored place of ELA teachers in developing students' literacy skills while at the same time recognizing that teachers in other areas must have a role in this development as well.

Part of the motivation behind the interdisciplinary approach to literacy promulgated by the Standards is extensive research establishing the need for college and career ready students to be proficient in reading complex informational text independently in a variety of content areas. Most of the required reading in college and workforce training programs is informational in structure and challenging in content; postsecondary education programs typically provide students with both a higher volume of such reading than is generally required in K-12 schools and comparatively little scaffolding.

The Standards are not alone in calling for a special emphasis on informational text. The 2009 reading framework of the National Assessment of Educational Progress (NAEP) requires a high and increasing proportion of informational text on its assessment as students advance through the grades.

*Distribution of Literary and Informational Passages by Grade in the 2009 NAEP Reading Framework*

Grade	Literary	Informational
4	50%	50%
8	45%	55%
12	30%	70%

Source: National Assessment Governing Board. (2008). *Reading framework for the 2009 National Assessment of Educational Progress*. Washington, DC: U.S. Government Printing Office.

The Standards aim to align instruction with this framework so that many more students than at present can meet the requirements of college and career readiness. In K-5, the Standards follow NAEP's lead in balancing the reading of literature with the reading of informational texts, including texts in history/social studies, science, and technical subjects. In accord with NAEP's growing emphasis on informational texts in the higher grades, the Standards demand that a significant amount of reading of informational texts take place in and outside the ELA classroom. Fulfilling the Standards for 6-12 ELA requires much greater attention to a specific category of informational text—literary nonfiction—than has been traditional. Because the ELA classroom must focus on literature (stories, drama, and poetry) as well as literary nonfiction, a great deal of informational reading in grades 6-12 must take place in other classes if the NAEP assessment framework is to be matched instructionally.<sup>1</sup> To measure students' growth toward college and career readiness, assessments aligned with the Standards should adhere to the distribution of texts across grades cited in the NAEP framework.

NAEP likewise outlines a distribution across the grades of the core purposes and types of student writing. The 2011 NAEP framework, like the Standards, cultivates the development of three mutually reinforcing writing capacities: writing to persuade, to explain, and to convey real or imagined experience. Evidence concerning the demands of college and career readiness gathered during development of the Standards concurs with NAEP's shifting emphases: standards for grades 9-12 describe writing in all three forms, but, consistent with NAEP, the overwhelming focus of writing throughout high school should be on arguments and informative/explanatory texts.<sup>2</sup>

*Distribution of Communicative Purposes by Grade in the 2011 NAEP Writing Framework*

Grade	To Persuade	To Explain	To Convey Experience
4	30%	35%	35%
8	35%	35%	30%
12	40%	40%	20%

Source: National Assessment Governing Board. (2007). *Writing framework for the 2011 National Assessment of Educational Progress, pre-publication edition*. Iowa City, IA: ACT, Inc.

It follows that writing assessments aligned with the Standards should adhere to the distribution of writing purposes across grades outlined by NAEP.

*Focus and coherence in instruction and assessment*

While the Standards delineate specific expectations in reading, writing, speaking, listening, and language, each

<sup>1</sup> The percentages on the table reflect the sum of student reading, not just reading in ELA settings. Teachers of senior English classes, for example, are not required to devote 70 percent of reading to informational texts. Rather, 70 percent of student reading across the grade should be informational.

<sup>2</sup> As with reading, the percentages in the table reflect the sum of student writing, not just writing in ELA settings.

standard need not be a separate focus for instruction and assessment. Often, several standards can be addressed by a single rich task. For example, when editing writing, students address Writing standard 5 (“Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach”) as well as Language standards 1-3 (which deal with conventions of standard English and knowledge of language). When drawing evidence from literary and informational texts per Writing standard 9, students are also demonstrating their comprehension skill in relation to specific standards in Reading. When discussing something they have read or written, students are also demonstrating their speaking and listening skills. The CCR anchor standards themselves provide another source of focus and coherence.

The same ten CCR anchor standards for Reading apply to both literary and informational texts, including texts in history/social studies, science, and technical subjects. The ten CCR anchor standards for Writing cover numerous text types and subject areas. This means that students can develop mutually reinforcing skills and exhibit mastery of standards for reading and writing across a range of texts and classrooms.

#### *What is not covered by the Standards*

The Standards should be recognized for what they are not as well as what they are. The most important intentional design limitations are as follows:

1) The Standards define what all students are expected to know and be able to do, not how teachers should teach. For instance, the use of play with young children is not specified by the Standards, but it is welcome as a valuable activity in its own right and as a way to help students meet the expectations in this document. Furthermore, while the Standards make references to some particular forms of content, including mythology, foundational U.S. documents, and Shakespeare, they do not—indeed, cannot—enumerate all or even most of the content that students should learn. The Standards must therefore be complemented by a well-developed, content-rich curriculum consistent with the expectations laid out in this document.

2) While the Standards focus on what is most essential, they do not describe all that can or should be taught. A great deal is left to the discretion of teachers and curriculum developers. The aim of the Standards is to articulate the fundamentals, not to set out an exhaustive list or a set of restrictions that limits what can be taught beyond what is specified herein.

3) The Standards do not define the nature of advanced work for students who meet the Standards prior to the end of high school. For those students, advanced work in such areas as literature, composition, language, and journalism should be available. This work should provide the next logical step up from the college and career readiness baseline established here.

4) The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

5) It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the

same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-high school lives.

Each grade will include students who are still acquiring English. For those students, it is possible to meet the standards in reading, writing, speaking, and listening without displaying native-like control of conventions and vocabulary.

The Standards should also be read as allowing for the widest possible range of students to participate fully from the outset and as permitting appropriate accommodations to ensure maximum participation of students with special education needs. For example, for students with disabilities *reading* should allow for the use of Braille, screen-reader technology, or other assistive devices, while *writing* should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, *speaking* and *listening* should be interpreted broadly to include sign language.

6) While the ELA and content area literacy components described herein are critical to college and career readiness, they do not define the whole of such readiness. Students require a wide-ranging, rigorous academic preparation and, particularly in the early grades, attention to such matters as social, emotional, and physical development and approaches to learning. Similarly, the Standards define literacy expectations in history/social studies, science, and technical subjects, but literacy standards in other areas, such as mathematics and health education, modeled on those in this document are strongly encouraged to facilitate a comprehensive, schoolwide literacy program.

#### **Students Who are College and Career Ready in Reading, Writing, Speaking, Listening, and Language**

The descriptions that follow are not standards themselves but instead offer a portrait of students who meet the standards set out in this document. As students advance through the grades and master the standards in reading, writing, speaking, listening, and language, they are able to exhibit with increasing fullness and regularity these capacities of the literate individual.

- *They demonstrate independence.*

Students can, without significant scaffolding, comprehend and evaluate complex texts across a range of types and disciplines, and they can construct effective arguments and convey intricate or multifaceted information. Likewise, students are able independently to discern a speaker’s key points, request clarification, and ask relevant questions. They build on others’ ideas, articulate their own ideas, and confirm they have been understood. Without prompting, they demonstrate command of standard English and acquire and use a wide-ranging vocabulary. More broadly, they become self-directed learners, effectively seeking out and using resources to assist them, including teachers, peers, and print and digital reference materials.

- *They build strong content knowledge.*

Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. They refine and share their knowledge through writing and speaking.

- *They respond to the varying demands of audience, task, purpose, and discipline.*

Students adapt their communication in relation to audience, task, purpose, and discipline. They set and adjust purpose for reading, writing, speaking, listening, and language use as warranted by the task. They appreciate nuances, such as how the composition of an audience should affect tone when speaking and how the connotations of words affect meaning. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in science).

- *They comprehend as well as critique.*

Students are engaged and open-minded-but discerning-readers and listeners. They work diligently to understand precisely what an author or speaker is saying, but they also question an author’s or speaker’s assumptions and premises and assess the veracity of claims and the soundness of reasoning.

- *They value evidence.*

Students cite specific evidence when offering an oral or written interpretation of a text. They use relevant evidence when supporting their own points in writing and speaking, making their reasoning clear to the reader or listener, and they constructively evaluate others’ use of evidence.

- *They use technology and digital media strategically and capably.*

Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.

- *They come to understand other perspectives and cultures.*

Students appreciate that the twenty-first-century classroom and workplace are settings in which people from often widely divergent cultures and who represent diverse experiences and perspectives must learn and work together. Students actively seek to understand other perspectives and cultures through reading and listening, and they are able to communicate effectively with people of varied backgrounds. They evaluate other points of view critically and constructively. Through reading great classic and contemporary works of literature representative of a variety of periods, cultures, and worldviews, students can vicariously inhabit worlds and have experiences much different than their own.

### How to Read This Document

#### Overall Document Organization

The Standards comprise three main sections: a comprehensive K-5 section and two content area-specific sections for grades 6-12, one for ELA and one for history/social studies, science, and technical subjects. Three appendices accompany the main document.

Each section is divided into *strands*. K-5 and 6-12 ELA have Reading, Writing, Speaking and Listening, and Language strands; the 6-12 history/social studies, science, and technical subjects section focuses on Reading and Writing. Each strand is headed by a strand-specific set of *College and Career Readiness Anchor Standards* that is identical across all grades and content areas.

Standards for each grade within K-8 and for grades 9-10 and 11-12 follow the CCR anchor standards in each strand. Each *grade-specific standard* (as these standards are collectively referred to) corresponds to the same-numbered CCR anchor standard. Put another way, each CCR anchor standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

Individual CCR anchor standards can be identified by their strand, CCR status, and number (R.CCR.6, for example). Individual grade-specific standards can be identified by their strand, grade, and number (or number and letter, where applicable), so that RI.4.3, for example, stands for Reading, Informational Text, grade 4, standard 3 and W.5.1a stands for Writing, grade 5, standard 1a. Strand designations can be found in brackets alongside the full strand title.

*Who is responsible for which portion of the Standards?*

A single K-5 section lists standards for reading, writing, speaking, listening, and language across the curriculum, reflecting the fact that most or all of the instruction students in these grades receive comes from one teacher. Grades 6-12 are covered in two content area-specific sections, the first for the English language arts teacher and the second for teachers of history/social studies, science, and technical subjects. Each section uses the same CCR anchor standards but also includes grade-specific standards tuned to the literacy requirements of the particular discipline(s).

#### Key Features of the Standards

*Reading: Text complexity and the growth of comprehension*

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by-grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

*Writing: Text types, responding to reading, and research*

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw upon and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

*Speaking and Listening: Flexible communication and collaboration*

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use



media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

*Language: Conventions, effective use, and vocabulary*

The Language standards include the essential “rules” of standard written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words and phrases, their relationships, and their nuances and on acquiring new vocabulary, particularly general academic and domain-specific words and phrases.

*Appendices A, B, and C*

Appendix A contains supplementary material on reading, writing, speaking and listening, and language as well as a glossary of key terms. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels with accompanying sample performance tasks. Appendix C includes annotated samples demonstrating at least adequate performance in student writing at various grade levels.

**STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS**

**K-5**

**COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR READING**

The K-5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

*Note on range and content of student reading*

To build a foundation for college and career readiness, students must read widely and deeply from among a broad range of high-quality, increasingly challenging literary and informational texts. Through extensive reading of stories, dramas, poems, and myths from diverse cultures and different time periods, students gain literary and cultural knowledge as well as familiarity with various text structures and elements. By reading texts in history/social studies, science, and other disciplines, students build a foundation of knowledge in these fields that will also give them the background to be better readers in all

content areas. Students can only gain this foundation when the curriculum is intentionally and coherently structured to develop rich content knowledge within and across grades. Students also acquire the habits of reading independently and closely, which are essential to their future success.

*Key Ideas and Details*

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

*Craft and Structure*

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

6. Assess how point of view or purpose shapes the content and style of a text.

*Integration of Knowledge and Ideas*

7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.\*

8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

*Range of Reading and Level of Text Complexity*

10. Read and comprehend complex literary and informational texts independently and proficiently.

\*Please see “Research to Build and Present Knowledge” in Writing and “Comprehension and Collaboration” in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

**Reading Standards for Literature K-5**

[RL]

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. *Students advancing through the grades are expected to meet each year’s grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

<b>Kindergartners:</b>	<b>Grade 1 students:</b>	<b>Grade 2 students:</b>
<b>Key Ideas and Details</b>		
1. With prompting and support, ask and answer questions about key details in a text.	1. Ask and answer questions about key details in a text.	1. Ask and answer such questions as <i>who, what, where, when, why,</i> and <i>how</i> to demonstrate understanding of key details in a text.

<b>Kindergartners:</b>	<b>Grade 1 students:</b>	<b>Grade 2 students:</b>
2. With prompting and support, retell familiar stories, including key details.	2. Retell stories, including key details, and demonstrate understanding of their central message or lesson.	2. Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
3. With prompting and support, identify characters, settings, and major events in a story.	3. Describe characters, settings, and major events in a story, using key details.	3. Describe how characters in a story respond to major events and challenges.
<b><i>Craft and Structure</i></b>		
4. Ask and answer questions about unknown words in a text.	4. Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	4. Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.
5. Recognize common types of texts (e.g., storybooks, poems).	5. Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.	5. Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.
6. With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.	6. Identify who is telling the story at various points in a text.	6. Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.
<b><i>Integration of Knowledge and Ideas</i></b>		
7. With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).	7. Use illustrations and details in a story to describe its characters, setting, or events.	7. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.
8. (Not applicable to literature)	8. (Not applicable to literature)	8. (Not applicable to literature)
9. With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.	9. Compare and contrast the adventures and experiences of characters in stories.	9. Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
<b><i>Range of Reading and Level of Text Complexity</i></b>		
10. Actively engage in group reading activities with purpose and understanding.	10. With prompting and support, read prose and poetry of appropriate complexity for grade 1.	10. By the end of the year, read and comprehend literature, including stories and poetry, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

**Reading Standards for Literature K-5**

[RL]

<b>Grade 3 students:</b>	<b>Grade 4 students:</b>	<b>Grade 5 students:</b>
<b><i>Key Ideas and Details</i></b>		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	1. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.	2. Determine a theme of a story, drama, or poem from details in the text; summarize the text.	2. Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
3. Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.	3. Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).	3. Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b><i>Craft and Structure</i></b>		
4. Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.	4. Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., <i>Herculean</i> ).	4. Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
5. Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as <i>chapter</i> , <i>scene</i> , and <i>stanza</i> ; describe how each successive part builds on earlier sections.	5. Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.	5. Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.
6. Distinguish their own point of view from that of the narrator or those of the characters.	6. Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	6. Describe how a narrator's or speaker's point of view influences how events are described.
<b><i>Integration of Knowledge and Ideas</i></b>		
7. Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).	7. Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.	7. Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).
8. (Not applicable to literature)	8. (Not applicable to literature)	8. (Not applicable to literature)
9. Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).	9. Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.	9. Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.
<b><i>Range of Reading and Level of Text Complexity</i></b>		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 2-3 text complexity band independently and proficiently.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, at the high end of the grades 4-5 text complexity band independently and proficiently.

**Reading Standards for Informational Text K-5**

[RI]

Kindergartners:	Grade 1 students:	Grade 2 students:
<b><i>Key Ideas and Details</i></b>		
1. With prompting and support, ask and answer questions about key details in a text.	1. Ask and answer questions about key details in a text.	1. Ask and answer such questions as <i>who</i> , <i>what</i> , <i>where</i> , <i>when</i> , <i>why</i> , and <i>how</i> to demonstrate understanding of key details in a text.
2. With prompting and support, identify the main topic and retell key details of a text.	2. Identify the main topic and retell key details of a text.	2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.
3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.	3. Describe the connection between two individuals, events, ideas, or pieces of information in a text.	3. Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

Kindergartners:	Grade 1 students:	Grade 2 students:
<b><i>Craft and Structure</i></b>		
4. With prompting and support, ask and answer questions about unknown words in a text.	4. Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	4. Determine the meaning of words and phrases in a text relevant to a <i>grade 2 topic or subject area</i> .
5. Identify the front cover, back cover, and title page of a book.	5. Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.	5. Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.
6. Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.	6. Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.	6. Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
<b><i>Integration of Knowledge and Ideas</i></b>		
7. With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).	7. Use the illustrations and details in a text to describe its key ideas.	7. Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
8. With prompting and support, identify the reasons an author gives to support points in a text.	8. Identify the reasons an author gives to support points in a text.	8. Describe how reasons support specific points the author makes in a text.
9. With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	9. Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	9. Compare and contrast the most important points presented by two texts on the same topic.
<b><i>Range of Reading and Level of Text Complexity</i></b>		
10. Actively engage in group reading activities with purpose and understanding.	10. With prompting and support, read informational texts appropriately complex for grade 1.	10. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

**Reading Standards for Informational Text K-5**

[RI]

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b><i>Key Ideas and Details</i></b>		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	1. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Determine the main idea of a text; recount the key details and explain how they support the main idea.	2. Determine the main idea of a text and explain how it is supported by key details; summarize the text.	2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
<b><i>Craft and Structure</i></b>		
4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 3 topic or subject area</i> .	4. Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a <i>grade 4 topic or subject area</i> .	4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a <i>grade 5 topic or subject area</i> .

<b>Grade 3 students:</b>	<b>Grade 4 students:</b>	<b>Grade 5 students:</b>
5. Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.	5. Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.	5. Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
6. Distinguish their own point of view from that of the author of a text.	6. Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	6. Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
<b>Integration of Knowledge and Ideas</b>		
7. Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	7. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
8. Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	8. Explain how an author uses reasons and evidence to support particular points in a text.	8. Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
9. Compare and contrast the most important points and key details presented in two texts on the same topic.	9. Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.	9. Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.
<b>Range of Reading and Level of Text Complexity</b>		
10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently.	10. By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4-5 text complexity band independently and proficiently.

**Reading Standards: Foundational Skills (K-5)****[RF]**

These standards are directed toward fostering students' understanding and working knowledge of concepts of print, the alphabetic principle, and other basic conventions of the English writing system. These foundational skills are not an end in and of themselves; rather, they are necessary and important components of an effective, comprehensive reading program designed to develop proficient readers with the capacity to comprehend texts across a range of types and disciplines. Instruction should be differentiated: good readers will need much less practice with these concepts than struggling readers will. The point is to teach students what they need to learn and not what they already know—to discern when particular children or activities warrant more or less attention.

*Note:* In kindergarten, children are expected to demonstrate increasing awareness and competence in the areas that follow.

<b>Kindergartners:</b>	<b>Grade 1 students:</b>
<b>Print Concepts</b>	
1. Demonstrate understanding of the organization and basic features of print. <ol style="list-style-type: none"> <li>Follow words from left to right, top to bottom, and page by page.</li> <li>Recognize that spoken words are represented in written language by specific sequences of letters.</li> <li>Understand that words are separated by spaces in print.</li> <li>Recognize and name all upper- and lowercase letters of the alphabet.</li> </ol>	1. Demonstrate understanding of the organization and basic features of print. <ol style="list-style-type: none"> <li>Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).</li> </ol>

Kindergartners:	Grade 1 students:
<b>Phonological Awareness</b>	
2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Recognize and produce rhyming words. b. Count, pronounce, blend, and segment syllables in spoken words. c. Blend and segment onsets and rimes of single-syllable spoken words. d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words.* (This does not include CVCs ending with /l/, /r/, or /x/.) e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.	2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Distinguish long from short vowel sounds in spoken single-syllable words. b. Orally produce single-syllable words by blending sounds (phonemes), including consonant blends. c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words. d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).

\*Words, syllables, or phonemes written in /slashes/refer to their pronunciation or phonology. Thus, /CVC/ is a word with three phonemes regardless of the number of letters in the spelling of the word.

**Reading Standards: Foundational Skills (K-5)**

[RF]

*Note:* In kindergarten, children are expected to demonstrate increasing awareness and competence in the areas that follow.

Kindergartners:	Grade 1 students:	Grade 2 students:
<b>Phonics and Word Recognition</b>		
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of one-to-one letter-sound correspondences by producing the primary sound or many of the most frequent sounds for each consonant. b. Associate the long and short sounds with common spellings (graphemes) for the five major vowels. c. Read common high-frequency words by sight (e.g., <i>the, of, to, you, she, my, is, are, do, does</i> ). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ.	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs. b. Decode regularly spelled one-syllable words. c. Know final -e and common vowel team conventions for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns by breaking the words into syllables. f. Read words with inflectional endings. g. Recognize and read grade-appropriate irregularly spelled words.	3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Distinguish long and short vowels when reading regularly spelled one-syllable words. b. Know spelling-sound correspondences for additional common vowel teams. c. Decode regularly spelled two-syllable words with long vowels. d. Decode words with common prefixes and suffixes. e. Identify words with inconsistent but common spelling-sound correspondences. f. Recognize and read grade-appropriate irregularly spelled words.
<b>Fluency</b>		
4. Read emergent-reader texts with purpose and understanding.	4. Read with sufficient accuracy and fluency to support comprehension. a. Read grade-level text with purpose and understanding. b. Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	4. Read with sufficient accuracy and fluency to support comprehension. a. Read grade-level text with purpose and understanding. b. Read grade-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

## Reading Standards: Foundational Skills (K-5)

[RF]

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b>Phonics and Word Recognition</b>		
<p>3. Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p>a. Identify and know the meaning of the most common prefixes and derivational suffixes.</p> <p>b. Decode words with common Latin suffixes.</p> <p>c. Decode multisyllable words.</p> <p>d. Read grade-appropriate irregularly spelled words.</p>	<p>3. Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p>a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p>	<p>3. Know and apply grade-level phonics and word analysis skills in decoding words.</p> <p>a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.</p>
<b>Fluency</b>		
<p>4. Read with sufficient accuracy and fluency to support comprehension.</p> <p>a. Read grade-level text with purpose and understanding.</p> <p>b. Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</p> <p>c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</p>	<p>4. Read with sufficient accuracy and fluency to support comprehension.</p> <p>a. Read grade-level text with purpose and understanding.</p> <p>b. Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</p> <p>c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</p>	<p>4. Read with sufficient accuracy and fluency to support comprehension.</p> <p>a. Read grade-level text with purpose and understanding.</p> <p>b. Read grade-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.</p> <p>c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.</p>

**COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR WRITING**

The K-5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

*Note on range and content of student writing*

To build a foundation for college and career readiness, students need to learn to use writing as a way of offering and supporting opinions, demonstrating understanding of the subjects they are studying, and conveying real and imagined experiences and events. They learn to appreciate that a key purpose of writing is to communicate clearly to an external, sometimes unfamiliar audience, and they begin to adapt the form and content of their writing to accomplish a particular task and purpose. They develop the capacity to build knowledge on a subject through research projects and to respond analytically to literary and informational sources. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and extended time frames throughout the year.

*Text Types and Purposes\**

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

*Production and Distribution of Writing*

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

*Research to Build and Present Knowledge*

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

*Range of Writing*

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

\*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

**Writing Standards K-5**

[W]

The following standards for K-5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. *Students advancing through the grades are expected to meet each year’s grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

<b>Kindergartners:</b>	<b>Grade 1 students:</b>	<b>Grade 2 students:</b>
<b><i>Text Types and Purposes</i></b>		
1. Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., <i>My favorite book is . . .</i> ).	1. Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.	1. Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., <i>because, and, also</i> ) to connect opinion and reasons, and provide a concluding statement or section.
2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	2. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.	2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.	3. Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.	3. Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of closure.
<b><i>Production and Distribution of Writing</i></b>		
4. (Begins in grade 3)	4. (Begins in grade 3)	4. (Begins in grade 3)
5. With guidance and support from adults, respond to questions and suggestions from peers and add details to strengthen writing as needed.	5. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.	5. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
6. With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.	6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.	6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
<b><i>Research to Build and Present Knowledge</i></b>		
7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	7. Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).	7. Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	8. Recall information from experiences or gather information from provided sources to answer a question.
9. (Begins in grade 4)	9. (Begins in grade 4)	9. (Begins in grade 4)
<b><i>Range of Writing</i></b>		
10. (Begins in grade 3)	10. (Begins in grade 3)	10. (Begins in grade 3)



## Writing Standards K-5

[[ W ]]

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b>Text Types and Purposes</b>		
<p>1. Write opinion pieces on topics or texts, supporting a point of view with reasons.</p> <p>a. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons.</p> <p>b. Provide reasons that support the opinion.</p> <p>c. Use linking words and phrases (e.g., <i>because, therefore, since, for example</i>) to connect opinion and reasons.</p> <p>d. Provide a concluding statement or section.</p>	<p>1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</p> <p>a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose.</p> <p>b. Provide reasons that are supported by facts and details.</p> <p>c. Link opinion and reasons using words and phrases (e.g., <i>for instance, in order to, in addition</i>).</p> <p>d. Provide a concluding statement or section related to the opinion presented.</p>	<p>1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information.</p> <p>a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose.</p> <p>b. Provide logically ordered reasons that are supported by facts and details.</p> <p>c. Link opinion and reasons using words, phrases, and clauses (e.g., <i>consequently, specifically</i>).</p> <p>d. Provide a concluding statement or section related to the opinion presented.</p>
<p>2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.</p> <p>b. Develop the topic with facts, definitions, and details.</p> <p>c. Use linking words and phrases (e.g., <i>also, another, and, more, but</i>) to connect ideas within categories of information.</p> <p>d. Provide a concluding statement or section.</p>	<p>2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</p> <p>c. Link ideas within categories of information using words and phrases (e.g., <i>another, for example, also, because</i>).</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Provide a concluding statement or section related to the information or explanation presented.</p>	<p>2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.</p> <p>a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.</p> <p>c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., <i>in contrast, especially</i>).</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Provide a concluding statement or section related to the information or explanation presented.</p>
<p>3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p>a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally.</p> <p>b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations.</p> <p>c. Use temporal words and phrases to signal event order.</p> <p>d. Provide a sense of closure.</p>	<p>3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p>a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.</p> <p>b. Use dialogue and description to develop experiences and events or show the responses of characters to situations.</p> <p>c. Use a variety of transitional words and phrases to manage the sequence of events.</p> <p>d. Use concrete words and phrases and sensory details to convey experiences and events precisely.</p> <p>e. Provide a conclusion that follows from the narrated experiences or events.</p>	<p>3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.</p> <p>a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally.</p> <p>b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations.</p> <p>c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events.</p> <p>d. Use concrete words and phrases and sensory details to convey experiences and events precisely.</p> <p>e. Provide a conclusion that follows from the narrated experiences or events.</p>

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b><i>Production and Distribution of Writing</i></b>		
4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)
5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 3 on page 29.)	5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 4 on page 29.)	5. With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 5 on page 29.)
6. With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.	6. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.	6. With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.
<b><i>Research to Build and Present Knowledge</i></b>		
7. Conduct short research projects that build knowledge about a topic.	7. Conduct short research projects that build knowledge through investigation of different aspects of a topic.	7. Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.	8. Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	8. Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
9. (Begins in grade 4)	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply <i>grade 4 Reading standards</i> to literature (e.g., “Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text [e.g., a character’s thoughts, words, or actions]”). b. Apply <i>grade 4 Reading standards</i> to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text”).	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply <i>grade 5 Reading standards</i> to literature (e.g., “Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text [e.g., how characters interact]”). b. Apply <i>grade 5 Reading standards</i> to informational texts (e.g., “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point[s]”).
<b><i>Range of Writing</i></b>		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

### COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR SPEAKING AND LISTENING

The K-5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

#### *Note on range and content of student speaking and listening*

To build a foundation for college and career readiness, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner. Being productive members of these conversations requires that students contribute accurate, relevant information; respond to and develop what others have said; make comparisons and contrasts; and analyze and synthesize a multitude of ideas in various domains.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio.

#### *Comprehension and Collaboration*

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

#### *Presentation of Knowledge and Ideas*

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

### Speaking and Listening Standards K-5

[SL]

The following standards for K-5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

Kindergartners:	Grade 1 students:	Grade 2 students:
<b><i>Comprehension and Collaboration</i></b>		
<p>1. Participate in collaborative conversations with diverse partners about <i>kindergarten topics and texts</i> with peers and adults in small and larger groups.</p> <p>a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).</p> <p>b. Continue a conversation through multiple exchanges.</p>	<p>1. Participate in collaborative conversations with diverse partners about <i>grade 1 topics and texts</i> with peers and adults in small and larger groups.</p> <p>a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).</p> <p>b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges.</p> <p>c. Ask questions to clear up any confusion about the topics and texts under discussion.</p>	<p>1. Participate in collaborative conversations with diverse partners about <i>grade 2 topics and texts</i> with peers and adults in small and larger groups.</p> <p>a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</p> <p>b. Build on others' talk in conversations by linking their comments to the remarks of others.</p> <p>c. Ask for clarification and further explanation as needed about the topics and texts under discussion.</p>
<p>2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.</p>	<p>2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.</p>	<p>2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</p>

<b>Kindergartners:</b>	<b>Grade 1 students:</b>	<b>Grade 2 students:</b>
3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.	3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
<b>Presentation of Knowledge and Ideas</b>		
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	4. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
5. Add drawings or other visual displays to descriptions as desired to provide additional detail.	5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
6. Speak audibly and express thoughts, feelings, and ideas clearly.	6. Produce complete sentences when appropriate to task and situation. (See grade 1 Language standards 1 and 3 on page 26 for specific expectations.)	6. Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 2 Language standards 1 and 3 on page 26 for specific expectations.)

**Speaking and Listening Standards K-5**

[SL]

<b>Grade 3 students:</b>	<b>Grade 4 students:</b>	<b>Grade 5 students:</b>
<b>Comprehension and Collaboration</b>		
<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 3 topics and texts</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).</p> <p>c. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.</p> <p>d. Explain their own ideas and understanding in light of the discussion.</p>	<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 4 topics and texts</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>b. Follow agreed-upon rules for discussions and carry out assigned roles.</p> <p>c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.</p> <p>d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.</p>	<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 5 topics and texts</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>b. Follow agreed-upon rules for discussions and carry out assigned roles.</p> <p>c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.</p> <p>d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.</p>
2. Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	2. Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	2. Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
3. Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.	3. Identify the reasons and evidence a speaker provides to support particular points.	3. Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b><i>Presentation of Knowledge and Ideas</i></b>		
4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.	4. Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	4. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5. Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.	5. Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	5. Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.
6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See grade 3 Language standards 1 and 3 on page 26 for specific expectations.)	6. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See grade 4 Language standards 1 and 3 on page 28 for specific expectations.)	6. Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See grade 5 Language standards 1 and 3 on page 28 for specific expectations.)

### COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR LANGUAGE

The K-5 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

#### *Note on range and content of student language use*

To build a foundation for college and career readiness in language, students must gain control over many conventions of standard English grammar, usage, and mechanics as well as learn other ways to use language to convey meaning effectively. They must also be able to determine or clarify the meaning of grade-appropriate words encountered through listening, reading, and media use; come to appreciate that words have nonliteral meanings, shadings of meaning, and relationships to other words; and expand their vocabulary in the course of studying content. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

#### *Conventions of Standard English*

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

#### *Knowledge of Language*

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

#### *Vocabulary Acquisition and Use*

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of figurative language, word relationships and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

### **Language Standards K-5**

[L]

The following standards for grades K-5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (\*). See the table on page 31 for a complete list and Appendix A for an example of how these skills develop in sophistication.

Kindergartners:	Grade 1 students:	Grade 2 students:
<b>Conventions of Standard English</b>		
<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Print many upper- and lowercase letters.</p> <p>b. Use frequently occurring nouns and verbs.</p> <p>c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., <i>dog, dogs; wish, wishes</i>).</p> <p>d. Understand and use question words (interrogatives) (e.g., <i>who, what, where, when, why, how</i>).</p> <p>e. Use the most frequently occurring prepositions (e.g., <i>to, from, in, out, on, off, for, of, by, with</i>).</p> <p>f. Produce and expand complete sentences in shared language activities.</p>	<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Print all upper- and lowercase letters.</p> <p>b. Use common, proper, and possessive nouns.</p> <p>c. Use singular and plural nouns with matching verbs in basic sentences (e.g., <i>He hops; We hop</i>).</p> <p>d. Use personal, possessive, and indefinite pronouns (e.g., <i>I, me, my; they, them, their; anyone, everything</i>).</p> <p>e. Use verbs to convey a sense of past, present, and future (e.g., <i>Yesterday I walked home; Today I walk home; Tomorrow I will walk home</i>).</p> <p>f. Use frequently occurring adjectives.</p> <p>g. Use frequently occurring conjunctions (e.g., <i>and, but, or, so, because</i>).</p> <p>h. Use determiners (e.g., <i>articles, demonstratives</i>).</p> <p>i. Use frequently occurring prepositions (e.g., <i>during, beyond, toward</i>).</p> <p>j. Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.</p>	<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Use collective nouns (e.g., <i>group</i>).</p> <p>b. Form and use frequently occurring irregular plural nouns (e.g., <i>feet, children, teeth, mice, fish</i>).</p> <p>c. Use reflexive pronouns (e.g., <i>myself, ourselves</i>).</p> <p>d. Form and use the past tense of frequently occurring irregular verbs (e.g., <i>sat, hid, told</i>).</p> <p>e. Use adjectives and adverbs, and choose between them depending on what is to be modified.</p> <p>f. Produce, expand, and rearrange complete simple and compound sentences (e.g., <i>The boy watched the movie; The little boy watched the movie; The action movie was watched by the little boy</i>).</p>
<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Capitalize the first word in a sentence and the pronoun <i>I</i>.</p> <p>b. Recognize and name end punctuation.</p> <p>c. Write a letter or letters for most consonant and short-vowel sounds (phonemes).</p> <p>d. Spell simple words phonetically, drawing on knowledge of sound-letter relationships.</p>	<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Capitalize dates and names of people.</p> <p>b. Use end punctuation for sentences.</p> <p>c. Use commas in dates and to separate single words in a series.</p> <p>d. Use conventional spelling for words with common spelling patterns and for frequently occurring irregular words.</p> <p>e. Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.</p>	<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Capitalize holidays, product names, and geographic names.</p> <p>b. Use commas in greetings and closings of letters.</p> <p>c. Use an apostrophe to form contractions and frequently occurring possessives.</p> <p>d. Generalize learned spelling patterns when writing words (e.g., <i>cage</i> → <i>badge</i>; <i>boy</i> → <i>boil</i>).</p> <p>e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.</p>
<b>Knowledge of Language</b>		
<p>3. (Begins in grade 2)</p>	<p>3. (Begins in grade 2)</p>	<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Compare formal and informal uses of English.</p>

Kindergartners:	Grade 1 students:	Grade 2 students:
<b>Vocabulary Acquisition and Use</b>		
<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>kindergarten reading and content</i>.</p> <p>a. Identify new meanings for familiar words and apply them accurately (e.g., knowing <i>duck</i> is a bird and learning the verb <i>to duck</i>).</p> <p>b. Use the most frequently occurring inflections and affixes (e.g., <i>-ed</i>, <i>-s</i>, <i>re-</i>, <i>un-</i>, <i>pre-</i>, <i>-ful</i>, <i>-less</i>) as a clue to the meaning of an unknown word.</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 1 reading and content</i>, choosing flexibly from an array of strategies.</p> <p>a. Use sentence-level context as a clue to the meaning of a word or phrase.</p> <p>b. Use frequently occurring affixes as a clue to the meaning of a word.</p> <p>c. Identify frequently occurring root words (e.g., <i>look</i>) and their inflectional forms (e.g., <i>looks</i>, <i>looked</i>, <i>looking</i>).</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 2 reading and content</i>, choosing flexibly from an array of strategies.</p> <p>a. Use sentence-level context as a clue to the meaning of a word or phrase.</p> <p>b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., <i>happy/unhappy</i>, <i>tell/retell</i>).</p> <p>c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., <i>addition</i>, <i>additional</i>).</p> <p>d. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., <i>birdhouse</i>, <i>lighthouse</i>, <i>housefly</i>; <i>bookshelf</i>, <i>notebook</i>, <i>bookmark</i>).</p> <p>e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.</p>
<p>5. With guidance and support from adults, explore word relationships and nuances in word meanings.</p> <p>a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.</p> <p>b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).</p> <p>c. Identify real-life connections between words and their use (e.g., note places at school that are <i>colorful</i>).</p> <p>d. Distinguish shades of meaning among verbs describing the same general action (e.g., <i>walk</i>, <i>march</i>, <i>strut</i>, <i>prance</i>) by acting out the meanings.</p>	<p>5. With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings.</p> <p>a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent.</p> <p>b. Define words by category and by one or more key attributes (e.g., a <i>duck</i> is a bird that swims; a <i>tiger</i> is a large cat with stripes).</p> <p>c. Identify real-life connections between words and their use (e.g., note places at home that are <i>cozy</i>).</p> <p>d. Distinguish shades of meaning among verbs differing in manner (e.g., <i>look</i>, <i>peek</i>, <i>glance</i>, <i>stare</i>, <i>glare</i>, <i>scowl</i>) and adjectives differing in intensity (e.g., <i>large</i>, <i>gigantic</i>) by defining or choosing them or by acting out the meanings.</p>	<p>5. Demonstrate understanding of word relationships and nuances in word meanings.</p> <p>a. Identify real-life connections between words and their use (e.g., describe foods that are <i>spicy</i> or <i>juicy</i>).</p> <p>b. Distinguish shades of meaning among closely related verbs (e.g., <i>toss</i>, <i>throw</i>, <i>hurl</i>) and closely related adjectives (e.g., <i>thin</i>, <i>slender</i>, <i>skinny</i>, <i>scrawny</i>).</p>
<p>6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.</p>	<p>6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., <i>because</i>).</p>	<p>6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., <i>When other kids are happy that makes me happy</i>).</p>

Language Standards K-5

[L]

Grade 3 students:	Grade 4 students:	Grade 5 students:
<b>Conventions of Standard English</b>		
<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences.</p> <p>b. Form and use regular and irregular plural nouns.</p> <p>c. Use abstract nouns (e.g., <i>childhood</i>).</p> <p>d. Form and use regular and irregular verbs.</p> <p>e. Form and use the simple (e.g., <i>I walked; I walk; I will walk</i>) verb tenses.</p> <p>f. Ensure subject-verb and pronoun-antecedent agreement.*</p> <p>g. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified.</p> <p>h. Use coordinating and subordinating conjunctions.</p> <p>i. Produce simple, compound, and complex sentences.</p>	<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Use relative pronouns (<i>who, whose, whom, which, that</i>) and relative adverbs (<i>where, when, why</i>).</p> <p>b. Form and use the progressive (e.g., <i>I was walking; I am walking; I will be walking</i>) verb tenses.</p> <p>c. Use modal auxiliaries (e.g., <i>can, may, must</i>) to convey various conditions.</p> <p>d. Order adjectives within sentences according to conventional patterns (e.g., <i>a small red bag</i> rather than <i>a red small bag</i>).</p> <p>e. Form and use prepositional phrases.</p> <p>f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.*</p> <p>g. Correctly use frequently confused words (e.g., <i>to, too, two; there, their</i>).*</p>	<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences.</p> <p>b. Form and use the perfect (e.g., <i>I had walked; I have walked; I will have walked</i>) verb tenses.</p> <p>c. Use verb tense to convey various times, sequences, states, and conditions.</p> <p>d. Recognize and correct inappropriate shifts in verb tense.*</p> <p>e. Use correlative conjunctions (e.g., <i>either/or, neither/nor</i>).</p>
<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Capitalize appropriate words in titles.</p> <p>b. Use commas in addresses.</p> <p>c. Use commas and quotation marks in dialogue.</p> <p>d. Form and use possessives.</p> <p>e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., <i>sitting, smiled, cries, happiness</i>).</p> <p>f. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words.</p> <p>g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.</p>	<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Use correct capitalization.</p> <p>b. Use commas and quotation marks to mark direct speech and quotations from a text.</p> <p>c. Use a comma before a coordinating conjunction in a compound sentence.</p> <p>d. Spell grade-appropriate words correctly, consulting references as needed.</p>	<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Use punctuation to separate items in a series.*</p> <p>b. Use a comma to separate an introductory element from the rest of the sentence.</p> <p>c. Use a comma to set off the words <i>yes</i> and <i>no</i> (e.g., <i>Yes, thank you</i>), to set off a tag question from the rest of the sentence (e.g., <i>It's true, isn't it?</i>), and to indicate direct address (e.g., <i>Is that you, Steve?</i>).</p> <p>d. Use underlining, quotation marks, or italics to indicate titles of works.</p> <p>e. Spell grade-appropriate words correctly, consulting references as needed.</p>
<b>Knowledge of Language</b>		
<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Choose words and phrases for effect.*</p> <p>b. Recognize and observe differences between the conventions of spoken and written standard English.</p>	<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Choose words and phrases to convey ideas precisely.*</p> <p>b. Choose punctuation for effect.*</p> <p>c. Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion).</p>	<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.</p> <p>b. Compare and contrast the varieties of English (e.g., dialects, registers) used in stories, dramas, or poems.</p>



Grade 3 students:	Grade 4 students:	Grade 5 students:
<b>Vocabulary Acquisition and Use</b>		
<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 3 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use sentence-level context as a clue to the meaning of a word or phrase.</p> <p>b. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., <i>agreeable/disagreeable</i>, <i>comfortable/uncomfortable</i>, <i>care/careless</i>, <i>heat/preheat</i>).</p> <p>c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., <i>company</i>, <i>companion</i>).</p> <p>d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 4 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., <i>telegraph</i>, <i>photograph</i>, <i>autograph</i>).</p> <p>c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 5 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., <i>photograph</i>, <i>photosynthesis</i>).</p> <p>c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.</p>
<p>5. Demonstrate understanding of word relationships and nuances in word meanings.</p> <p>a. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., <i>take steps</i>).</p> <p>b. Identify real-life connections between words and their use (e.g., describe people who are <i>friendly</i> or <i>helpful</i>).</p> <p>c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., <i>knew</i>, <i>believed</i>, <i>suspected</i>, <i>heard</i>, <i>wondered</i>).</p>	<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Explain the meaning of simple similes and metaphors (e.g., <i>as pretty as a picture</i>) in context.</p> <p>b. Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p>c. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).</p>	<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figurative language, including similes and metaphors, in context.</p> <p>b. Recognize and explain the meaning of common idioms, adages, and proverbs.</p> <p>c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.</p>
<p>6. Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, including those that signal spatial and temporal relationships (e.g., <i>After dinner that night we went looking for them</i>).</p>	<p>6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal precise actions, emotions, or states of being (e.g., <i>quizzed</i>, <i>whined</i>, <i>stammered</i>) and that are basic to a particular topic (e.g., <i>wildlife</i>, <i>conservation</i>, and <i>endangered</i> when discussing animal preservation).</p>	<p>6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., <i>however</i>, <i>although</i>, <i>nevertheless</i>, <i>similarly</i>, <i>moreover</i>, <i>in addition</i>).</p>

### Language Progressive Skills, by Grade

The following skills, marked with an asterisk (\*) in Language standards 1-3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Standard	Grade(s)							
	3	4	5	6	7	8	9-10	11-12
<b>L.3.1f.</b> Ensure subject-verb and pronoun-antecedent agreement.	X	X	X	X	X	X	X	X
<b>L.3.3a.</b> Choose words and phrases for effect.	X	X	X	X	X	X	X	X
<b>L.4.1f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.		X	X	X	X	X	X	X
<b>L.4.1g.</b> Correctly use frequently confused words (e.g., <i>to/through</i> ; <i>there/their</i> ).		X	X	X	X	X	X	X

Standard	Grade(s)							
	3	4	5	6	7	8	9-10	11-12
<b>L.4.3a.</b> Choose words and phrases to convey ideas precisely.*		X	X	X				
<b>L.4.3b.</b> Choose punctuation for effect.		X	X	X	X	X	X	X
<b>L.5.1d.</b> Recognize and correct inappropriate shifts in verb tense.			X	X	X	X	X	X
<b>L.5.2a.</b> Use punctuation to separate items in a series.†			X	X	X	X		
<b>L.6.1c.</b> Recognize and correct inappropriate shifts in pronoun number and person.				X	X	X	X	X
<b>L.6.1d.</b> Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).				X	X	X	X	X
<b>L.6.1e.</b> Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.				X	X	X	X	X
<b>L.6.2a.</b> Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.				X	X	X	X	X
<b>L.6.3a.</b> Vary sentence patterns for meaning, reader/listener interest, and style.‡				X	X	X	X	
<b>L.6.3b.</b> Maintain consistency in style and tone.				X	X	X	X	X
<b>L.7.1c.</b> Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.					X	X	X	X
<b>L.7.3a.</b> Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.					X	X	X	X
<b>L.8.1d.</b> Recognize and correct inappropriate shifts in verb voice and mood.						X	X	X
<b>L.9-10.1a.</b> Use parallel structure.							X	X

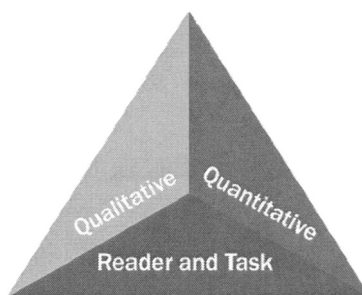
\* Subsumed by L.7.3a

† Subsumed by L.9—10.1a

‡ Subsumed by L.11—12.3a

**Standard 10: Range, Quality, and Complexity of Student Reading K-5**

**Measuring Text Complexity: Three Factors**



*Qualitative evaluation of the text:* Levels of meaning, structure, language conventionality and clarity, and knowledge demands

*Quantitative evaluation of the text:* Readability measures and other scores of text complexity

*Matching reader to text and task:* Reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

*Note:* More detailed information on text complexity and how it is measured is contained in Appendix A.

*Range of Text Types for K-5*

Students in K-5 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature			Informational Text
Stories	Dramas	Poetry	Literary Nonfiction and Historical, Scientific, and Technical Texts
Includes children's adventure stories, folktales, legends, fables, fantasy, realistic fiction, and myth	Includes staged dialogue and brief familiar scenes	Includes nursery rhymes and the subgenres of the narrative poem, limerick, and free verse poem	Includes biographies and autobiographies; books about history, social studies, science, and the arts; technical texts, including directions, forms, and information displayed in graphs, charts, or maps; and digital sources on a range of topics

*Texts Illustrating the Complexity, Quality, and Range of Student Reading K-5*

	Literature: Stories, Drama, Poetry	Informational Texts: Literary Nonfiction and Historical, Scientific, and Technical Texts
<b>K<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• <i>Over in the Meadow</i> by John Langstaff (traditional) (c1800)*</li> <li>• <i>A Boy, a Dog, and a Frog</i> by Mercer Mayer (1967)</li> <li>• <i>A Story, A Story</i> by Gail E. Haley (1970)*</li> <li>• <i>Pancakes for Breakfast</i> by Tomie DePaola (1978)</li> <li>• <i>Kitten's First Full Moon</i> by Kevin Henkes (2004)*</li> </ul>	<ul style="list-style-type: none"> <li>• <i>My Five Senses</i> by Aliki (1962)**</li> <li>• <i>Truck</i> by Donald Crews (1980)</li> <li>• <i>I Read Signs</i> by Tana Hoban (1987)</li> <li>• <i>What Do You Do With a Tail Like This?</i> by Steve Jenkins and Robin Page (2003)*</li> <li>• <i>Amazing Whales!</i> by Sarah L. Thomson (2005)*</li> </ul>
<b>1<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• "Mix a Pancake" by Christina G. Rossetti (1893)**</li> <li>• <i>Mr. Popper's Penguins</i> by Richard Atwater (1938)*</li> <li>• <i>Little Bear</i> by Else Holmelund Minarik, illustrated by Maurice Sendak (1957)**</li> <li>• <i>Frog and Toad Together</i> by Arnold Lobel (1971)**</li> <li>• <i>Hi! Fly Guy</i> by Tedd Arnold (2006)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>A Tree Is a Plant</i> by Clyde Robert Bulla, illustrated by Stacey Schuett (1960)**</li> <li>• <i>Starfish</i> by Edith Thacher Hurd (1962)</li> <li>• <i>Follow the Water from Brook to Ocean</i> by Arthur Dorros (1991)**</li> <li>• <i>From Seed to Pumpkin</i> by Wendy Pfeffer, illustrated by James Graham Hale (2004)*</li> <li>• <i>How People Learned to Fly</i> by Fran Hodgkins and True Kelley (2007)*</li> </ul>
<b>2-3</b>	<ul style="list-style-type: none"> <li>• "Who Has Seen the Wind?" by Christina G. Rossetti (1893)</li> <li>• <i>Charlotte's Web</i> by E. B. White (1952)*</li> <li>• <i>Sarah, Plain and Tall</i> by Patricia MacLachlan (1985)</li> <li>• <i>Tops and Bottoms</i> by Janet Stevens (1995)</li> <li>• <i>Poppleton in Winter</i> by Cynthia Rylant, illustrated by Mark Teague (2001)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>A Medieval Feast</i> by Aliki (1983)</li> <li>• <i>From Seed to Plant</i> by Gail Gibbons (1991)</li> <li>• <i>The Story of Ruby Bridges</i> by Robert Coles (1995)*</li> <li>• <i>A Drop of Water: A Book of Science and Wonder</i> by Walter Wick (1997)</li> <li>• <i>Moonshot: The Flight of Apollo 11</i> by Brian Floca (2009)</li> </ul>
<b>4-5</b>	<ul style="list-style-type: none"> <li>• <i>Alice's Adventures in Wonderland</i> by Lewis Carroll (1865)</li> <li>• "Casey at the Bat" by Ernest Lawrence Thayer (1888)</li> <li>• <i>The Black Stallion</i> by Walter Farley (1941)</li> <li>• "Zlateh the Goat" by Isaac Bashevis Singer (1984)</li> <li>• <i>Where the Mountain Meets the Moon</i> by Grace Lin (2009)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Discovering Mars: The Amazing Story of the Red Planet</i> by Melvin Berger (1992)</li> <li>• <i>Hurricanes: Earth's Mightiest Storms</i> by Patricia Lauber (1996)</li> <li>• <i>A History of US</i> by Joy Hakim (2005)</li> <li>• <i>Horses</i> by Seymour Simon (2006)</li> <li>• <i>Quest for the Tree Kangaroo: An Expedition to the Cloud Forest of New Guinea</i> by Sy Montgomery (2006)</li> </ul>

*Note:* Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a wide range of topics and genres.

(See Appendix B for excerpts of these and other texts illustrative of K-5 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth. On the next page is an example of progressions of texts building knowledge across grade levels.

<sup>1</sup> Children at the kindergarten and grade 1 levels should be expected to read texts independently that have been specifically written to correlate to their reading level and their word knowledge. Many of the titles listed above are meant to supplement carefully structured independent reading with books to read along with a teacher or that are read aloud to students to build knowledge and cultivate a joy in reading.

*Staying on Topic Within a Grade and Across Grades:  
How to Build Knowledge Systematically in English Language Arts K-5*

Building knowledge systematically in English language arts is like giving children various pieces of a puzzle in each grade that, over time, will form one big picture. At a curricular or instructional level, texts—within and across grade levels—need to be selected around topics or themes that systematically develop the knowledge base of students. Within a

grade level, there should be an adequate number of titles on a single topic that would allow children to study that topic for a sustained period. The knowledge children have learned about particular topics in early grade levels should then be expanded and developed in subsequent grade levels to ensure an increasingly deeper understanding of these topics. Children in the upper elementary grades will generally be expected to read these texts independently and reflect on them in writing. However, children in the early grades (particularly K-2) should participate in rich, structured conversations with an adult in response to the written texts that are read aloud, *orally* comparing and contrasting as well as analyzing and synthesizing, in the manner called for by the *Standards*.

Preparation for reading complex informational texts should begin at the very earliest elementary school grades. What follows is one example that uses domain-specific nonfiction titles across grade levels to illustrate how curriculum designers and classroom teachers can infuse the English language arts block with rich, age-appropriate content knowledge and vocabulary in history/social studies, science, and the arts. Having students listen to informational read-alouds in the early grades helps lay the necessary foundation for students' reading and understanding of increasingly complex texts on their own in subsequent grades.

<b>Exemplar Texts on a Topic Across Grades</b>	<b>K</b>	<b>1</b>	<b>2-3</b>	<b>4-5</b>
<p><b>The Human Body</b> Students can begin learning about the human body starting in kindergarten and then review and extend their learning during each subsequent grade.</p>	<p>The five senses and associated body parts</p> <ul style="list-style-type: none"> <li>• <i>My Five Senses</i> by Aliki (1989)</li> <li>• <i>Hearing</i> by Maria Rius (1985)</li> <li>• <i>Sight</i> by Maria Rius (1985)</li> <li>• <i>Smell</i> by Maria Rius (1985)</li> <li>• <i>Taste</i> by Maria Rius (1985)</li> <li>• <i>Touch</i> by Maria Rius (1985)</li> </ul> <p>Taking care of your body: Overview (hygiene, diet, exercise, rest)</p> <ul style="list-style-type: none"> <li>• <i>My Amazing Body: A First Look at Health &amp; Fitness</i> by Pat Thomas (2001)</li> <li>• <i>Get Up and Go!</i> by Nancy Carlson (2008)</li> <li>• <i>Go Wash Up</i> by Doering Tourville (2008)</li> <li>• <i>Sleep</i> by Paul Showers (1997)</li> <li>• <i>Fuel the Body</i> by Doering Tourville (2008)</li> </ul>	<p>Introduction to the systems of the human body and associated body parts</p> <ul style="list-style-type: none"> <li>• <i>Under Your Skin: Your Amazing Body</i> by Mick Manning (2007)</li> <li>• <i>Me and My Amazing Body</i> by Joan Sweeney (1999)</li> <li>• <i>The Human Body</i> by Gallimard Jeunesse (2007)</li> <li>• <i>The Busy Body Book</i> by Lizzy Rockwell (2008)</li> <li>• <i>First Encyclopedia of the Human Body</i> by Fiona Chandler (2004)</li> </ul> <p>Taking care of your body: Germs, diseases, and preventing illness</p> <ul style="list-style-type: none"> <li>• <i>Germs Make Me Sick</i> by Marilyn Berger (1995)</li> <li>• <i>Tiny Life on Your Body</i> by Christine Taylor-Butler (2005)</li> <li>• <i>Germ Stories</i> by Arthur Kornberg (2007)</li> <li>• <i>All About Scabs</i> by Genichiro Yagu (1998)</li> </ul>	<p>Digestive and excretory systems</p> <ul style="list-style-type: none"> <li>• <i>What Happens to a Hamburger</i> by Paul Showers (1985)</li> <li>• <i>The Digestive System</i> by Christine Taylor-Butler (2008)</li> <li>• <i>The Digestive System</i> by Rebecca L. Johnson (2006)</li> <li>• <i>The Digestive System</i> by Kristin Petrie (2007)</li> </ul> <p>Taking care of your body: Healthy eating and nutrition</p> <ul style="list-style-type: none"> <li>• <i>Good Enough to Eat</i> by Lizzy Rockwell (1999)</li> <li>• <i>Showdown at the Food Pyramid</i> by Rex Barron (2004)</li> </ul> <p>Muscular, skeletal, and nervous systems</p> <ul style="list-style-type: none"> <li>• <i>The Mighty Muscular and Skeletal Systems</i> Crabtree Publishing (2009)</li> <li>• <i>Muscles</i> by Seymour Simon (1998)</li> <li>• <i>Bones</i> by Seymour Simon (1998)</li> <li>• <i>The Astounding Nervous System</i> Crabtree Publishing (2009)</li> <li>• <i>The Nervous System</i> by Joelle Riley (2004)</li> </ul>	<p>Circulatory system</p> <ul style="list-style-type: none"> <li>• <i>The Heart</i> by Seymour Simon (2006)</li> <li>• <i>The Heart and Circulation</i> by Carol Ballard (2005)</li> <li>• <i>The Circulatory System</i> by Kristin Petrie (2007)</li> <li>• <i>The Amazing Circulatory System</i> by John Burstein (2009)</li> </ul> <p>Respiratory system</p> <ul style="list-style-type: none"> <li>• <i>The Lungs</i> by Seymour Simon (2007)</li> <li>• <i>The Respiratory System</i> by Susan Glass (2004)</li> <li>• <i>The Respiratory System</i> by Kristin Petrie (2007)</li> <li>• <i>The Remarkable Respiratory System</i> by John Burstein (2009)</li> </ul> <p>Endocrine system</p> <ul style="list-style-type: none"> <li>• <i>The Endocrine System</i> by Rebecca Olien (2006)</li> <li>• <i>The Exciting Endocrine System</i> by John Burstein (2009)</li> </ul>

**STANDARDS FOR ENGLISH LANGUAGE ARTS**

**6-12**

**COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR READING**

The grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

*Note on range and content of student reading*

To become college and career ready, students must grapple with works of exceptional craft and thought whose range extends across genres, cultures, and centuries. Such works offer profound insights into the human condition and serve as models for students' own thinking and writing. Along with high-quality contemporary works, these texts should be chosen from among seminal U.S. documents, the classics of American literature, and the timeless dramas of Shakespeare. Through wide and deep reading of literature and literary nonfiction of steadily increasing sophistication, students gain a reservoir of literary and cultural knowledge, references, and images; the ability to evaluate intricate arguments; and the capacity to surmount the challenges posed by complex texts.

*Key Ideas and Details*

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

*Craft and Structure*

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

*Integration of Knowledge and Ideas*

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.\*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

*Range of Reading and Level of Text Complexity*

10. Read and comprehend complex literary and informational texts independently and proficiently.

\*Please see "Research to Build Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

**Reading Standards for Literature 6-12****[RL]**

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

<b>Grade 6 students:</b>	<b>Grade 7 students:</b>	<b>Grade 8 students:</b>
<b><i>Key Ideas and Details</i></b>		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	2. Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.	2. Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
3. Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.	3. Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	3. Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.

Grade 6 students:	Grade 7 students:	Grade 8 students:
<b><i>Craft and Structure</i></b>		
4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
5. Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	5. Analyze how a drama’s or poem’s form or structure (e.g., soliloquy, sonnet) contributes to its meaning.	5. Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
6. Explain how an author develops the point of view of the narrator or speaker in a text.	6. Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.	6. Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
<b><i>Integration of Knowledge and Ideas</i></b>		
7. Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they “see” and “hear” when reading the text to what they perceive when they listen or watch.	7. Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	7. Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.
8. (Not applicable to literature)	8. (Not applicable to literature)	8. (Not applicable to literature)
<b><i>Integration of Knowledge and Ideas</i></b>		
9. Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	9. Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	9. Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
<b><i>Range of Reading and Level of Text Complexity</i></b>		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6-8 text complexity band independently and proficiently.

**Reading Standards for Literature 6-12**

[RL]

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9-10 students:	Grades 11-12 students:
<b><i>Key Ideas and Details</i></b>	
1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

<b>Grades 9-10 students:</b>	<b>Grades 11-12 students:</b>
3. Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.	3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).
<b><i>Craft and Structure</i></b>	
4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)
5. Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.	5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
6. Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.	6. Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).
<b><i>Integration of Knowledge and Ideas</i></b>	
7. Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's <i>Landscape with the Fall of Icarus</i> ).	7. Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)
8. (Not applicable to literature)	8. (Not applicable to literature)
9. Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).	9. Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.
<b><i>Range of Reading and Level of Text Complexity</i></b>	
10. By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9-10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9-10 text complexity band independently and proficiently.	10. By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11—CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11—CCR text complexity band independently and proficiently.

**Reading Standards for Informational Text 6-12****[RI]**

<b>Grade 6 students:</b>	<b>Grade 7 students:</b>	<b>Grade 8 students:</b>
<b><i>Key Ideas and Details</i></b>		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.	2. Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
3. Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	3. Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	3. Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

Grade 6 students:	Grade 7 students:	Grade 8 students:
<b><i>Craft and Structure</i></b>		
4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.	4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.	4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
5. Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.	5. Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.
6. Determine an author’s point of view or purpose in a text and explain how it is conveyed in the text.	6. Determine an author’s point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.	6. Determine an author’s point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
<b><i>Integration of Knowledge and Ideas</i></b>		
7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.	7. Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium’s portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).	7. Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
8. Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	8. Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.	8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
9. Compare and contrast one author’s presentation of events with that of another (e.g., a memoir written by and a biography on the same person).	9. Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.	9. Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.
<b><i>Range of Reading and Level of Text Complexity</i></b>		
10. By the end of the year, read and comprehend literary nonfiction in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literary nonfiction in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10. By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6-8 text complexity band independently and proficiently.

**Reading Standards for Informational Text 6-12**

[RI]

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations-the former providing broad standards, the latter providing additional specificity.

Grades 9-10 students:	Grades 11-12 students:
<b><i>Key Ideas and Details</i></b>	
1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.



<b>Grades 9-10 students:</b>	<b>Grades 11-12 students:</b>
3. Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
<b><i>Craft and Structure</i></b>	
4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).	4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines <i>faction</i> in <i>Federalist</i> No. 10).
5. Analyze in detail how an author’s ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	5. Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
6. Determine an author’s point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.	6. Determine an author’s point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.
<b><i>Integration of Knowledge and Ideas</i></b>	
7. Analyze various accounts of a subject told in different mediums (e.g., a person’s life story in both print and multimedia), determining which details are emphasized in each account.	7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.
8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.	8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., <i>The Federalist</i> , presidential addresses).
9. Analyze seminal U.S. documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter from Birmingham Jail”), including how they address related themes and concepts.	9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln’s Second Inaugural Address) for their themes, purposes, and rhetorical features.
<b><i>Range of Reading and Level of Text Complexity</i></b>	
10. By the end of grade 9, read and comprehend literary nonfiction in the grades 9-10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9-10 text complexity band independently and proficiently.	10. By the end of grade 11, read and comprehend literary nonfiction in the grades 11-CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11-CCR text complexity band independently and proficiently.

### COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR WRITING

The grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

#### *Note on range and content of student writing*

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college- and career- ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to know how to combine elements of different kinds of writing—for example, to use narrative strategies within argument and explanation within narrative—to produce complex and nuanced writing. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline as well as the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it.

*Text Types and Purposes\**

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

*Production and Distribution of Writing*

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

*Research to Build and Present Knowledge*

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

*Range of Writing*

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

\*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

**Writing Standards 6-12**

**[W]**

The following standards for grades 6-12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. *Students advancing through the grades are expected to meet each year’s grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

<b>Grade 6 students:</b>	<b>Grade 7 students:</b>	<b>Grade 8 students:</b>
<b><i>Text Types and Purposes</i></b>		
1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.	1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.

Grade 6 students:	Grade 7 students:	Grade 8 students:
<p>2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <p>a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.</p> <p>c. Use appropriate transitions to clarify the relationships among ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Establish and maintain a formal style.</p> <p>f. Provide a concluding statement or section that follows from the information or explanation presented.</p>	<p>2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <p>a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.</p> <p>c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Establish and maintain a formal style.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>	<p>2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <p>a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.</p> <p>c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Establish and maintain a formal style.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>
<p>3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.</p> <p>a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.</p> <p>b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.</p> <p>c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.</p> <p>d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events.</p> <p>e. Provide a conclusion that follows from the narrated experiences or events.</p>	<p>3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.</p> <p>a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.</p> <p>b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.</p> <p>c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.</p> <p>d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.</p> <p>e. Provide a conclusion that follows from and reflects on the narrated experiences or events.</p>	<p>3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.</p> <p>a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.</p> <p>b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters.</p> <p>c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events.</p> <p>d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.</p> <p>e. Provide a conclusion that follows from and reflects on the narrated experiences or events.</p>

Grade 6 students:	Grade 7 students:	Grade 8 students:
<b><i>Production and Distribution of Writing</i></b>		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 6 on page 53.)	5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 7 on page 53.)	5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grade 8 on page 53.)
6. Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.	6. Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.	6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.
<b><i>Research to Build and Present Knowledge</i></b>		
7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	7. Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
8. Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.	8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply <i>grade 6 Reading standards</i> to literature (e.g., “Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics”). b. Apply <i>grade 6 Reading standards</i> to literary nonfiction (e.g., “Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not”).	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply <i>grade 7 Reading standards</i> to literature (e.g., “Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history”). b. Apply <i>grade 7 Reading standards</i> to literary nonfiction (e.g. “Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims”).	9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply <i>grade 8 Reading standards</i> to literature (e.g., “Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new”). b. Apply <i>grade 8 Reading standards</i> to literary nonfiction (e.g., “Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced”).

Grade 6 students:	Grade 7 students:	Grade 8 students:
<b>Range of Writing</b>		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

**Writing Standards 6-12**

[W]

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9-10 students:	Grades 11-12 students:
<b>Text Types and Purposes</b>	
<p>1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.</p> <p>b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience’s knowledge level and concerns.</p> <p>c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p>d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>e. Provide a concluding statement or section that follows from and supports the argument presented.</p>	<p>1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <p>a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.</p> <p>b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience’s knowledge level, concerns, values, and possible biases.</p> <p>c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p>d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>e. Provide a concluding statement or section that follows from and supports the argument presented.</p>
<p>2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p> <p>c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to manage the complexity of the topic.</p> <p>e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p>	<p>2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p> <p>c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p>d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.</p> <p>e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p>

<b>Grades 9-10 students:</b>	<b>Grades 11-12 students:</b>
<p>3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.</p> <p>a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.</p> <p>b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.</p> <p>c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.</p> <p>d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.</p> <p>e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.</p>	<p>3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.</p> <p>a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.</p> <p>b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.</p> <p>c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).</p> <p>d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.</p> <p>e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.</p>
<b><i>Production and Distribution of Writing</i></b>	
<p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)</p>	<p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.)</p>
<p>5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grades 9-10 on page 55.)</p>	<p>5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grades 11-12 on page 55.)</p>
<p>6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.</p>	<p>6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.</p>
<b><i>Research to Build and Present Knowledge</i></b>	
<p>7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p>	<p>7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p>
<p>8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p>	<p>8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.</p>

Grades 9-10 students:	Grades 11-12 students:
<p>9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p>a. Apply <i>grades 9-10 Reading standards</i> to literature (e.g., “Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]”).</p> <p>b. Apply <i>grades 9-10 Reading standards</i> to literary nonfiction (e.g., “Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning”).</p>	<p>9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p>a. Apply <i>grades 11-12 Reading standards</i> to literature (e.g., “Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics”).</p> <p>b. Apply <i>grades 11-12 Reading standards</i> to literary nonfiction (e.g., “Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., <i>The Federalist</i>, presidential addresses]”).</p>
<b>Range of Writing</b>	
<p>10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.</p>	<p>10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.</p>

### COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR SPEAKING AND LISTENING

The grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

#### *Note on range and content of student speaking and listening*

To become college and career ready, students must have ample opportunities to take part in a variety of rich, structured conversations—as part of a whole class, in small groups, and with a partner—built around important content in various domains. They must be able to contribute appropriately to these conversations, to make comparisons and contrasts, and to analyze and synthesize a multitude of ideas in accordance with the standards of evidence appropriate to a particular discipline. Whatever their intended major or profession, high school graduates will depend heavily on their ability to listen attentively to others so that they are able to build on others’ meritorious ideas while expressing their own clearly and persuasively.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. The Internet has accelerated the speed at which connections between speaking, listening, reading, and writing can be made, requiring that students be ready to use these modalities nearly simultaneously. Technology itself is changing quickly, creating a new urgency for students to be adaptable in response to change.

#### *Comprehension and Collaboration*

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
3. Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.

#### *Presentation of Knowledge and Ideas*

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Speaking and Listening Standards 6-12

[SL]

The following standards for grades 6-12 offer a focus for instruction in each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.*

Grade 6 students:	Grade 7 students:	Grade 8 students:
<b>Comprehension and Collaboration</b>		
<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 6 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.</p> <p>b. Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.</p> <p>c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.</p> <p>d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.</p>	<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 7 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.</p> <p>b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.</p> <p>d. Acknowledge new information expressed by others and, when warranted, modify their own views.</p>	<p>1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 8 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly.</p> <p>a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.</p> <p>b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.</p> <p>c. Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.</p> <p>d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.</p>
<p>2. Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.</p>	<p>2. Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.</p>	<p>2. Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.</p>
<p>3. Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.</p>	<p>3. Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.</p>	<p>3. Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.</p>
<b>Presentation of Knowledge and Ideas</b>		
<p>4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	<p>4. Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.</p>	<p>4. Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.</p>
<p>5. Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.</p>	<p>5. Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.</p>	<p>5. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.</p>
<p>6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 on page 53 for specific expectations.)</p>	<p>6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 on page 53 for specific expectations.)</p>	<p>6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 8 Language standards 1 and 3 on page 53 for specific expectations.)</p>



## Speaking and Listening Standards 6-12

[SL]

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9-10 students:	Grades 11-12 students:
<b>Comprehension and Collaboration</b>	
<p>1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grades 9-10 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly and persuasively.</p> <p>a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.</p> <p>c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.</p> <p>d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.</p>	<p>1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grades 11-12 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly and persuasively.</p> <p>a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.</p> <p>c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.</p> <p>d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.</p>
<p>2. Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.</p>	<p>2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p>
<p>3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.</p>	<p>3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.</p>
<b>Presentation of Knowledge and Ideas</b>	
<p>4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.</p>	<p>4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>
<p>5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.</p>	<p>5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.</p>
<p>6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9-10 Language standards 1 and 3 on pages 54 for specific expectations.)</p>	<p>6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11-12 Language standards 1 and 3 on page 54 for specific expectations.)</p>

## COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR LANGUAGE

The grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

*Note on range and content of student language use*

To be college and career ready in language, students must have firm control over the conventions of standard English. At the same time, they must come to appreciate that language is as at least as much a matter of craft as of rules and be able to choose words, syntax, and punctuation to express themselves and achieve particular functions and rhetorical

effects. They must also have extensive vocabularies, built through reading and study, enabling them to comprehend complex texts and engage in purposeful writing about and conversations around content. They need to become skilled in determining or clarifying the meaning of words and phrases they encounter, choosing flexibly from an array of strategies to aid them. They must learn to see an individual word as part of a network of other words—words, for example, that have similar denotations but different connotations. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

*Conventions of Standard English*

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

*Knowledge of Language*

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

*Vocabulary Acquisition and Use*

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

**Language Standards 6-12**

[L]

The following standards for grades 6-12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. *Students advancing through the grades are expected to meet each year’s grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.* Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (\*). See the table on page 57 for a complete listing and Appendix A for an example of how these skills develop in sophistication.

<b>Grade 6 students:</b>	<b>Grade 7 students:</b>	<b>Grade 8 students:</b>
<b><i>Conventions of Standard English</i></b>		
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <ol style="list-style-type: none"> <li>a. Ensure that pronouns are in the proper case (subjective, objective, possessive).</li> <li>b. Use intensive pronouns (e.g., <i>myself, ourselves</i>).</li> <li>c. Recognize and correct inappropriate shifts in pronoun number and person.*</li> <li>d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents)*.</li> <li>e. Recognize variations from standard English in their own and others’ writing and speaking, and identify and use strategies to improve expression in conventional language.*</li> </ol>	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <ol style="list-style-type: none"> <li>a. Explain the function of phrases and clauses in general and their function in specific sentences.</li> <li>b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.</li> <li>c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*</li> </ol>	1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <ol style="list-style-type: none"> <li>a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.</li> <li>b. Form and use verbs in the active and passive voice.</li> <li>c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.</li> <li>d. Recognize and correct inappropriate shifts in verb voice and mood.*</li> </ol>
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <ol style="list-style-type: none"> <li>a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.*</li> <li>b. Spell correctly.</li> </ol>	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <ol style="list-style-type: none"> <li>a. Use a comma to separate coordinate adjectives (e.g., <i>It was a fascinating, enjoyable movie</i> but not <i>He wore an old[,] green shirt</i>).</li> <li>b. Spell correctly.</li> </ol>	2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <ol style="list-style-type: none"> <li>a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break.</li> <li>b. Use an ellipsis to indicate an omission.</li> <li>c. Spell correctly.</li> </ol>

Grade 6 students:	Grade 7 students:	Grade 8 students:
<b>Knowledge of Language</b>		
<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Vary sentence patterns for meaning, reader/listener interest, and style.*</p> <p>b. Maintain consistency in style and tone.*</p>	<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*</p>	<p>3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).</p>
<b>Vocabulary Acquisition and Use</b>		
<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 6 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>audience, auditory, audible</i>).</p> <p>c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 7 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>belligerent, bellicose, rebel</i>).</p> <p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on <i>grade 8 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., <i>precede, recede, secede</i>).</p> <p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>
<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figures of speech (e.g., personification) in context.</p> <p>b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.</p> <p>c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>stingy, scrimping, economical, unwasteful, thrifty</i>).</p>	<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context.</p> <p>b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words.</p> <p>c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>refined, respectful, polite, diplomatic, condescending</i>).</p>	<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figures of speech (e.g. verbal irony, puns) in context.</p> <p>b. Use the relationship between particular words to better understand each of the words.</p> <p>c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>bullheaded, willful, firm, persistent, resolute</i>).</p>
<p>6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>	<p>6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>	<p>6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>

Language Standards 6-12

[L]

The CCR anchor standards and high school grade-specific standards work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 9-10 students:	Grades 11-12 students:
<b>Conventions of Standard English</b>	
<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Use parallel structure.*</p> <p>b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.</p>	<p>1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.</p> <p>b. Resolve issues of complex or contested usage, consulting references (e.g., <i>Merriam-Webster's Dictionary of English Usage</i>, <i>Garner's Modern American Usage</i>) as needed.</p>
<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.</p> <p>b. Use a colon to introduce a list or quotation.</p> <p>c. Spell correctly.</p>	<p>2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Observe hyphenation conventions.</p> <p>b. Spell correctly.</p>
<b>Knowledge of Language</b>	
<p>3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.</p> <p>a. Write and edit work so that it conforms to the guidelines in a style manual (e.g., <i>MLA Handbook</i>, <i>Turabian's Manual for Writers</i>) appropriate for the discipline and writing type.</p>	<p>3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.</p> <p>a. Vary syntax for effect, consulting references (e.g., <i>Tufte's Artful Sentences</i>) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.</p>
<b>Vocabulary Acquisition and Use</b>	
<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 9-10 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., <i>analyze, analysis, analytical; advocate, advocacy</i>).</p> <p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>	<p>4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 11-12 reading and content</i>, choosing flexibly from a range of strategies.</p> <p>a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.</p> <p>b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., <i>conceive, conception, conceivable</i>).</p> <p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.</p> <p>d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).</p>
<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.</p> <p>b. Analyze nuances in the meaning of words with similar denotations.</p>	<p>5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.</p> <p>b. Analyze nuances in the meaning of words with similar denotations.</p>
<p>6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>	<p>6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>

## Language Progressive Skills, by Grade

The following skills, marked with an asterisk (\*) in Language standards 1-3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Standard	Grade(s)							
	3	4	5	6	7	8	9-10	11-12
<b>L.3.1f.</b> Ensure subject-verb and pronoun-antecedent agreement.	X	X	X	X	X	X	X	X
<b>L.3.3a.</b> Choose words and phrases for effect.	X	X	X	X	X	X	X	X
<b>L.4.1f.</b> Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.		X	X	X	X	X	X	X
<b>L.4.1g.</b> Correctly use frequently confused words (e.g., <i>to/tootwo</i> ; <i>there/their</i> ).		X	X	X	X	X	X	X
<b>L.4.3a.</b> Choose words and phrases to convey ideas precisely.*		X	X	X				
<b>L.4.3b.</b> Choose punctuation for effect.		X	X	X	X	X	X	X
<b>L.5.1d.</b> Recognize and correct inappropriate shifts in verb tense.			X	X	X	X	X	X
<b>L.5.2a.</b> Use punctuation to separate items in a series.†			X	X	X	X		
<b>L.6.1c.</b> Recognize and correct inappropriate shifts in pronoun number and person.				X	X	X	X	X
<b>L.6.1d.</b> Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).				X	X	X	X	X
<b>L.6.1e.</b> Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.				X	X	X	X	X
<b>L.6.2a.</b> Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.				X	X	X	X	X
<b>L.6.3a.</b> Vary sentence patterns for meaning, reader/listener interest, and style.‡				X	X	X	X	
<b>L.6.3b.</b> Maintain consistency in style and tone.				X	X	X	X	XX
<b>L.7.1c.</b> Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.					X	X	X	X
<b>L.7.3a.</b> Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.					X	X	X	X
<b>L.8.1d.</b> Recognize and correct inappropriate shifts in verb voice and mood.						X	X	X
<b>L.9-10.1a.</b> Use parallel structure.							X	X

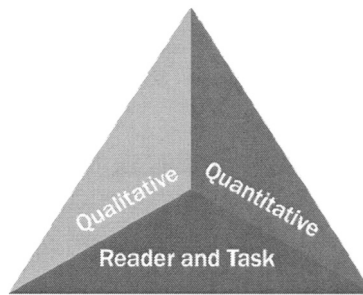
\* Subsumed by L.7.3a

† Subsumed by L.9—10.1a

‡ Subsumed by L.11—12.3a

Standard 10: Range, Quality, and Complexity of Student Reading 6-12

Measuring Text Complexity: Three Factors



*Qualitative evaluation of the text:* Levels of meaning, structure, language conventionality and clarity, and knowledge demands

*Quantitative evaluation of the text:* Readability measures and other scores of text complexity

*Matching reader to text and task:* Reader variables (such as motivation, knowledge, and experiences) and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

*Note:* More detailed information on text complexity and how it is measured is contained in Appendix A.

*Range of Text Types for 6-12*

Students in grades 6-12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature			Informational Text
Stories	Drama	Poetry	Literary Nonfiction
Includes the subgenres of adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, and graphic novels	Includes one-act and multi-act plays, both in written form and on film	Includes the subgenres of narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads, and epics	Includes the subgenres of exposition, argument, and functional text in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, technical, or economic accounts (including digital sources) written for a broad audience

*Texts Illustrating the Complexity, Quality, and Range of Student Reading 6-12*

	Literature: Stories, Dramas, Poetry	Informational Texts: Literary Nonfiction
6-8	<ul style="list-style-type: none"> <li>• <i>Little Women</i> by Louisa May Alcott (1869)</li> <li>• <i>The Adventures of Tom Sawyer</i> by Mark Twain (1876)</li> <li>• “The Road Not Taken” by Robert Frost (1915)</li> <li>• <i>The Dark Is Rising</i> by Susan Cooper (1973)</li> <li>• <i>Dragonwings</i> by Laurence Yep (1975)</li> <li>• <i>Roll of Thunder, Hear My Cry</i> by Mildred Taylor (1976)</li> </ul>	<ul style="list-style-type: none"> <li>• “Letter on Thomas Jefferson” by John Adams (1776)</li> <li>• <i>Narrative of the Life of Frederick Douglass, an American Slave</i> by Frederick Douglass (1845)</li> <li>• “Blood, Toil, Tears and Sweat: Address to Parliament on May 13th, 1940” by Winston Churchill (1940)</li> <li>• <i>Harriet Tubman: Conductor on the Underground Railroad</i> by Ann Petry (1955)</li> <li>• <i>Travels with Charley: In Search of America</i> by John Steinbeck (1962)</li> </ul>
9-10	<ul style="list-style-type: none"> <li>• <i>The Tragedy of Macbeth</i> by William Shakespeare (1592)</li> <li>• “Ozymandias” by Percy Bysshe Shelley (1817)</li> <li>• “The Raven” by Edgar Allen Poe (1845)</li> <li>• “The Gift of the Magi” by O. Henry (1906)</li> <li>• <i>The Grapes of Wrath</i> by John Steinbeck (1939)</li> <li>• <i>Fahrenheit 451</i> by Ray Bradbury (1953)</li> <li>• <i>The Killer Angels</i> by Michael Shaara (1975)</li> </ul>	<ul style="list-style-type: none"> <li>• “Speech to the Second Virginia Convention” by Patrick Henry (1775)</li> <li>• “Farewell Address” by George Washington (1796)</li> <li>• “Gettysburg Address” by Abraham Lincoln (1863)</li> <li>• “State of the Union Address” by Franklin Delano Roosevelt (1941)</li> <li>• “Letter from Birmingham Jail” by Martin Luther King, Jr. (1964)</li> <li>• “Hope, Despair and Memory” by Elie Wiesel (1997)</li> </ul>

	Literature: Stories, Dramas, Poetry	Informational Texts: Literary Nonfiction
<b>II-CCR</b>	<ul style="list-style-type: none"> <li>• “Ode on a Grecian Urn” by John Keats (1820)</li> <li>• <i>Jane Eyre</i> by Charlotte Brontë (1848)</li> <li>• “Because I Could Not Stop for Death” by Emily Dickinson (1890)</li> <li>• <i>The Great Gatsby</i> by F. Scott Fitzgerald (1925)</li> <li>• <i>Their Eyes Were Watching God</i> by Zora Neale Hurston (1937)</li> <li>• <i>A Raisin in the Sun</i> by Lorraine Hansberry (1959)</li> <li>• <i>The Namesake</i> by Jhumpa Lahiri (2003)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Common Sense</i> by Thomas Paine (1776)</li> <li>• <i>Walden</i> by Henry David Thoreau (1854)</li> <li>• “Society and Solitude” by Ralph Waldo Emerson (1857)</li> <li>• “The Fallacy of Success” by G. K. Chesterton (1909)</li> <li>• <i>Black Boy</i> by Richard Wright (1945)</li> <li>• “Politics and the English Language” by George Orwell (1946)</li> <li>• “Take the Tortillas Out of Your Poetry” by Rudolfo Anaya (1995)</li> </ul>

*Note:* Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of grades 6-12 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth.

### STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS

#### 6-12

#### COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR READING

The grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

#### *Note on range and content of student reading*

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. College and career ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.

#### *Key Ideas and Details*

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

#### *Craft and Structure*

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

#### *Integration of Knowledge and Ideas*

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.\*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

#### *Range of Reading and Level of Text Complexity*

10. Read and comprehend complex literary and informational texts independently and proficiently.

\*Please see “Research to Build and Present Knowledge” in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Reading Standards for Literacy in History/Social Studies 6-12

[RH]

The standards below begin at grade 6; standards for K-5 reading in history/social studies, science, and technical subjects are integrated into the K-5 Reading standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
<b>Key Ideas and Details</b>		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Identify key steps in a text’s description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
<b>Craft and Structure</b>		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines <i>faction</i> in <i>Federalist</i> No. 10).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.	5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.	6. Evaluate authors’ differing points of view on the same historical event or issue by assessing the authors’ claims, reasoning, and evidence.
<b>Integration of Knowledge and Ideas</b>		
7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.	7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author’s claims.	8. Evaluate an author’s premises, claims, and evidence by corroborating or challenging them with other information.
9. Analyze the relationship between a primary and secondary source on the same topic.	9. Compare and contrast treatments of the same topic in several primary and secondary sources.	9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.



Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
<b>Range of Reading and Level of Text Complexity</b>		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6-8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend history/social studies texts in the grades 9-10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11-CCR text complexity band independently and proficiently.

**Reading Standards for Literacy in Science and Technical Subjects 6-12****[RST]**

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
<b>Key Ideas and Details</b>		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.	3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
<b>Craft and Structure</b>		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 6-8 texts and topics</i> .	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 9-10 texts and topics</i> .	4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i> .
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., <i>force, friction, reaction force, energy</i> ).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
<b>Integration of Knowledge and Ideas</b>		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
<b><i>Range of Reading and Level of Text Complexity</i></b>		
10. By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.

**COLLEGE AND CAREER READINESS ANCHOR STANDARDS FOR WRITING**

The grades 6-12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

*Note on range and content of student writing*

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college and career ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

*Text Types and Purposes\**

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

*Production and Distribution of Writing*

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

*Research to Build and Present Knowledge*

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

*Range of Writing*

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

\*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

**Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12 [WHST]**

The standards below begin at grade 6; standards for K-5 writing in history/social studies, science, and technical subjects are integrated into the K-5 Writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
<b>Text Types and Purposes</b>		
<p>1. Write arguments focused on <i>discipline-specific content</i>.</p> <p>a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.</p> <p>b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.</p> <p>c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.</p> <p>d. Establish and maintain a formal style.</p> <p>e. Provide a concluding statement or section that follows from and supports the argument presented.</p>	<p>1. Write arguments focused on <i>discipline-specific content</i>.</p> <p>a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.</p> <p>b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.</p> <p>c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p>d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>e. Provide a concluding statement or section that follows from or supports the argument presented.</p>	<p>1. Write arguments focused on <i>discipline-specific content</i>.</p> <p>a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.</p> <p>b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.</p> <p>c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p>d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>e. Provide a concluding statement or section that follows from or supports the argument presented.</p>

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
<p>2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.</p> <p>c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Establish and maintain a formal style and objective tone.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>	<p>2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p> <p>c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.</p> <p>e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).</p>	<p>2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.</p> <p>a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p> <p>c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p>d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.</p> <p>e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).</p>
<p>3. (See note; not applicable as a separate requirement)</p>	<p>3. (See note; not applicable as a separate requirement)</p>	<p>3. (See note; not applicable as a separate requirement)</p>

*Note:* Students’ narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

**Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12 [WHST]**

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
<b><i>Production and Distribution of Writing</i></b>		
<p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>	<p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>	<p>4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p>
<p>5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.</p>	<p>5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>	<p>5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>

Grades 6-8 students:	Grades 9-10 students:	Grades 11-12 students:
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
<b>Research to Build and Present Knowledge</b>		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
<b>Range of Writing</b>		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

### Common Core State Standards for Mathematics

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### Introduction

#### *Toward greater focus and coherence*

Mathematics experiences in early childhood settings should concentrate on (1) number (which includes whole number, operations, and relations) and (2) geometry, spatial relations, and measurement, with more mathematics learning time devoted to number than to other topics. Mathematical process goals should be integrated in these content areas.

Mathematics Learning in Early Childhood, National Research Council, 2009

The composite standards [of Hong Kong, Korea and Singapore] have a number of features that can inform an international benchmarking process for the development of K-6 mathematics standards in the U.S. First, the composite standards concentrate the early learning of mathematics on the number, measurement, and geometry strands with less emphasis on data analysis and little exposure to algebra. The Hong Kong standards for grades 1–3 devote approximately half the targeted time to numbers and almost all the time remaining to geometry and measurement.

Ginsburg, Leinwand and Decker, 2009

Because the mathematics concepts in [U.S.] textbooks are often weak, the presentation becomes more mechanical than is ideal. We looked at both traditional and non-traditional textbooks used in the US and found this conceptual weakness in both.

Ginsburg et al., 2005

There are many ways to organize curricula. The challenge, now rarely met, is to avoid those that distort mathematics and turn off students.

Steen, 2007

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is “a mile wide and an inch deep.” These Standards are a substantial answer to that challenge.

It is important to recognize that “fewer standards” are no substitute for *focused* standards. Achieving “fewer standards” would be easy to do by resorting to broad, general statements. Instead, these Standards aim for clarity and specificity.

Assessing the coherence of a set of standards is more difficult than assessing their focus. William Schmidt and Richard Houang (2002) have said that content standards and curricula are coherent if they are:

articulated over time as a sequence of topics and performances that are logical and reflect, where appropriate, the sequential or hierarchical nature of the disciplinary content from which the subject matter derives. That is, what and how students are taught should reflect not only the topics that fall within a certain academic discipline, *but also the key ideas* that determine how knowledge is organized and generated within that discipline. This implies that to be coherent, a set of content standards must evolve from particulars (e.g., the meaning and operations of whole numbers, including simple math facts and routine computational procedures associated with whole numbers and fractions) to deeper structures inherent in the discipline. These deeper structures then serve as a means for connecting the particulars (such as an understanding of the rational number system and its properties). (emphasis added)

These Standards endeavor to follow such a design, not only by stressing conceptual understanding of key ideas, but also by continually returning to organizing principles such as place value or the properties of operations to structure those ideas.

In addition, the “sequence of topics and performances” that is outlined in a body of mathematics standards must also respect what is known about how students learn. As Confrey (2007) points out, developing “sequenced obstacles and challenges for students . . . absent the insights about meaning that derive from careful study of learning, would be unfortunate and unwise.” In recognition of this,

the development of these Standards began with research-based learning progressions detailing what is known today about how students’ mathematical knowledge, skill, and understanding develop over time.

*Understanding mathematics*

These Standards define what students should understand and be able to do in their study of mathematics. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student’s mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as  $(a + b)(x + y)$  and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding  $(a + b + c)(x + y)$ . Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs. For example, for students with disabilities reading should allow for use of Braille, screen reader technology, or other assistive devices, while writing should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and listening should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

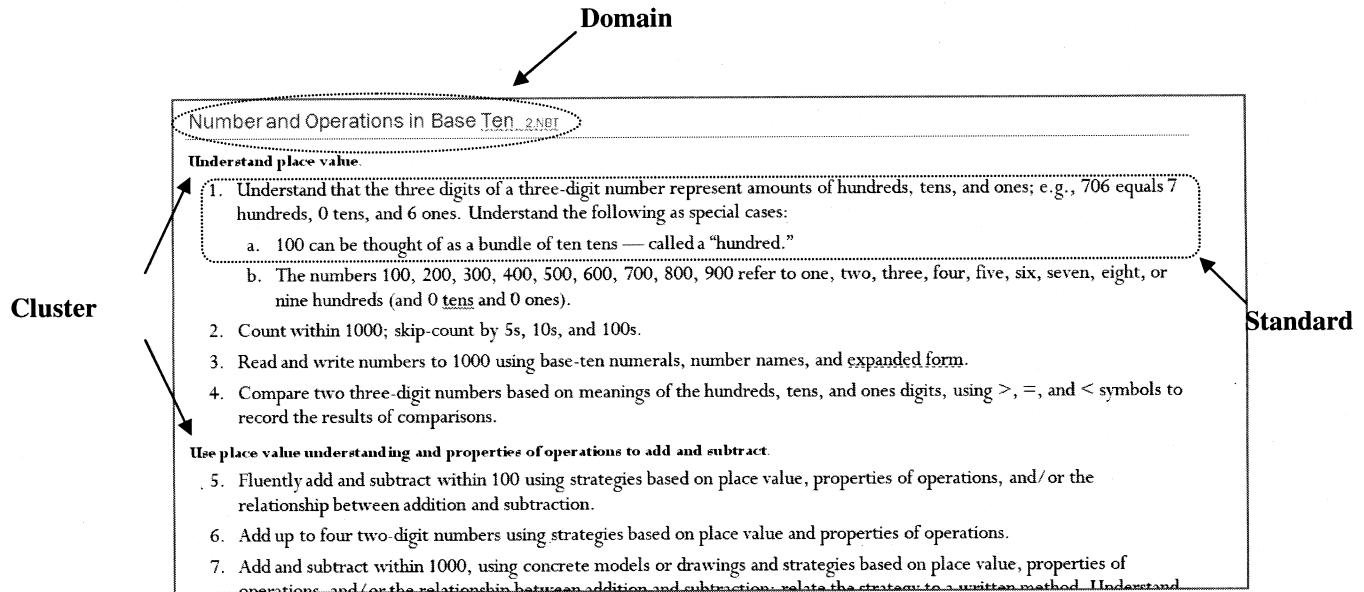
The Standards begin on page 5 with eight Standards for Mathematical Practice.

**How to read the grade level standards**

*Standards* define what students should understand and be able to do.

*Clusters* are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

*Domains* are larger groups of related standards. Standards from different domains may sometimes be closely related.



These Standards do not dictate curriculum or teaching methods. For example, just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time. Or, a teacher might prefer to teach a topic of his or her own choosing that leads, as a byproduct, to students reaching the standards for topics A and B.

What students can learn at any particular grade level depends upon what they have learned before. Ideally then, each standard in this document might have been phrased in the form, “Students who already know . . . should next come to learn . . .” But at present this approach is unrealistic—not least because existing education research cannot specify all such learning pathways. Of necessity therefore, grade placements for specific topics have been made on the basis of state and international comparisons and the collective experience and collective professional judgment of educators, researchers and mathematicians. One promise of common state standards is that over time they will allow research on learning progressions to inform and improve the design of standards to a much greater extent than is possible today. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on their current understanding.

These Standards are not intended to be new names for old ways of doing business. They are a call to take the next step. It is time for states to work together to build on lessons learned from two decades of standards based reforms. It is time to recognize that standards are not just promises to our children, but promises we intend to keep.

### **MATHEMATICS—STANDARDS FOR MATHEMATICAL PRACTICE**

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels

should seek to develop in their students. These practices rest on important “processes and proficiencies” with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council’s report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy).

*1 Make sense of problems and persevere in solving them.*

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the ap-

proaches of others to solving complex problems and identify correspondences between different approaches.

*2 Reason abstractly and quantitatively.*

Mathematically proficient students make sense of the quantities and their relationships in problem situations. Students bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

*3 Construct viable arguments and critique the reasoning of others.*

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

*4 Model with mathematics.*

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

*5 Use appropriate tools strategically.*

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

*6 Attend to precision.*

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

*7 Look for and make use of structure.*

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see  $7 \times 8$  equals the well remembered  $7 \times 5 + 7 \times 3$ , in preparation for learning about the distributive property. In the expression  $x^2 + 9x + 14$ , older students can see the 14 as  $2 \times 7$  and the 9 as  $2 + 7$ . They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see  $5 - 3(x - y)^2$  as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers  $x$  and  $y$ .

*8 Look for and express regularity in repeated reasoning.*

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are



on the line through (1, 2) with slope 3, middle school students might abstract the equation  $(y - 2)/(x - 1) = 3$ . Noticing the regularity in the way terms cancel when expanding  $(x - 1)(x + 1)$ ,  $(x - 1)(x^2 + x + 1)$ , and  $(x - 1)(x^3 + x^2 + x + 1)$  might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

### Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice.

These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

### MATHEMATICS—KINDERGARTEN

In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as  $5 + 2 = 7$  and  $7 - 2 = 5$ . (Kindergarten students should see addition and subtraction equations, and student writing of equations in Kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

### Grade K Overview

Counting and Cardinality	<ul style="list-style-type: none"> <li>• Know number names and the count sequence.</li> <li>• Count to tell the number of objects.</li> <li>• Compare numbers.</li> </ul>	1. Make sense of problems and persevere in solving them.	Mathematical Practices
Operations and Algebraic Thinking	<ul style="list-style-type: none"> <li>• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.</li> </ul>	2. Reason abstractly and quantitatively.	
Number and Operations in Base Ten	<ul style="list-style-type: none"> <li>• Work with numbers 11–19 to gain foundations for place value.</li> </ul>	3. Construct viable arguments and critique the reasoning of others.	
Measurement and Data	<ul style="list-style-type: none"> <li>• Describe and compare measurable attributes.</li> <li>• Classify objects and count the number of objects in categories.</li> </ul>	4. Model with mathematics.	
Geometry	<ul style="list-style-type: none"> <li>• Identify and describe shapes.</li> <li>• Analyze, compare, create, and compose shapes.</li> </ul>	5. Use appropriate tools strategically.	
		6. Attend to precision.	
		7. Look for and make use of structure.	
		8. Look for and express regularity in repeated reasoning.	

**Counting and Cardinality** K.CC

*Know number names and the count sequence.*

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

*Count to tell the number of objects.*

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
  - a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
  - b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
  - c. Understand that each successive number name refers to a quantity that is one larger.
5. Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

*Compare numbers.*

6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.<sup>1</sup>
7. Compare two numbers between 1 and 10 presented as written numerals.

**Operations and Algebraic Thinking** K.OA

*Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.*

1. Represent addition and subtraction with objects, fingers, mental images, drawings<sup>2</sup>, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g.,  $5 = 2 + 3$  and  $5 = 4 + 1$ ).
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
5. Fluently add and subtract within 5.

**Number and Operations in Base Ten** K.NBT

*Work with numbers 11–19 to gain foundations for place value.*

1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or

<sup>1</sup> Include groups with up to ten objects.  
<sup>2</sup> Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

drawings, and record each composition or decomposition by a drawing or equation (e.g.,  $18 = 10 + 8$ ); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

**Measurement and Data** K.MD

*Describe and compare measurable attributes.*

1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

*Classify objects and count the number of objects in each category.*

3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.<sup>3</sup>

**Geometry** K.G

*Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).*

1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
2. Correctly name shapes regardless of their orientations or overall size.
3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

*Analyze, compare, create, and compose shapes.*

4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”*

**MATHEMATICS—GRADE 1**

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic prob-

<sup>3</sup> Limit category counts to be less than or equal to 10.

lems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., “making tens”) to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the

counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.<sup>4</sup>

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

<sup>4</sup> Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

### Grade 1 Overview

Operations and Algebraic Thinking	<ul style="list-style-type: none"> <li>• Represent and solve problems involving addition and subtraction.</li> <li>• Understand and apply properties of operations and the relationship between addition and subtraction.</li> <li>• Add and subtract within 20.</li> <li>• Work with addition and subtraction equations.</li> </ul>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>	Mathematical Practices
Number and Operations In Base Ten	<ul style="list-style-type: none"> <li>• Extend the counting sequence.</li> <li>• Understand place value.</li> <li>• Use place value understanding and properties of operations to add and subtract.</li> </ul>		
Measurement and Data	<ul style="list-style-type: none"> <li>• Measure lengths indirectly and by iterating length units.</li> <li>• Tell and write time.</li> <li>• Represent and interpret data.</li> </ul>		
Geometry	<ul style="list-style-type: none"> <li>• Reason with shapes and their attributes.</li> </ul>		

### Operations and Algebraic Thinking<sub>1.OA</sub>

*Represent and solve problems involving addition and subtraction.*

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.<sup>5</sup>

2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

*Understand and apply properties of operations and the relationship between addition and subtraction.*

3. Apply properties of operations as strategies to add and subtract.<sup>6</sup> *Examples: If  $8 + 3 = 11$  is known, then  $3 +$*

*$8 = 11$  is also known. (Commutative property of addition.) To add  $2 + 6 + 4$ , the second two numbers can be added to make a ten, so  $2 + 6 + 4 = 2 + 10 = 12$ . (Associative property of addition.)*

4. Understand subtraction as an unknown-addend problem. *For example, subtract  $10 - 8$  by finding the number that makes 10 when added to 8.*

*Add and subtract within 20.*

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g.,  $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$ ); decomposing a number leading to a ten (e.g.,  $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$ ); using the relationship between addition and subtraction (e.g., knowing that  $8 + 4 = 12$ , one knows  $12 - 8 = 4$ ); and creating equivalent but easier or known sums (e.g., adding  $6 + 7$  by creating the known equivalent  $6 + 6 + 1 = 12 + 1 = 13$ ).

<sup>5</sup> See Glossary, Table 1.

<sup>6</sup> Students need not use formal terms for these properties.

Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false?  $6 = 6$ ,  $7 = 8 - 1$ ,  $5 + 2 = 2 + 5$ ,  $4 + 1 = 5 + 2$ .

8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations  $8 + ? = 11$ ,  $5 = \square - 3$ ,  $6 + 6 = \square$ .

**Number and Operations in Base Ten<sub>1.NBT</sub>**

Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones—called a “ten.”

b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols  $>$ ,  $=$ , and  $<$ .

Use place value understanding and properties of operations to add and subtract.

4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

6. Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

**Measurement and Data<sub>1.MD</sub>**

Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.

2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

**Geometry<sub>1.G</sub>**

Reason with shapes and their attributes.

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes that possess defining attributes.

2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.<sup>7</sup>

3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

**MATHEMATICS—GRADE 2**

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding

<sup>7</sup> Students do not need to learn formal names such as “right rectangular prism.”

of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recog-

nize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

### Grade 2 Overview

#### Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

#### Number and Operations in Base Ten

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

#### Measurement and Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

#### Geometry

- Reason with shapes and their attributes.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

#### Mathematical Practices

### Operations and Algebraic Thinking 2.OA

*Represent and solve problems involving addition and subtraction.*

1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.<sup>8</sup>

*Add and subtract within 20.*

2. Fluently add and subtract within 20 using mental strategies.<sup>9</sup> By end of Grade 2, know from memory all sums of two one-digit numbers.

*Work with equal groups of objects to gain foundations for multiplication.*

3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

### Number and Operations in Base Ten 2.NBT

*Understand place value.*

1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones;

e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

a. 100 can be thought of as a bundle of ten tens—called a “hundred.”

b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2. Count within 1000; skip-count by 5s, 10s, and 100s.

3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

*Use place value understanding and properties of operations to add and subtract.*

5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

6. Add up to four two-digit numbers using strategies based on place value and properties of operations.

7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

<sup>8</sup> See Glossary, Table 1.

<sup>9</sup> See standard 1.OA.6 for a list of mental strategies.

9. Explain why addition and subtraction strategies work, using place value and the properties of operations.<sup>10</sup>

**Measurement and Data 2.MD**

*Measure and estimate lengths in standard units.*

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

3. Estimate lengths using units of inches, feet, centimeters, and meters.

4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

*Relate addition and subtraction to length.*

5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, . . . , and represent whole-number sums and differences within 100 on a number line diagram.

*Work with time and money.*

7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

*Represent and interpret data.*

9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems<sup>11</sup> using information presented in a bar graph.

**Geometry 2.G**

*Reason with shapes and their attributes.*

1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.<sup>12</sup> Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

**MATHEMATICS—GRADE 3**

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

<sup>10</sup> Explanations may be supported by drawings or objects.  
<sup>11</sup> See Glossary, Table 1.  
<sup>12</sup> Sizes of lengths and angles are compared directly or visually, not compared by measuring.

## Grade 3 Overview

Operations and Algebraic Thinking	<ul style="list-style-type: none"> <li>• Represent and solve problems involving multiplication and division.</li> <li>• Understand properties of multiplication and the relationship between multiplication and division.</li> <li>• Multiply and divide within 100.</li> <li>• Solve problems involving the four operations, and identify and explain patterns in arithmetic.</li> </ul>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>	Mathematical Practices
Number and Operations in Base Ten	<ul style="list-style-type: none"> <li>• Use place value understanding and properties of operations to perform multi-digit arithmetic.</li> </ul>		
Number and Operations—Fractions	<ul style="list-style-type: none"> <li>• Develop understanding of fractions as numbers.</li> </ul>		
Measurement and Data	<ul style="list-style-type: none"> <li>• Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</li> <li>• Represent and interpret data.</li> <li>• Geometric measurement: understand concepts of area and relate area to multiplication and to addition.</li> <li>• Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.</li> </ul>		
Geometry	<ul style="list-style-type: none"> <li>• Reason with shapes and their attributes.</li> </ul>		

**Operations and Algebraic Thinking 3.OA**

*Represent and solve problems involving multiplication and division.*

1. Interpret products of whole numbers, e.g., interpret  $5 \times 7$  as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as  $5 \times 7$ .*

2. Interpret whole-number quotients of whole numbers, e.g., interpret  $56 \div 8$  as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as  $56 \div 8$ .*

3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.<sup>13</sup>

4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations  $8 \times ? = 48$ ,  $5 = \square \div 3$ ,  $6 \times 6 = ?$ .*

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*Understand properties of multiplication and the relationship between multiplication and division.*

5. Apply properties of operations as strategies to multiply and divide.<sup>14</sup> *Examples: If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known. (Commutative property of multiplication.)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$ . (Associative property of multiplication.) Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ . (Distributive property.)*

6. Understand division as an unknown-factor problem. *For example, find  $32 \div 8$  by finding the number that makes 32 when multiplied by 8.*

*Multiply and divide within 100.*

7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

*Solve problems involving the four operations, and identify and explain patterns in arithmetic.*

8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the

<sup>13</sup> See Glossary, Table 2.

<sup>14</sup> Students need not use formal terms for these properties.

reasonableness of answers using mental computation and estimation strategies including rounding.<sup>15</sup>

9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

**Number and Operations in Base Ten 3.NBT**

*Use place value understanding and properties of operations to perform multi-digit arithmetic.<sup>16</sup>*

1. Use place value understanding to round whole numbers to the nearest 10 or 100.

2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g.,  $9 \times 80$ ,  $5 \times 60$ ) using strategies based on place value and properties of operations.

**Number and Operations—Fractions<sup>17</sup> 3.NF**

*Develop understanding of fractions as numbers.*

1. Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts of size  $1/b$ .

2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction  $1/b$  on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into  $b$  equal parts. Recognize that each part has size  $1/b$  and that the endpoint of the part based at 0 locates the number  $1/b$  on the number line.

b. Represent a fraction  $a/b$  on a number line diagram by marking off  $a$  lengths  $1/b$  from 0. Recognize that the resulting interval has size  $a/b$  and that its endpoint locates the number  $a/b$  on the number line.

3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

b. Recognize and generate simple equivalent fractions, e.g.,  $1/2 = 2/4$ ,  $4/6 = 2/3$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.

c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form  $3 = 3/1$ ; recognize that  $6/1 = 6$ ; locate  $4/4$  and 1 at the same point of a number line diagram.*

d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

<sup>15</sup> This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

<sup>16</sup> A range of algorithms may be used.

<sup>17</sup> Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.

**Measurement and Data 3.MD**

*Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.*

1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).<sup>18</sup> Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.<sup>19</sup>

*Represent and interpret data.*

3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

*Geometric measurement: understand concepts of area and relate area to multiplication and to addition.*

5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.

b. A plane figure which can be covered without gaps or overlaps by  $n$  unit squares is said to have an area of  $n$  square units.

6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

7. Relate area to the operations of multiplication and addition.

a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths  $a$  and  $b + c$  is the sum of  $a \times b$  and  $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.

d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

<sup>18</sup> Excludes compound units such as  $\text{cm}^3$  and finding the geometric volume of a container.

<sup>19</sup> Excludes multiplicative comparison problems (problems involving notions of “times as much”; see Glossary, Table 2).



*Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.*

8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

### Geometry 3.G

*Reason with shapes and their attributes.*

1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as  $1/4$  of the area of the shape.*

### MATHEMATICS—GRADE 4

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g.,  $15/9 = 5/3$ ), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

### Grade Level Overview

Operations and Algebraic Thinking

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten

- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Mathematical Practices

- |                      |   |
|----------------------|---|
| Measurement and Date | <ul style="list-style-type: none"> <li>• Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.</li> <li>• Represent and interpret data.</li> <li>• Geometric measurement: Understand concepts of angle and measure angles.</li> </ul> |
| Geometry             | <ul style="list-style-type: none"> <li>• Draw and identify lines and angles, and classify shapes by properties of their lines and angles.</li> </ul>  |

**Operations and Algebraic Thinking 4.OA**

*Use the four operations with whole numbers to solve problems.*

1. Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.<sup>20</sup>

3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

*Gain familiarity with factors and multiples.*

4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

*Generate and analyze patterns.*

5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

**Number and Operations in Base Ten<sup>21</sup> 4.NBT**

*Generalize place value understanding for multi-digit whole numbers.*

1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that  $700 \div 70 = 10$  by applying concepts of place value and division.*

2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of

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the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

3. Use place value understanding to round multi-digit whole numbers to any place.

*Use place value understanding and properties of operations to perform multi-digit arithmetic.*

4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.

5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

**Number and Operations—Fractions<sup>22</sup> 4.NF**

*Extend understanding of fraction equivalence and ordering.*

1. Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

*Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.*

3. Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ .

a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decomposi-

<sup>20</sup> See Glossary, Table 2.

<sup>21</sup> Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.

<sup>22</sup> Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

tions, e.g., by using a visual fraction model. *Examples:*  $3/8 = 1/8 + 1/8 + 1/8$ ;  $3/8 = 1/8 + 2/8$ ;  $2\ 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$ .

c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

a. Understand a fraction  $a/b$  as a multiple of  $1/b$ . *For example, use a visual fraction model to represent  $5/4$  as the product  $5 \times (1/4)$ , recording the conclusion by the equation  $5/4 = 5 \times (1/4)$ .*

b. Understand a multiple of  $a/b$  as a multiple of  $1/b$ , and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express  $3 \times (2/5)$  as  $6 \times (1/5)$ , recognizing this product as  $6/5$ . (In general,  $n \times (a/b) = (n \times a)/b$ .)*

c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat  $3/8$  of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

*Understand decimal notation for fractions, and compare decimal fractions.*

5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.<sup>23</sup> *For example, express  $3/10$  as  $30/100$ , and add  $3/10 + 4/100 = 34/100$ .*

6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite  $0.62$  as  $62/100$ ; describe a length as  $0.62$  meters; locate  $0.62$  on a number line diagram.*

7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual model.

#### Measurement and Data 4.MD

*Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.*

1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), . . .*

2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes,

<sup>23</sup> Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

*Represent and interpret data.*

4. Make a line plot to display a data set of measurements in fractions of a unit ( $1/2$ ,  $1/4$ ,  $1/8$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

*Geometric measurement: understand concepts of angle and measure angles.*

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through  $1/360$  of a circle is called a “one-degree angle,” and can be used to measure angles.

b. An angle that turns through  $n$  one-degree angles is said to have an angle measure of  $n$  degrees.

6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

#### Geometry 4.G

*Draw and identify lines and angles, and classify shapes by properties of their lines and angles.*

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

#### MATHEMATICS—GRADE 5

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers

and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations

to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

**Grade 5 Overview**

Operations and Algebraic Thinking	<ul style="list-style-type: none"> <li>• Write and interpret numerical expressions.</li> <li>• Analyze patterns and relationships.</li> </ul>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>	Mathematical Practices
Number and Operations in Base Ten	<ul style="list-style-type: none"> <li>• Understand the place value</li> <li>• Perform operations with multi-digit whole numbers and with decimals to hundredths.</li> </ul>		
Number and Operations—Fractions	<ul style="list-style-type: none"> <li>• Use equivalent fractions as a strategy to add and subtract fractions.</li> <li>• Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</li> </ul>		
Measurement and Data	<ul style="list-style-type: none"> <li>• Convert like measurement units within a given measurement system.</li> <li>• Represent and interpret data.</li> <li>• Geometric measurement: Understand concepts of volume and relate volume to multiplication and to addition.</li> </ul>		
Geometry	<ul style="list-style-type: none"> <li>• Graph points on the coordinate plane to solve real world and mathematical problems.</li> <li>• Classify two-dimensional figures into categories based on their properties.</li> </ul>		

**Operations and Algebraic Thinking 5.OA**

*Write and interpret numerical expressions.*

1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation*

*“add 8 and 7, then multiply by 2” as  $2 \times (8 + 7)$ . Recognize that  $3 \times (18932 + 921)$  is three times as large as  $18932 + 921$ , without having to calculate the indicated sum or product.*

*Analyze patterns and relationships.*

3. Generate two numerical patterns using two given rules. Identify apparent relationships between corre-

sponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

### Number and Operations in Base Ten 5.NBT

*Understand the place value system.*

1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and  $1/10$  of what it represents in the place to its left.

2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

3. Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.,  $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ .

b. Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.

4. Use place value understanding to round decimals to any place.

*Perform operations with multi-digit whole numbers and with decimals to hundredths.*

5. Fluently multiply multi-digit whole numbers using the standard algorithm.

6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

### Number and Operations—Fractions 5.NF

*Use equivalent fractions as a strategy to add and subtract fractions.*

1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example,  $2/3 + 5/4 = 8/12 + 15/12 = 23/12$ . (In general,  $a/b + c/d = (ad + bc)/bd$ .)*

2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result  $2/5 + 1/2 = 3/7$ , by observing that  $3/7 < 1/2$ .*

*Apply and extend previous understandings of multiplication and division to multiply and divide fractions.*

3. Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret  $3/4$  as the result of dividing 3 by 4, noting that  $3/4$  multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size  $3/4$ . If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product  $(a/b) \times q$  as  $a$  parts of a partition of  $q$  into  $b$  equal parts; equivalently, as the result of a sequence of operations  $a \times q \div b$ . *For example, use a visual fraction model to show  $(2/3) \times 4 = 8/3$ , and create a story context for this equation. Do the same with  $(2/3) \times (4/5) = 8/15$ . (In general,  $(a/b) \times (c/d) = ac/bd$ .)*

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5. Interpret multiplication as scaling (resizing), by:

a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence  $a/b = (n \times a)/(n \times b)$  to the effect of multiplying  $a/b$  by 1.

6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.<sup>24</sup>

a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for  $(1/3) \div 4$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $(1/3) \div 4 = 1/12$  because  $(1/12) \times 4 = 1/3$ .*

b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for  $4 \div (1/5)$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $4 \div (1/5) = 20$  because  $20 \times (1/5) = 4$ .*

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of

<sup>24</sup> Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share  $1/2$  lb of chocolate equally? How many  $1/3$ -cup servings are in 2 cups of raisins?*

**Measurement and Data** 5.MD

*Convert like measurement units within a given measurement system.*

1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

*Represent and interpret data.*

2. Make a line plot to display a data set of measurements in fractions of a unit ( $1/2$ ,  $1/4$ ,  $1/8$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

*Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.*

3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.

b. A solid figure which can be packed without gaps or overlaps using  $n$  unit cubes is said to have a volume of  $n$  cubic units.

4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

b. Apply the formulas  $V = l \times w \times h$  and  $V = b \times h$  for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

**Geometry** 5.G

*Graph points on the coordinate plane to solve real-world and mathematical problems.*

1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of

the two axes and the coordinates correspond (e.g.,  $x$ -axis and  $x$ -coordinate,  $y$ -axis and  $y$ -coordinate).

2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

*Classify two-dimensional figures into categories based on their properties.*

3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*

4. Classify two-dimensional figures in a hierarchy based on properties.

**MATHEMATICS—GRADE 6**

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

(1) Students use reasoning about multiplication and division to solve ratio and rate problems about quantities. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students connect their understanding of multiplication and division with ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division to solve problems, and they connect ratios and fractions. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students use these operations to solve problems. Students extend their previous understandings of number and the ordering of numbers to the full system of rational numbers, which includes negative rational numbers, and in particular negative integers. They reason about the order and absolute value of rational numbers and about the location of points in all four quadrants of the coordinate plane.

(3) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as  $3x = y$ ) to describe relationships between quantities.

(4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

### Grade 6 Overview

Ratios and Proportional Relationships	<ul style="list-style-type: none"> <li>• Understand ratio concepts and use ratio reasoning to solve problems.</li> </ul>	1. Make sense of problems and persevere in solving them.	Mathematical Practices
The Number System	<ul style="list-style-type: none"> <li>• Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</li> <li>• Compute fluently with multi-digit numbers and find common factors and multiples.</li> <li>• Apply and extend previous understandings of numbers to the system of rational numbers.</li> </ul>	2. Reason abstractly and quantitatively.	
Expressions and Equations	<ul style="list-style-type: none"> <li>• Apply and extend previous understandings of arithmetic to algebraic expressions.</li> <li>• Reason about and solve one-variable equations and inequalities.</li> <li>• Represent and analyze quantitative relationships between dependent and independent variables.</li> </ul>	3. Construct viable arguments and critique the reasoning of others.	
Geometry	<ul style="list-style-type: none"> <li>• Solve real-world and mathematical problems involving area, surface area, and volume.</li> </ul>	4. Model with mathematics.	
Statistics and Probability	<ul style="list-style-type: none"> <li>• Develop understanding of statistical variability.</li> <li>• Summarize and describe distributions.</li> </ul>	5. Use appropriate tools strategically.	
		6. Attend to precision.	
		7. Look for and make use of structure.	
		8. Look for and express regularity in repeated reasoning.	

#### Ratios and Proportional Relationships **6.RP**

*Understand ratio concepts and use ratio reasoning to solve problems.*

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”*

2. Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , and use rate language in the context of a ratio relationship. *For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is*

*$3/4$  cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”*<sup>25</sup>

3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

<sup>25</sup> Expectations for unit rates in this grade are limited to non-complex fractions.

b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*

c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means  $30/100$  times the quantity); solve problems involving finding the whole, given a part and the percent.

d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

**The Number System** 6.NS

*Apply and extend previous understandings of multiplication and division to divide fractions by fractions.*

1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for  $(2/3) \div (3/4)$  and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that  $(2/3) \div (3/4) = 8/9$  because  $3/4$  of  $8/9$  is  $2/3$ . (In general,  $(a/b) \div (c/d) = ad/bc$ .) How much chocolate will each person get if 3 people share  $1/2$  lb of chocolate equally? How many  $3/4$ -cup servings are in  $2/3$  of a cup of yogurt? How wide is a rectangular strip of land with length  $3/4$  mi and area  $1/2$  square mi?*

*Compute fluently with multi-digit numbers and find common factors and multiples.*

2. Fluently divide multi-digit numbers using the standard algorithm.

3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express  $36 + 8$  as  $4(9 + 2)$ .*

*Apply and extend previous understandings of numbers to the system of rational numbers.*

5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g.,  $-(-3) = 3$ , and that 0 is its own opposite.

b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane;

recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

7. Understand ordering and absolute value of rational numbers.

a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret  $-3 > -7$  as a statement that  $-3$  is located to the right of  $-7$  on a number line oriented from left to right.*

b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write  $-3\text{ }^\circ\text{C} > -7\text{ }^\circ\text{C}$  to express the fact that  $-3\text{ }^\circ\text{C}$  is warmer than  $-7\text{ }^\circ\text{C}$ .*

c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of  $-30$  dollars, write  $|-30| = 30$  to describe the size of the debt in dollars.*

d. Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than  $-30$  dollars represents a debt greater than 30 dollars.*

8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

**Expressions and Equations** 6.EE

*Apply and extend previous understandings of arithmetic to algebraic expressions.*

1. Write and evaluate numerical expressions involving whole-number exponents.

2. Write, read, and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation “Subtract  $y$  from 5” as  $5 - y$ .*

b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression  $2(8 + 7)$  as a product of two factors; view  $(8 + 7)$  as both a single entity and a sum of two terms.*

c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas  $V = s^3$  and  $A = 6s^2$  to find the volume and surface area of a cube with sides of length  $s = 1/2$ .*

3. Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression  $3(2 + x)$  to produce the equivalent expression  $6 + 3x$ ; apply the distributive property to the expression  $24x + 18y$  to produce the equivalent*



expression  $6(4x + 3y)$ ; apply properties of operations to  $y + y + y$  to produce the equivalent expression  $3y$ .

4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions  $y + y + y$  and  $3y$  are equivalent because they name the same number regardless of which number  $y$  stands for.

*Reason about and solve one-variable equations and inequalities.*

5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

7. Solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.

8. Write an inequality of the form  $x > c$  or  $x < c$  to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form  $x > c$  or  $x < c$  have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

*Represent and analyze quantitative relationships between dependent and independent variables.*

9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation  $d = 65t$  to represent the relationship between distance and time.

### Geometry 6.G

*Solve real-world and mathematical problems involving area, surface area, and volume.*

1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas  $V = lwh$  and  $V = bh$  to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

### Statistics and Probability 6.SP

*Develop understanding of statistical variability.*

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.

2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

*Summarize and describe distributions.*

4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

5. Summarize numerical data sets in relation to their context, such as by:

a. Reporting the number of observations.

b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

### MATHEMATICS—GRADE 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

(1) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(2) Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.

(3) Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects.

In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

(4) Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

**Grade 7 Overview**

Ratios and Proportional Relationships	<ul style="list-style-type: none"> <li>• Analyze proportional relationships and use them to solve real-world and mathematical problems.</li> </ul>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>	Mathematical Practices
The Number System	<ul style="list-style-type: none"> <li>• Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</li> </ul>		
Expressions and Equations	<ul style="list-style-type: none"> <li>• Use properties of operations to generate equivalent expressions.</li> <li>• Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</li> </ul>		
Geometry	<ul style="list-style-type: none"> <li>• Draw, construct and describe geometrical figures and describe the relationships between them.</li> <li>• Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</li> </ul>		
Statistics and Probability	<ul style="list-style-type: none"> <li>• Use random sampling to draw inferences about a population.</li> <li>• Draw informal comparative inferences about two populations.</li> <li>• Investigate chance processes and develop, use, and evaluate probability models.</li> </ul>		

**Ratios and Proportional Relationships 7.RP**

*Analyze proportional relationships and use them to solve real-world and mathematical problems.*

1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.*

2. Recognize and represent proportional relationships between quantities.

a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

c. Represent proportional relationships by equations. *For example, if total cost  $t$  is proportional to the number  $n$  of items purchased at a constant price  $p$ , the relationship between the total cost and the number of items can be expressed as  $t = pn$ .*

d. Explain what a point  $(x, y)$  on the graph of a proportional relationship means in terms of the situation, with special attention to the points  $(0, 0)$  and  $(1, r)$  where  $r$  is the unit rate.

3. Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

### The Number System 7.NS

*Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.*

1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.

b. Understand  $p + q$  as the number located a distance  $|q|$  from  $p$ , in the positive or negative direction depending on whether  $q$  is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

c. Understand subtraction of rational numbers as adding the additive inverse,  $p - q = p + (-q)$ . Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

d. Apply properties of operations as strategies to add and subtract rational numbers.

2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as  $(-1)(-1) = 1$  and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If  $p$  and  $q$  are integers, then  $-(p/q) = (-p)/q = p/(-q)$ . Interpret quotients of rational numbers by describing real-world contexts.

c. Apply properties of operations as strategies to multiply and divide rational numbers.

d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

3. Solve real-world and mathematical problems involving the four operations with rational numbers.<sup>26</sup>

### Expressions and Equations 7.EE

*Use properties of operations to generate equivalent expressions.*

1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

<sup>26</sup> Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example,  $a + 0.05a = 1.05a$  means that “increase by 5%” is the same as “multiply by 1.05.”

*Solve real-life and mathematical problems using numerical and algebraic expressions and equations.*

3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional  $1/10$  of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar  $9\frac{3}{4}$  inches long in the center of a door that is  $27\frac{1}{2}$  inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

a. Solve word problems leading to equations of the form  $px + q = r$  and  $p(x + q) = r$ , where  $p$ ,  $q$ , and  $r$  are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

b. Solve word problems leading to inequalities of the form  $px + q > r$  or  $px + q < r$ , where  $p$ ,  $q$ , and  $r$  are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.

### Geometry 7.G

*Draw, construct, and describe geometrical figures and describe the relationships between them.*

1. Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

*Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.*

4. Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and use them to solve simple equations for an unknown angle in a figure.

6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

**Statistics and Probability 7.SP**

*Use random sampling to draw inferences about a population.*

1. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

*Draw informal comparative inferences about two populations.*

3. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*

4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*

*Investigate chance processes and develop, use, and evaluate probability models.*

5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*

7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*

b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*

8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.

b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

**MATHEMATICS—GRADE 8**

In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

(1) Students use linear equations and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize equations for proportions ( $y/x = m$  or  $y = mx$ ) as special linear equations ( $y = mx + b$ ), understanding that the constant of proportionality ( $m$ ) is the slope, and the graphs are lines through the origin. They understand that the slope ( $m$ ) of a line is a constant rate of change, so that if the input or  $x$ -coordinate changes by an amount  $A$ , the output or  $y$ -coordinate changes by the amount  $m \cdot A$ . Students also use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and  $y$ -intercept) in terms of the situation.

Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each input exactly one output. They understand that functions describe situations where one quantity determines another. They can translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve

problems. Students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

### Grade 8 Overview

The Number System	<ul style="list-style-type: none"> <li>• Know that there are numbers that are not rational, and approximate them by rational numbers.</li> </ul>	1. Make sense of problems and persevere in solving them.	Mathematical Practices
Expressions and Equations	<ul style="list-style-type: none"> <li>• Work with radicals and integer exponents.</li> <li>• Understand the connections between proportional relationships, lines, and linear equations.</li> <li>• Analyze and solve linear equations and pairs of simultaneous linear equations.</li> </ul>	2. Reason abstractly and quantitatively.	
Functions	<ul style="list-style-type: none"> <li>• Define, evaluate, and compare functions.</li> <li>• Use functions to model relationships between quantities.</li> </ul>	3. Construct viable arguments and critique the reasoning of others.	
Geometry	<ul style="list-style-type: none"> <li>• Understand congruence and similarity using physical models, transparencies, or geometry software.</li> <li>• Understand and apply the Pythagorean Theorem.</li> <li>• Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.</li> </ul>	4. Model with mathematics.	
Statistics and Probability	<ul style="list-style-type: none"> <li>• Investigate patterns of association in bivariate data.</li> </ul>	5. Use appropriate tools strategically.	
		6. Attend to precision.	
		7. Look for and make use of structure.	
		8. Look for and express regularity in repeated reasoning.	

### The Number System 8.NS

*Know that there are numbers that are not rational, and approximate them by rational numbers.*

1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g.,  $\pi^2$ ). *For example, by truncating the decimal expansion of  $\sqrt{2}$ , show that  $\sqrt{2}$  is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

### Expressions and Equations 8.EE

*Work with radicals and integer exponents.*

1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,  $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$ .*

2. Use square root and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$ , where  $p$  is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that  $\sqrt{2}$  is irrational.

3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as  $3 \times 10^8$  and the population of the world as  $7 \times 10^9$ , and determine that the world population is more than 20 times larger.*

4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

*Understand the connections between proportional relationships, lines, and linear equations.*

5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

6. Use similar triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation  $y = mx$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$ .

*Analyze and solve linear equations and pairs of simultaneous linear equations.*

7. Solve linear equations in one variable.

a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form  $x = a$ ,  $a = a$ , or  $a = b$  results (where  $a$  and  $b$  are different numbers).

b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

8. Analyze and solve pairs of simultaneous linear equations.

a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example,  $3x + 2y = 5$  and  $3x + 2y = 6$  have no solution because  $3x + 2y$  cannot simultaneously be 5 and 6.*

c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

### Functions 8.F

*Define, evaluate, and compare functions.*

1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.<sup>27</sup>

2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

3. Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function  $A = s^2$  giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*

*Use functions to model relationships between quantities.*

4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two  $(x, y)$  values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.

5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

### Geometry 8.G

*Understand congruence and similarity using physical models, transparencies, or geometry software.*

1. Verify experimentally the properties of rotations, reflections, and translations:

a. Lines are taken to lines, and line segments to line segments of the same length.

b. Angles are taken to angles of the same measure.

c. Parallel lines are taken to parallel lines.

2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*

*Understand and apply the Pythagorean Theorem.*

6. Explain a proof of the Pythagorean Theorem and its converse.

7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

<sup>27</sup> Function notation is not required in Grade 8.

*Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.*

9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

### Statistics and Probability s.SP

*Investigate patterns of association in bivariate data.*

1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*

4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

### MATHEMATICS STANDARDS FOR HIGH SCHOOL

The high school standards specify the mathematics that all students should study in order to be college and career ready. Additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics is indicated by (+), as in this example:

(+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers).

All standards without a (+) symbol should be in the common mathematics curriculum for all college and career ready students. Standards with a (+) symbol may also appear in courses intended for all students.

The high school standards are listed in conceptual categories:

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability

Conceptual categories portray a coherent view of high school mathematics; a student's work with functions, for example, crosses a number of traditional course boundaries, potentially up through and including calculus.

Modeling is best interpreted not as a collection of isolated topics but in relation to other standards. Making mathematical models is a Standard for Mathematical

Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to all standards in that group.

### MATHEMATICS—HIGH SCHOOL— NUMBER AND QUANTITY

Numbers and Number Systems. During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, “number” means “counting number”: 1, 2, 3. . . . Soon after that, 0 is used to represent “none” and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 8, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers.

With each extension of number, the meanings of addition, subtraction, multiplication, and division are extended. In each new number system—integers, rational numbers, real numbers, and complex numbers—the four operations stay the same in two important ways: They have the commutative, associative, and distributive properties and their new meanings are consistent with their previous meanings.

Extending the properties of whole-number exponents leads to new and productive notation. For example, properties of whole-number exponents suggest that  $(5^{1/3})^3$  should be  $5^{(1/3) \cdot 3} = 5^1 = 5$  and that  $5^{1/3}$  should be the cube root of 5.

Calculators, spreadsheets, and computer algebra systems can provide ways for students to become better acquainted with these new number systems and their notation. They can be used to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities. In real world problems, the answers are usually not numbers but quantities: numbers with units, which involves measurement. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, and volume. In high school, students encounter a wider variety of units in modeling, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. Such a conceptual process is sometimes called quantification. Quantification is important for science, as when surface area suddenly “stands out” as an important variable in evaporation. Quantification is also important for companies, which must conceptualize relevant attributes and create or choose suitable measures for them.

**Number and Quantity Overview**

The Real Number System	<ul style="list-style-type: none"> <li>• Extend the properties of exponents to rational exponents.</li> <li>• Use properties of rational and irrational numbers.</li> </ul>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>	Mathematical Practices
Quantities	<ul style="list-style-type: none"> <li>• Reason quantitatively and use units to solve problems.</li> </ul>		
The Complex Number System	<ul style="list-style-type: none"> <li>• Perform arithmetic operations with complex numbers.</li> <li>• Represent complex numbers and their operations on the complex plane.</li> <li>• Use complex numbers in polynomial identities and equations.</li> </ul>		
Vector and Matrix Quantities	<ul style="list-style-type: none"> <li>• Represent and model with vector quantities.</li> <li>• Perform operations on vectors. Perform operations on matrices and use matrices in applications.</li> </ul>		

**The Real Number System** N-RN

*Extend the properties of exponents to rational exponents.*

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define  $5^{1/3}$  to be the cube root of 5 because we want  $(5^{1/3})^3 = 5^{(1/3)3}$  to hold, so  $(5^{1/3})^3$  must equal 5.*

2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

*Use properties of rational and irrational numbers.*

3. Explain why the sum or product of two rational numbers are rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

**Quantities**★ N-Q

*Reason quantitatively and use units to solve problems.*

1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

2. Define appropriate quantities for the purpose of descriptive modeling.

3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

**The Complex Number System** N-CN

*Perform arithmetic operations with complex numbers.*

1. Know there is a complex number  $i$  such that  $i^2 = -1$ , and every complex number has the form  $a + bi$  with  $a$  and  $b$  real.

2. Use the relation  $i^2 = -1$  and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

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*Represent complex numbers and their operations on the complex plane.*

4. (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.

5. (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,  $(-1 + \sqrt{3}i)^3 = 8$  because  $(-1 + \sqrt{3}i)$  has modulus 2 and argument  $120^\circ$ .*

6. (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

*Use complex numbers in polynomial identities and equations.*

7. Solve quadratic equations with real coefficients that have complex solutions.

8. (+) Extend polynomial identities to the complex numbers. *For example, rewrite  $x^2 + 4$  as  $(x + 2i)(x - 2i)$ .*

9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

**Vector and Matrix Quantities** N-VM

*Represent and model with vector quantities.*

1. (+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g.,  $v$ ,  $|v|$ ,  $\|v\|$ ,  $v$ ).

2. (+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.

3. (+) Solve problems involving velocity and other quantities that can be represented by vectors.



*Perform operations on vectors.*

4. (+) Add and subtract vectors.

a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.

b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.

c. Understand vector subtraction  $v - w$  as  $v + (-w)$ , where  $-w$  is the additive inverse of  $w$ , with the same magnitude as  $w$  and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.

5. (+) Multiply a vector by a scalar.

a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as  $c(v_x, v_y) = (cv_x, cv_y)$ .

b. Compute the magnitude of a scalar multiple  $cv$  using  $\|c\| = |c|v$ . Compute the direction of  $cv$  knowing that when  $|c|v \neq 0$ , the direction of  $cv$  is either along  $v$  (for  $c > 0$ ) or against  $v$  (for  $c < 0$ ).

*Perform operations on matrices and use matrices in applications.*

6. (+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.

7. (+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.

8. (+) Add, subtract, and multiply matrices of appropriate dimensions.

9. (+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.

10. (+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.

11. (+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.

12. (+) Work with  $2 \times 2$  matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.

### **MATHEMATICS—HIGH SCHOOL—ALGEBRA**

Expressions. An expression is a record of a computation with numbers, symbols that represent numbers, arithmetic operations, exponentiation, and, at more advanced levels, the operation of evaluating a function. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a

different but equivalent way of writing the expression that exhibits some different aspect of its meaning. For example,  $p + 0.05p$  can be interpreted as the addition of a 5% tax to a price  $p$ . Rewriting  $p + 0.05p$  as  $1.05p$  shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by the properties of operations and exponents, and the conventions of algebraic notation. At times, an expression is the result of applying operations to simpler expressions. For example,  $p + 0.05p$  is the sum of the simpler expressions  $p$  and  $0.05p$ . Viewing an expression as the result of operation on simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a computer algebra system (CAS) can be used to experiment with algebraic expressions, perform complicated algebraic manipulations, and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement of equality between two expressions, often viewed as a question asking for which values of the variables the expressions on either side are in fact equal. These values are the solutions to the equation. An identity, in contrast, is true for all values of the variables; identities are often developed by rewriting an expression in an equivalent form.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs of numbers, which can be plotted in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively deducing from it one or more simpler equations. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, but have a solution in a larger system. For example, the solution of  $x + 1 = 0$  is an integer, not a whole number; the solution of  $2x + 1 = 0$  is a rational number, not an integer; the solutions of  $x^2 - 2 = 0$  are real numbers, not rational numbers; and the solutions of  $x^2 + 2 = 0$  are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid,  $A = ((b_1 + b_2)/2)h$ , can be solved for  $h$  using the same deductive process.

Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

*Connections to Functions and Modeling.* Expressions can define functions, and equivalent expressions define the same function. Asking when two functions have the same value for the same input leads to an equation; graphing the two functions allows for finding approximate solutions of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Algebra Overview

Seeing Structure in Expressions

- Interpret the structure of expressions.
- Write expressions in equivalent forms to solve problems.

Arithmetic with Polynomials and Rational Expressions

- Perform arithmetic operations on polynomials.
- Understand the relationship between zeros and factors of polynomials.
- Use polynomial identities to solve problems.
- Rewrite rational expressions.

Creating Equations

- Create equations that describe numbers or relationships.

Reasoning with Equations and Inequalities

- Understand solving equations as a process of reasoning and explain the reasoning.
- Solve equations and inequalities in one variable.
- Solve systems of equations. Represent and solve equations and inequalities graphically.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Mathematical Practices

Seeing Structure in Expressions A-SSE

Interpret the structure of expressions.

1. Interpret expressions that represent a quantity in terms of its context.★

a. Interpret parts of an expression, such as terms, factors, and coefficients.

b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret  $P(1+r)^n$  as the product of  $P$  and a factor not depending on  $P$ .*

2. Use the structure of an expression to identify ways to rewrite it. *For example, see  $x^4 - y^4$  as  $(x^2)^2 - (y^2)^2$ , thus recognizing it as a difference of squares that can be factored as  $(x^2 - y^2)(x^2 + y^2)$ .*

Write expressions in equivalent forms to solve problems.

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★

a. Factor a quadratic expression to reveal the zeros of the function it defines.

b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression  $1.15^t$  can be rewritten as  $(1.15^{1/12})^{12t} \approx 1.012^{12t}$  to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*

4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*★

Arithmetic with Polynomials and Rational Expressions A-APR

Perform arithmetic operations on polynomials.

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Understand the relationship between zeros and factors of polynomials.

2. Know and apply the Remainder Theorem: For a polynomial  $p(x)$  and a number  $a$ , the remainder on division by  $x - a$  is  $p(a)$ , so  $p(a) = 0$  if and only if  $(x - a)$  is a factor of  $p(x)$ .

3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Use polynomial identities to solve problems.

4. Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity  $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$  can be used to generate Pythagorean triples.*

5. (+) Know and apply the Binomial Theorem for the expansion of  $(x + y)^n$  in powers of  $x$  and  $y$  for a positive integer  $n$ , where  $x$  and  $y$  are any numbers, with coefficients determined for example by Pascal's Triangle.<sup>28</sup>

Rewrite rational expressions.

6. Rewrite simple rational expressions in different forms; write  $a(x)/b(x)$  in the form  $q(x) + r(x)/b(x)$ , where  $a(x)$ ,  $b(x)$ ,  $q(x)$ , and  $r(x)$  are polynomials with the degree of  $r(x)$  less than the degree of  $b(x)$ , using inspection, long division, or, for the more complicated examples, a computer algebra system.

<sup>28</sup>The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

### Creating Equations★ A-CED

Create equations that describe numbers or relationships.

1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*

4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law  $V = IR$  to highlight resistance  $R$ .*

### Reasoning with Equations and Inequalities A-REI

Understand solving equations as a process of reasoning and explain the reasoning.

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

*Solve equations and inequalities in one variable.*

3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

4. Solve quadratic equations in one variable.

a. Use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from this form.

b. Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .

*Solve systems of equations.*

5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line  $y = -3x$  and the circle  $x^2 + y^2 = 3$ .*

8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.

9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension  $3 \times 3$  or greater).

*Represent and solve equations and inequalities graphically.*

10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

11. Explain why the  $x$ -coordinates of the points where the graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where  $f(x)$  and/or  $g(x)$  are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.★

12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

## MATHEMATICS—HIGH SCHOOL—FUNCTIONS

Functions describe situations where one quantity determines another. For example, the return on \$10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because we continually make theories about dependencies between quantities in nature and society, functions are important tools in the construction of mathematical models.

In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a car to drive 100 miles is a function of the car's speed in miles per hour,  $v$ ; the rule  $T(v) = 100/v$  expresses this relationship algebraically and defines a function whose name is  $T$ .

The set of inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context.

A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city;" by an algebraic expression like  $f(x) = a + bx$ ; or by a recursive rule. The graph of a function is often a useful way of visualizing the relationship of the function models, and manipulating a mathematical expression for a function can throw light on the function's properties.

Functions presented as expressions can model many important phenomena. Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with a constant term of zero describe proportional relationships.

A graphing utility or a computer algebra system can be used to experiment with properties of these functions and their graphs and to build computational models of functions, including recursively defined functions.

*Connections to Expressions, Equations, Modeling, and Coordinates.* Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the same value for the same input lead to equations, whose solutions can

be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

**Functions Overview**

Interpreting Functions	<ul style="list-style-type: none"> <li>• Understand the concept of a function and use function notation.</li> <li>• Interpret functions that arise in applications in terms of the context.</li> <li>• Analyze functions using different representations.</li> </ul>	<ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning.</li> </ol>	Mathematical Practices
Building Functions	<ul style="list-style-type: none"> <li>• Build a function that models a relationship between two quantities.</li> <li>• Build new functions from existing functions.</li> </ul>		
Linear, Quadratic, and Exponential Models	<ul style="list-style-type: none"> <li>• Construct and compare linear, quadratic, and exponential models and solve problems.</li> <li>• Interpret expressions for functions in terms of the situation they model.</li> </ul>		
Trigonometric Functions	<ul style="list-style-type: none"> <li>• Extend the domain of trigonometric functions using the unit circle.</li> <li>• Model periodic phenomena with trigonometric functions. Prove and apply trigonometric identities.</li> </ul>		

**Interpreting Functions F-IF**

*Understand the concept of a function and use function notation.*

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If  $f$  is a function and  $x$  is an element of its domain, then  $f(x)$  denotes the output of  $f$  corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $y = f(x)$ .

2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by  $f(0) = f(1) = 1$ ,  $f(n+1) = f(n) + f(n-1)$  for  $n \geq 1$ .*

*Interpret functions that arise in applications in terms of the context.*

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or*

*negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★*

5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function.★*

6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★

*Analyze functions using different representations.*

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★

a. Graph linear and quadratic functions and show intercepts, maxima, and minima.

b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.

d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as  $y = (1.02)^t$ ,  $y = (0.97)^y$ ,  $y = (1.01)^{2t}$ ,  $y = (1.2)^{t/10}$ , and classify them as representing exponential growth or decay.*

9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

### Building Functions F-BF

*Build a function that models a relationship between two quantities.*

1. Write a function that describes a relationship between two quantities.★

a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*

c. (+) Compose functions. *For example, if  $T(y)$  is the temperature in the atmosphere as a function of height, and  $h(t)$  is the height of a weather balloon as a function of time, then  $T(h(t))$  is the temperature at the location of the weather balloon as a function of time.*

2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★

*Build new functions from existing functions.*

3. Identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*

4. Find inverse functions.

a. Solve an equation of the form  $f(x) = c$  for a simple function  $f$  that has an inverse and write an expression for the inverse. *For example,  $f(x) = 2x^3$  or  $f(x) = (x+1)/(x-1)$  for  $x \neq 1$ .*

b. (+) Verify by composition that one function is the inverse of another.

c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.

d. (+) Produce an invertible function from a non-invertible function by restricting the domain.

5. (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

### Linear, Quadratic, and Exponential Models★ F-LQE

*Construct and compare linear, quadratic, and exponential models and solve problems.*

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.

a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

4. For exponential models, express as a logarithm the solution to  $ab^{ct} = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology.

*Interpret expressions for functions in terms of the situation they model.*

5. Interpret the parameters in a linear, quadratic, or exponential function in terms of a context.

### Trigonometric Functions F-TF

*Extend the domain of trigonometric functions using the unit circle.*

1. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.

2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

3. (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for  $\pi/3$ ,  $\pi/4$  and  $\pi/6$ , and use the unit circle to express the values of sine, cosine, and tangent for  $\pi-x$ ,  $\pi+x$ , and  $2\pi-x$  in terms of their values for  $x$ , where  $x$  is any real number.

4. (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

*Model periodic phenomena with trigonometric functions.*

5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★

6. (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.

7. (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.★

*Prove and apply trigonometric identities.*

8. Prove the Pythagorean identity  $\sin^2(\theta) + \cos^2(\theta) = 1$  and use it to calculate trigonometric ratios.

9. (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

**MATHEMATICS—HIGH SCHOOL—MODELING**

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social, and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

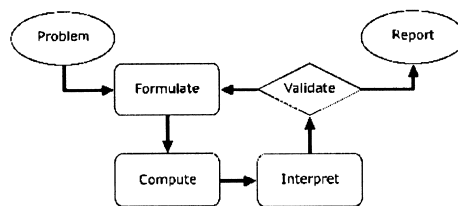
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player.
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car.
- Modeling savings account balance, bacterial colony growth, or investment growth.
- Engaging in critical path analysis, e.g., applied to turnaround of an aircraft at an airport.
- Analyzing risk in situations such as extreme sports, pandemics, and terrorism.
- Relating population statistics to individual predictions.

In situations like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and

our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.



One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can sometimes model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example, as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.

The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those that represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions, and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO<sub>2</sub> over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems.

Graphing utilities, spreadsheets, computer algebra systems, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

*Modeling Standards* Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★).

**MATHEMATICS—HIGH SCHOOL—GEOMETRY**

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Although there are many types of geometry, school mathematics is devoted primarily to plane Euclidean geometry, studied both synthetically (without coordinates) and analytically (with coordinates). Euclidean geometry is characterized most importantly by the Parallel Postulate, that through a point not on a given line there is exactly one parallel line. (Spherical geometry, in contrast, has no parallel lines.)

During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.

The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally). Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent.

In the approach taken here, two geometric figures are defined to be congruent if there is a sequence of rigid motions that carries one onto the other. This is the principle of superposition. For triangles, congruence means the equality of all corresponding pairs of sides and all corresponding pairs of angles. During the middle grades, through experiences drawing triangles from given conditions, students notice ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent. Once these triangle congruence criteria (ASA, SAS, and SSS) are established using rigid motions, they can be used to prove theorems about triangles, quadrilaterals, and other geometric figures.

Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence, thereby formalizing the similarity ideas of “same shape” and “scale factor” developed in the middle grades. These transformations lead to the

criterion for triangle similarity that two pairs of corresponding angles are congruent.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity, and, with the Pythagorean Theorem, are fundamental in many real-world and theoretical situations. The Pythagorean Theorem is generalized to non-right triangles by the Law of Cosines. Together, the Laws of Sines and Cosines embody the triangle congruence criteria for the cases where three pieces of information suffice to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that Side-Side-Angle is not a congruence criterion.

Analytic geometry connects algebra and geometry, resulting in powerful methods of analysis and problem solving. Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof. Geometric transformations of the graphs of equations correspond to algebraic changes in their equations.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same way as computer algebra systems allow them to experiment with algebraic phenomena.

*Connections to Equations.* The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling, and proof.

### Geometry Overview

Congruence	<ul style="list-style-type: none"> <li>• Experiment with transformations in the plane.</li> <li>• Understand congruence in terms of rigid motions.</li> <li>• Prove geometric theorems.</li> <li>• Make geometric constructions.</li> </ul>	<ol style="list-style-type: none"> <li>1. Apply geometric concepts in modeling situations</li> <li>2. Mathematical Practices</li> <li>3. Make sense of problems and persevere in solving them.</li> <li>4. Reason abstractly and quantitatively.</li> </ol>	Mathematical Practices
Similarity, Right Triangles, and Trigonometry	<ul style="list-style-type: none"> <li>• Understand similarity in terms of similarity transformations.</li> <li>• Prove theorems involving similarity.</li> <li>• Define trigonometric ratios and solve problems involving right triangles.</li> <li>• Apply trigonometry to general triangles.</li> </ul>	<ol style="list-style-type: none"> <li>5. Construct viable arguments and critique the reasoning of others.</li> <li>6. Model with mathematics.</li> <li>7. Use appropriate tools strategically.</li> <li>8. Attend to precision.</li> <li>9. Look for and make use of structure.</li> <li>10. Look for and express regularity in repeated reasoning.</li> </ol>	

Circles	<ul style="list-style-type: none"> <li>• Understand and apply theorems about circles.</li> <li>• Find arc lengths and areas of sectors of circles.</li> </ul>
Expressing Geometric Properties with Equations	<ul style="list-style-type: none"> <li>• Translate between the geometric description and the equation for a conic section.</li> <li>• Use coordinates to prove simple geometric theorems algebraically.</li> </ul>
Geometric Measurement and Dimension	<ul style="list-style-type: none"> <li>• Explain volume formulas and use them to solve problems.</li> <li>• Visualize relationships between two-dimensional and three-dimensional objects.</li> </ul>
Modeling with Geometry	<ul style="list-style-type: none"> <li>• Apply geometric concepts in modeling situations.</li> </ul>

**Congruence** G-CO

*Experiment with transformations in the plane.*

1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify

a sequence of transformations that will carry a given figure onto another.

*Understand congruence in terms of rigid motions.*

6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

*Prove geometric theorems.*

9. Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congru-*

*ent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*

10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*

11. Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*

*Make geometric constructions.*

12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*

13. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

**Similarity, Right Triangles, and Trigonometry** G-SRT

*Understand similarity in terms of similarity transformations.*

1. Verify experimentally the properties of dilations given by a center and a scale factor:

a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.

b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.



*Prove theorems involving similarity.*

4. Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*

5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

*Define trigonometric ratios and solve problems involving right triangles.*

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

7. Explain and use the relationship between the sine and cosine of complementary angles.

8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★

*Apply trigonometry to general triangles.*

9. (+) Derive the formula  $A = 1/2 ab \sin(C)$  for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.

10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.

11. (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

### **Circles** G-C

*Understand and apply theorems about circles.*

1. Prove that all circles are similar.

2. Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

4. (+) Construct a tangent line from a point outside a given circle to the circle.

*Find arc lengths and areas of sectors of circles.*

5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

### **Expressing Geometric Properties with Equations**

G-GPE

*Translate between the geometric description and the equation for a conic section.*

1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

2. Derive the equation of a parabola given a focus and directrix.

3. (+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

*Use coordinates to prove simple geometric theorems algebraically.*

4. Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point  $(1, \sqrt{3})$  lies on the circle centered at the origin and containing the point  $(0, 2)$ .*

5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★

### **Geometric Measurement and Dimension** G-GMD

*Explain volume formulas and use them to solve problems.*

1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*

2. (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.

3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.★

*Visualize relationships between two-dimensional and three-dimensional objects.*

4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

### **Modeling with Geometry** G-MG

*Apply geometric concepts in modeling situations.*

1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).★

2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★

3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★

### **MATHEMATICS—HIGH SCHOOL—STATISTICS AND PROBABILITY**★

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account.

Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and

spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports, it is important to consider the study design, how the data were gathered, and the

analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the Addition and Multiplication Rules. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two-way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

*Connections to Functions and Modeling.* Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.

**Statistics and Probability Overview**

Interpreting Categorical and Quantitative Data

- Summarize, represent, and interpret data on a single count or measurement variable.
- Summarize, represent, and interpret data on two categorical and quantitative variables.
- Interpret linear models.

Making Inferences and Justifying Conclusions

- Understand and evaluate random processes underlying statistical experiments.
- Make inferences and justify conclusions from sample surveys, experiments and observational studies.

Conditional Probability and the Rules of Probability

- Understand independence and conditional probability and use them to interpret data.
- Use the rules of probability to compute probabilities of compound events in a uniform probability model.

Using Probability to Make Decisions

- Calculate expected values and use them to solve problems.
- Use probability to evaluate outcomes of decisions.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Mathematical Practices

**Interpreting Categorical and Quantitative Data** S-ID  
*Summarize, represent, and interpret data on a single count or measurement variable.*

1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread

(interquartile range, standard deviation) of two or more different data sets.

3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for

which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

*Summarize, represent, and interpret data on two categorical and quantitative variables.*

5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.*

b. Informally assess the fit of a function by plotting and analyzing residuals.

c. Fit a linear function for a scatter plot that suggests a linear association.

*Interpret linear models.*

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

8. Compute (using technology) and interpret the correlation coefficient of a linear fit.

9. Distinguish between correlation and causation.

### **Making Inferences and Justifying Conclusions** S-IC

*Understand and evaluate random processes underlying statistical experiments.*

1. Understand statistics as a process for making inferences to be made about population parameters based on a random sample from that population.

2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*

*Make inferences and justify conclusions from sample surveys, experiments, and observational studies.*

3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

4. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.

5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

6. Evaluate reports based on data.

### **Conditional Probability and the Rules of Probability** S-CP

*Understand independence and conditional probability and use them to interpret data.*

1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).

2. Understand that two events  $A$  and  $B$  are independent if the probability of  $A$  and  $B$  occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

3. Understand the conditional probability of  $A$  given  $B$  as  $P(A \text{ and } B)/P(B)$ , and interpret independence of  $A$  and  $B$  as saying that the conditional probability of  $A$  given  $B$  is the same as the probability of  $A$ , and the conditional probability of  $B$  given  $A$  is the same as the probability of  $B$ .

4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*

5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

*Use the rules of probability to compute probabilities of compound events in a uniform probability model.*

6. Find the conditional probability of  $A$  given  $B$  as the fraction of  $B$ 's outcomes that also belong to  $A$ , and interpret the answer in terms of the model.

7. Apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.

8. (+) Apply the general Multiplication Rule in a uniform probability model,  $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$ , and interpret the answer in terms of the model.

9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

### **Using Probability to Make Decisions** S-MD

*Calculate expected values and use them to solve problems.*

1. (+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.

2. (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.

3. (+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*

4. (+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate*

the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?

Use probability to evaluate outcomes of decisions.

5. (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.

a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.

b. Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.

6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

**NOTE ON COURSES AND TRANSITIONS**

The high school portion of the Standards for Mathematical Content specifies the mathematics all students should study for college and career readiness. These standards do not mandate the sequence of high school courses. However, the organization of high school courses is a critical component to implementation of the standards. To that end, sample high school pathways for mathematics—in both a traditional course sequence (Algebra I, Geometry, and Algebra II) as well as an integrated course sequence (Mathematics 1, Mathematics 2, Mathematics 3)—will be made available shortly after the release of the final Common Core State Standards. It is expected that additional model pathways based on these standards will become available as well.

The standards themselves do not dictate curriculum, pedagogy, or delivery of content. In particular, states may handle the transition to high school in different ways. For example, many students in the U.S. today take Algebra I in the 8th grade, and in some states this is a requirement. The K-7 standards contain the prerequisites to prepare students for Algebra I by 8th grade, and the standards are designed to permit states to continue existing policies concerning Algebra I in 8th grade.

A second major transition is the transition from high school to post-secondary education for college and careers. The evidence concerning college and career readiness shows clearly that the knowledge, skills, and practices important for readiness include a great deal of mathematics prior to the boundary defined by (+) symbols in these standards. Indeed, some of the highest priority content for college and career readiness comes from Grades 6-8. This body of material includes powerfully useful proficiencies such as applying ratio reasoning in real-world and mathematical problems, computing fluently with positive and negative fractions and decimals, and solving real-world and mathematical problems involving angle measure, area, surface area, and volume. Because important standards for college and career readiness are distributed across grades and courses, systems for evaluating college and career readiness should reach as far back in the standards as Grades 6-8. It is important to note as well that cut scores or other information generated by assessment systems for college and career readiness should be developed in collaboration with representatives from higher education and workforce development programs,

and should be validated by subsequent performance of students in college and the workforce.

**GLOSSARY**

*Addition and subtraction within 5, 10, 20, 100, or 1000.* Addition or subtraction of two whole numbers with whole number answers, and with sum or minuend in the range 0-5, 0-10, 0-20, or 0-100, respectively. Example:  $8 + 2 = 10$  is an addition within 10,  $14 - 5 = 9$  is a subtraction within 20, and  $55 - 18 = 37$  is a subtraction within 100.

*Additive inverses.* Two numbers whose sum is 0 are additive inverses of one another. Example:  $3/4$  and  $-3/4$  are additive inverses of one another because  $3/4 + (-3/4) = (-3/4) + 3/4 = 0$ .

*Associative property of addition.* See Table 3 in this Glossary.

*Associative property of multiplication.* See Table 3 in this Glossary.

*Bivariate data.* Pairs of linked numerical observations. Example: a list of heights and weights for each player on a football team.

*Box plot.* A method of visually displaying a distribution of data values by using the median, quartiles, and extremes of the data set. A box shows the middle 50% of the data.<sup>29</sup>

*Commutative property.* See Table 3 in this Glossary.

*Complex fraction.* A fraction  $A/B$  where  $A$  and/or  $B$  are fractions ( $B$  nonzero).

*Computation algorithm.* A set of predefined steps applicable to a class of problems that gives the correct result in every case when the steps are carried out correctly. See also: *computation strategy*.

*Computation strategy.* Purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another. See also: *computation algorithm*.

*Congruent.* Two plane or solid figures are congruent if one can be obtained from the other by rigid motion (a sequence of rotations, reflections, and translations).

*Counting on.* A strategy for finding the number of objects in a group without having to count every member of the group. For example, if a stack of books is known to have 8 books and 3 more books are added to the top, it is not necessary to count the stack all over again; one can find the total by *counting on*—pointing to the top book and saying “eight,” following this with “nine, ten, eleven. There are eleven books now.”

*Dot plot.* See: *line plot*.

*Dilation.* A transformation that moves each point along the ray through the point emanating from a fixed center, and multiplies distances from the center by a common scale factor.

*Expanded form.* A multidigit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example,  $643 = 600 + 40 + 3$ .

*Expected value.* For a random variable, the weighted average of its possible values, with weights given by their respective probabilities.

*First quartile.* For a data set with median  $M$ , the first quartile is the median of the data values less than  $M$ .

<sup>29</sup> Adapted from Wisconsin Department of Public Instruction, <http://dpi.wi.gov/standards/mathglos.html>, accessed March 2, 2010.

Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the first quartile is 6.<sup>30</sup> See also: median, third quartile, interquartile range.

*Fraction.* A number expressible in the form  $a/b$  where  $a$  is a whole number and  $b$  is a positive whole number. (The word *fraction* in these standards always refers to a nonnegative number.) See also: rational number.

*Identity property of 0.* See Table 3 in this Glossary.

*Independently combined probability models.* Two probability models are said to be combined independently if the probability of each ordered pair in the combined model equals the product of the original probabilities of the two individual outcomes in the ordered pair.

*Integer.* A number expressible in the form  $a$  or  $-a$  for some whole number  $a$ .

*Interquartile Range.* A measure of variation in a set of numerical data, the interquartile range is the distance between the first and third quartiles of the data set. Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the interquartile range is  $15 - 6 = 9$ . See also: first quartile, third quartile.

*Line plot.* A method of visually displaying a distribution of data values where each data value is shown as a dot or mark above a number line. Also known as a dot plot.<sup>31</sup>

*Mean.* A measure of center in a set of numerical data, computed by adding the values in a list and then dividing by the number of values in the list.<sup>32</sup> Example: For the data set {1, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean is 21.

*Mean absolute deviation.* A measure of variation in a set of numerical data, computed by adding the distances between each data value and the mean, then dividing by the number of data values. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the mean absolute deviation is 20.

*Median.* A measure of center in a set of numerical data. The median of a list of values is the value appearing at the center of a sorted version of the list—or the mean of the two central values, if the list contains an even number of values. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 90}, the median is 11.

*Midline.* In the graph of a trigonometric function, the horizontal line half-way between its maximum and minimum values.

*Multiplication and division within 100.* Multiplication or division of two whole numbers with whole number answers, and with product or dividend in the range 0-100. Example:  $72 \div 8 = 9$ .

*Multiplicative inverses.* Two numbers whose product is 1 are multiplicative inverses of one another. Example:  $3/4$  and  $4/3$  are multiplicative inverses of one another because  $3/4 \times 4/3 = 4/3 \times 3/4 = 1$ .

*Number line diagram.* A diagram of the number line used to represent numbers and support reasoning about them. In a number line diagram for measurement quantities, the interval from 0 to 1 on the diagram represents the unit of measure for the quantity.

*Percent rate of change.* A rate of change expressed as a percent. Example: if a population grows from 50 to 55 in a year, it grows by  $5/50 = 10\%$  per year.

*Probability distribution.* The set of possible values of a random variable with a probability assigned to each.

*Properties of operations.* See Table 3 in this Glossary.

*Properties of equality.* See Table 4 in this Glossary.

*Properties of inequality.* See Table 5 in this Glossary.

*Properties of operations.* See Table 3 in this Glossary.

*Probability.* A number between 0 and 1 used to quantify likelihood for processes that have uncertain outcomes (such as tossing a coin, selecting a person at random from a group of people, tossing a ball at a target, testing for a medical condition).

*Probability model.* A probability model is used to assign probabilities to outcomes of a chance process by examining the nature of the process. The set of all outcomes is called the sample space, and their probabilities sum to 1. See also: uniform probability model.

*Random variable.* An assignment of a numerical value to each outcome in a sample space.

*Rational expression.* A quotient of two polynomials with a non-zero denominator. Rational number. A number expressible in the form  $a/b$  or  $-a/b$  for some fraction  $a/b$ . The rational numbers include the integers.

*Rectilinear figure.* A polygon all angles of which are right angles.

*Rigid motion.* A transformation of points in space consisting of a sequence of one or more translations, reflections, and/or rotations. Rigid motions are here assumed to preserve distances and angle measures.

*Repeating decimal.* The decimal form of a rational number. See also: terminating decimal.

*Sample space.* In a probability model for a random process, a list of the individual outcomes that are to be considered.

*Scatter plot.* A graph in the coordinate plane representing a set of bivariate data. For example, the heights and weights of a group of people could be displayed on a scatter plot.<sup>33</sup>

*Similarity transformation.* A rigid motion followed by a dilation.

*Tape diagram.* A drawing that looks like a segment of tape, used to illustrate number relationships. Also known as a strip diagram, bar model, fraction strip, or length model.

*Terminating decimal.* A decimal is called terminating if its repeating digit is 0.

*Third quartile.* For a data set with median  $M$ , the third quartile is the median of the data values greater than  $M$ . Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the third quartile is 15. See also: median, first quartile, interquartile range.

*Transitivity principle for indirect measurement.* If the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well.

*Uniform probability model.* A probability model which assigns equal probability to all outcomes. See also: probability model.

*Vector.* A quantity with magnitude and direction in the plane or in space, defined by an ordered pair or triple of real numbers.

*Visual fraction model.* A tape diagram, number line diagram, or area model.

*Whole numbers.* The numbers 0, 1, 2, 3, . . .

<sup>30</sup> Many different methods for computing quartiles are in use. The method defined here is sometimes called the Moore and McCabe method. See Langford, E., "Quartiles in Elementary Statistics," *Journal of Statistics Education* Volume 14, Number 3 (2006),

<sup>31</sup> Adapted from Wisconsin Department of Public Instruction, *op. cit.*

<sup>32</sup> To be more precise, this defines the *arithmetic mean*.

<sup>33</sup> Adapted from Wisconsin Department of Public Instruction, *op. cit.*

Table 1. Common addition and subtraction situations.<sup>34</sup>

	Result Unknown	Change Unknown	Start Unknown
<b>Add to</b>	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
<b>Take from</b>	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$
	Total Unknown	Addend Unknown	Both Addends Unknown <sup>35</sup>
<b>Put Together/ Take Apart<sup>36</sup></b>	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$
	Difference Unknown	Bigger Unknown	Smaller Unknown
<b>Compare<sup>37</sup></b>	(“How many more?” version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? (“How many fewer?” version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with “more”): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with “fewer”): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with “more”): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with “fewer”): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$

Table 2. Common multiplication and division situations.<sup>38</sup>

	Unknown Product	Group Size Unknown (“How many in each group?” Division)	Number of Groups Unknown (“How many groups?” Division)
	$3 \times 6 = ?$	$3 \times ? = 18$ and $18 \div 3 = ?$	$? \times 6 = 18$ and $18 \div 6 = ?$
<b>Equal Groups</b>	There are 3 bags with 6 plums in each bag. How many plums are there in all? <i>Measurement example.</i> You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? <i>Measurement example.</i> You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? <i>Measurement example.</i> You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
<b>Arrays,<sup>39</sup> Area<sup>40</sup></b>	There are 3 rows of apples with 6 apples in each row. How many apples are there? <i>Area example.</i> What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? <i>Area example.</i> A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? <i>Area example.</i> A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?

<sup>34</sup> Adapted from Box 2-4 of Mathematics Learning in Early Childhood, National Research Council (2009, pp. 32, 33).

<sup>35</sup> These *take apart* situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes or results in* but always does mean *is the same number as*.

<sup>36</sup> Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10.

<sup>37</sup> For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

<sup>38</sup> The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.

<b>Compare</b>	A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? <i>Measurement example.</i> A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? <i>Measurement example.</i> A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue hat? <i>Measurement example.</i> A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
<b>General</b>	$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$

**Table 3. The properties of operations.**

Here  $a$ ,  $b$  and  $c$  stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.

Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property of addition	$a + b = b + a$
Additive identity property of 0	$a + 0 = 0 + a = a$
Existence of additive inverses	For every $a$ there exists $-a$ so that $a + (-a) = (-a) + a = 0$ .
Associative property of multiplication	$(a \times b) \times c = a \times (b \times c)$
Commutative property of multiplication	$a \times b = b \times a$
Multiplicative identity property of 1	$a \times 1 = 1 \times a = a$
Existence of multiplicative inverses	For every $a \neq 0$ there exists $1/a$ so that $a \times 1/a = 1/a \times a = 1$ .
Distributive property of multiplication over addition	$a \times (b + c) = a \times b + a \times c$

**Table 4. The properties of equality.**

Here  $a$ ,  $b$  and  $c$  stand for arbitrary numbers in the rational, real, or complex number systems.

Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$ , then $b = a$ .
Transitive property of equality	If $a = b$ and $b = c$ , then $a = c$ .
Addition property of equality	If $a = b$ , then $a + c = b + c$ .
Subtraction property of equality	If $a = b$ , then $a - c = b - c$ .
Multiplication property of equality	If $a = b$ , then $a \times c = b \times c$ .
Division property of equality	If $a = b$ and $c \neq 0$ , then $a \div c = b \div c$ .
Substitution property of equality	If $a = b$ , then $b$ may be substituted for $a$ in any expression containing $a$ .

<sup>39</sup> The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: The apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.

<sup>40</sup> Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

**Table 5. The properties of inequality.**

Here  $a$ ,  $b$  and  $c$  stand for arbitrary numbers in the rational or real number systems.

<p>Exactly one of the following is true: <math>a &lt; b</math>, <math>a = b</math>, <math>a &gt; b</math>.                  If <math>a &gt; b</math> and <math>b &gt; c</math> then <math>a &gt; c</math>.                  If <math>a &gt; b</math>, then <math>b &lt; a</math>.                  If <math>a &gt; b</math>, then <math>-a &lt; -b</math>.                  If <math>a &gt; b</math>, then <math>a \pm c &gt; b \pm c</math>.                  If <math>a &gt; b</math> and <math>c &gt; 0</math>, then <math>a \times c &gt; b \times c</math>.                  If <math>a &gt; b</math> and <math>c &lt; 0</math>, then <math>a \times c &lt; b \times c</math>.                  If <math>a &gt; b</math> and <math>c &gt; 0</math>, then <math>a \times c &gt; b \times c</math>.                  If <math>a &gt; b</math> and <math>c &lt; 0</math>, then <math>a \times c &lt; b \times c</math>.</p>
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[Pa.B. Doc. No. 10-1962. Filed for public inspection October 15, 2010, 9:00 a.m.]





# NOTICES

## DEPARTMENT OF BANKING

### Actions on Applications

The Department of Banking (Department), under the authority contained in the act of November 30, 1965 (P. L. 847, No. 356), known as the Banking Code of 1965; the act of December 14, 1967 (P. L. 746, No. 345), known as the Savings Association Code of 1967; the act of May 15, 1933 (P. L. 565, No. 111), known as the Department of Banking Code; and the act of December 19, 1990 (P. L. 834, No. 198), known as the Credit Union Code, has taken the following action on applications received for the week ending September 21, 2010.

Under section 503.E of the Department of Banking Code (71 P. S. § 733-503.E), any person wishing to comment on the following applications, with the exception of branch applications, may file their comments in writing with the Department of Banking, Corporate Applications Division, 17 North Second Street, Suite 1300, Harrisburg, PA 17101-2290. Comments must be received no later than 30 days from the date notice regarding receipt of the application is published in the *Pennsylvania Bulletin*. The nonconfidential portions of the applications are on file at the Department and are available for public inspection, by appointment only, during regular business hours. To schedule an appointment, contact the Corporate Applications Division at (717) 783-2253. Photocopies of the nonconfidential portions of the applications may be requested consistent with the Department's Right-to-Know Law Records Request policy.

### BANKING INSTITUTIONS

#### Section 112 Acquisitions

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Action</i>
9-15-2010	WVS Financial Corp. Employee Stock Ownership Plan and Trustee Jonathan D. Hoover  Application for approval to acquire up to 24.9% of the common stock of WVS Financial Corp., Pittsburgh, the parent bank holding company of West View Savings Bank, Pittsburgh.	Filed

#### Holding Company Acquisitions

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Action</i>
9-16-2010	Alliance Bancorp, Inc. of Pennsylvania Broomall Delaware County  Application for approval to acquire 100% of Greater Delaware Valley Savings Bank (doing business as Alliance Bank), Broomall.	Filed

### Branch Applications

#### De Novo Branches

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-9-2010	New Century Bank Phoenixville Chester County	1 South Main Street Yardley Bucks County	Opened
9-15-2010	ESB Bank Ellwood City Lawrence County	Rochester Road and Graham Park Drive Cranberry Township Butler County	Filed
9-18-2010	New Century Bank Phoenixville Chester County	457 Haddonfield Road Suite 100 Cherry Hill Camden County, NJ	Opened

### Branch Consolidations

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-15-2010	AmeriServ Financial Bank Johnstown Cambria County	<i>Into:</i> 734 South Atherton Street State College Centre County  <i>From:</i> 763 Benner Pike State College Centre County	Filed

**Branch Discontinuances**

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-15-2010	S & T Bank Indiana Indiana County	225 Lucerne Road Lucerne Mines Indiana County	Filed

**SAVINGS INSTITUTIONS**

No activity.

**CREDIT UNIONS**

No activity.

The Department's web site at [www.banking.state.pa.us](http://www.banking.state.pa.us) includes public notices for more recently filed applications.

STEVEN KAPLAN,  
*Secretary*

[Pa.B. Doc. No. 10-1963. Filed for public inspection October 15, 2010, 9:00 a.m.]

**Actions on Applications**

The Department of Banking (Department), under the authority contained in the act of November 30, 1965 (P. L. 847, No. 356), known as the Banking Code of 1965; the act of December 14, 1967 (P. L. 746, No. 345), known as the Savings Association Code of 1967; the act of May 15, 1933 (P. L. 565, No. 111), known as the Department of Banking Code; and the act of December 19, 1990 (P. L. 834, No. 198), known as the Credit Union Code, has taken the following action on applications received for the week ending September 28, 2010.

Under section 503.E of the Department of Banking Code (71 P. S. § 733-503.E), any person wishing to comment on the following applications, with the exception of branch applications, may file their comments in writing with the Department of Banking, Corporate Applications Division, 17 North Second Street, Suite 1300, Harrisburg, PA 17101-2290. Comments must be received no later than 30 days from the date notice regarding receipt of the application is published in the *Pennsylvania Bulletin*. The nonconfidential portions of the applications are on file at the Department and are available for public inspection, by appointment only, during regular business hours. To schedule an appointment, contact the Corporate Applications Division at (717) 783-2253. Photocopies of the nonconfidential portions of the applications may be requested consistent with the Department's Right-to-Know Law Records Request policy.

**BANKING INSTITUTIONS****Section 112 Acquisitions**

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Action</i>
9-21-2010	Edward E. Shin and group of passive individual investors Application for approval to acquire 100% of the common stock of Royal Asian Bank, Philadelphia.	Filed

**Branch Applications****De Novo Branches**

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-17-2010	CNB Bank Clearfield Clearfield County	Mountain View Shopping Center 111 Rolling Stone Road Kylertown Clearfield County	Opened
9-23-2010	Citizens Bank of Pennsylvania Philadelphia Philadelphia County	1071 Baltimore Pike Glen Mills Delaware County	Approved
9-27-2010	Beneficial Mutual Savings Bank Philadelphia Philadelphia County	821 West Lancaster Avenue Wayne Chester County	Filed

**Branch Discontinuances**

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-23-2010	Graystone Tower Bank Lancaster Lancaster County	2001 Lincoln Way East Chambersburg Franklin County	Approved
9-23-2010	Graystone Tower Bank Lancaster Lancaster County	11050 Buchanan Trail East Waynesboro Franklin County	Approved

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-23-2010	NOVA Bank Berwyn Chester County	1819 John F. Kennedy Boulevard Philadelphia Philadelphia County	Approved
9-23-2010	S & T Bank Indiana Indiana County	20 North Pennsylvania Avenue Greensburg Westmoreland County	Approved

#### Articles of Amendment

<i>Date</i>	<i>Name and Location of Institution</i>	<i>Action</i>
9-21-2010	Royal Asian Bank Philadelphia Philadelphia County  Amendment to the Fifth Article of the institution's Articles of Incorporation increases the number of authorized common shares to 20 million.	Filed
9-24-2010	Community First Bank Reynoldsville Jefferson County  Articles of Amendment provide for the institution's Articles of Incorporation to be amended and restated in their entirety and also authorize the issuance of preferred stock.	Filed

#### SAVINGS INSTITUTIONS

No activity.

#### CREDIT UNIONS

No activity.

The Department's web site at [www.banking.state.pa.us](http://www.banking.state.pa.us) includes public notices for more recently filed applications.

STEVEN KAPLAN,  
*Secretary*

[Pa.B. Doc. No. 10-1964. Filed for public inspection October 15, 2010, 9:00 a.m.]

#### Actions on Applications

The Department of Banking (Department), under the authority contained in the act of November 30, 1965 (P. L. 847, No. 356), known as the Banking Code of 1965; the act of December 14, 1967 (P. L. 746, No. 345), known as the Savings Association Code of 1967; the act of May 15, 1933 (P. L. 565, No. 111), known as the Department of Banking Code; and the act of December 19, 1990 (P. L. 834, No. 198), known as the Credit Union Code, has taken the following action on applications received for the week ending October 5, 2010.

Under section 503.E of the Department of Banking Code (71 P. S. § 733-503.E), any person wishing to comment on the following applications, with the exception of branch applications, may file their comments in writing with the Department of Banking, Corporate Applications Division, 17 North Second Street, Suite 1300, Harrisburg, PA 17101-2290. Comments must be received no later than 30 days from the date notice regarding receipt of the application is published in the *Pennsylvania Bulletin*. The nonconfidential portions of the applications are on file at the Department and are available for public inspection, by appointment only, during regular business hours. To schedule an appointment, contact the Corporate Applications Division at (717) 783-2253. Photocopies of the nonconfidential portions of the applications may be requested consistent with the Department's Right-to-Know Law Records Request policy.

#### BANKING INSTITUTIONS

##### Conversions

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Action</i>
10-1-2010	<i>From:</i> First Keystone National Bank Berwick Columbia County  <i>To:</i> First Keystone Community Bank Berwick Columbia County  Conversion from a national banking association to a Pennsylvania state-chartered bank and trust company. First Keystone Community Bank is a wholly-owned subsidiary of First Keystone Corporation, Berwick, an existing bank holding company.  <i>Branch offices operated by First Keystone Community Bank:</i>	Effective

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Action</i>
	701 Freas Avenue Berwick Columbia County	50 Briar Creek Plaza Berwick Columbia County
	2301 Columbia Boulevard Bloomsburg Columbia County	Third and Race Streets Mifflinville Columbia County
	400 Fowler Avenue Berwick Luzerne County	179 South Wyoming Avenue Kingston Luzerne County
	18 North Mountain Boulevard Mountain Top Luzerne County	437 West Third Street Nescopeck Luzerne County
	1540 Sans Souci Highway Wilkes-Barre Luzerne County	Route 209 Brodheads ville Monroe County
	Route 390 and Price's Drive Mountainhome Monroe County	559 Main Street Stroudsburg Monroe County
	Route 611 Swiftwater Monroe County	1519 Bloom Road Danville Montour County
10-4-2010	<i>From:</i> Adams County National Bank Gettysburg Adams County  <i>To:</i> ACNB Bank Gettysburg Adams County  Conversion from a national banking association to a Pennsylvania state-chartered bank and trust company. ACNB Bank is a wholly-owned subsidiary of ACNB Corporation, Gettysburg, an existing bank holding company.  <i>Branch offices operated by ACNB Bank:</i>  101 Main Street Arendtsville Adams County  3459 Biglerville Road Biglerville Adams County  1677 Route 194 North East Berlin Adams County  100 V-Twin Drive Gettysburg Adams County  545 West Middle Street Gettysburg Adams County  223 East King Street Littlestown Adams County  318 Lincolnway East New Oxford Adams County  1 West Big Spring Avenue Newville Cumberland County  3 Tristan Drive Dillsburg York County	Effective
		101 North Main Street Bendersville Adams County  10 High Street Cashtown Adams County  4910 Fairfield Road Fairfield Adams County  675 Old Harrisburg Road Gettysburg Adams County  444 West King Street Littlestown Adams County  369 Main Street McSherrystown Adams County  202 Main Street York Springs Adams County  39 Carlisle Road Newville Cumberland County  1127 Eichelberger Street Hanover York County

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Action</i>
	865 Baltimore Street Hanover York County	

**Branch Applications****De Novo Branches**

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-14-2010	First Savings Bank of Perkasie Perkasie Bucks County	3617 Route 202 Doylestown Bucks County	Opened
10-1-2010	Penn Liberty Bank Wayne Chester County	654 West Lincoln Highway Exton Chester County	Filed
10-5-2010	First Star Bank Bethlehem Northampton County	2415 Park Avenue Easton Northampton County	Filed

**Branch Discontinuances**

<i>Date</i>	<i>Name and Location of Applicant</i>	<i>Location of Branch</i>	<i>Action</i>
9-25-2010	Beneficial Mutual Savings Bank Philadelphia Philadelphia County	1191 Woodlane Road Eastampton Burlington County, NJ	Closed
9-25-2010	Beneficial Mutual Savings Bank Philadelphia Philadelphia County	220 West Front Street Florence Burlington County, NJ	Closed
9-25-2010	Beneficial Mutual Savings Bank Philadelphia Philadelphia County	25 Fort Dix Road Pemberton Burlington County, NJ	Closed
10-5-2010	First Star Bank Bethlehem Northampton County	3590 Northwood Avenue Palmer Northampton County	Filed

**SAVINGS INSTITUTIONS**

No activity.

**CREDIT UNIONS**

No activity.

The Department's web site at [www.banking.state.pa.us](http://www.banking.state.pa.us) includes public notices for more recently filed applications.

STEVEN KAPLAN,  
*Secretary*

[Pa.B. Doc. No. 10-1965. Filed for public inspection October 15, 2010, 9:00 a.m.]

**Maximum Lawful Rate of Interest for Residential Mortgages for the Month of November 2010**

The Department of Banking (Department), under the authority contained in section 301 of the act of January 30, 1974 (P. L. 13, No. 6) (41 P. S. § 301), determines that the maximum lawful rate of interest for residential mortgages for the month of November, 2010, is 5 1/2%.

The interest rate limitations under the State's usury statute were preempted to a great extent by Federal law, the Depository Institutions Deregulation and Monetary Control Act of 1980 (Pub. L. No. 96-221). Further preemption was instituted with the signing of Pub. L. No. 96-399, which overrode State interest rate limitations on any individual who finances the sale or exchange of residential real property which the individual owns and

which the individual occupies or has occupied as his principal residence.

Each month the Department is required by State law to compute and announce the ceiling rate on residential mortgages in this Commonwealth. This maximum rate is determined by adding 2.50 percentage points to the yield rate on long-term government bonds as published by the Federal Reserve Board and/or the United States Treasury. The latest yield rate on long-term government securities is 3.06 to which was added 2.50 percentage points for a total of 5.56 that by law is rounded off to the nearest quarter at 5 1/2%.

STEVEN KAPLAN,  
*Secretary*

[Pa.B. Doc. No. 10-1966. Filed for public inspection October 15, 2010, 9:00 a.m.]

# DEPARTMENT OF ENVIRONMENTAL PROTECTION

## Applications, Actions and Special Notices

### APPLICATIONS

#### THE CLEAN STREAMS LAW AND THE FEDERAL CLEAN WATER ACT APPLICATIONS FOR NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS AND WATER QUALITY MANAGEMENT (WQM) PERMITS

This Notice provides information about persons who have applied for a new, amended or renewed NPDES or WQM permit, a permit waiver for certain stormwater discharges, or submitted a Notice of Intent (NOI) for coverage under a General Permit. The applications concern, but are not limited to, discharges related to industrial, animal or sewage waste, discharges to groundwater, discharges associated with municipal separate storm sewer systems (MS4), stormwater associated with construction activities or concentrated animal feeding operations (CAFOs) (hereinafter referred to as "applications"). This Notice is provided in accordance with regulations at 25 Pa. Code Chapters 91 and 92 and 40 CFR Part 122, implementing provisions of the Pennsylvania Clean Streams Law, 35 P.S. §§ 691.1 *et seq.*, and the federal Clean Water Act, 33 USCA §§ 1251 *et seq.*

<i>Location</i>	<i>Permit Authority</i>	<i>Application Type or Category</i>
Section I	NPDES	Renewals
Section II	NPDES	New or Amendment
Section III	WQM	Industrial, Sewage or Animal waste; discharge into groundwater
Section IV	NPDES	MS4 Individual Permit
Section V	NPDES	MS4 Permit Waiver
Section VI	NPDES	Individual Permit Stormwater Construction
Section VII	NPDES	NOI for Coverage under NPDES General Permits

For NPDES renewal applications listed in Section I, the Department of Environmental Protection (Department) has made a tentative determination to re-issue these permits for 5 years subject to effluent limitations and monitoring and reporting requirements in their current permits, with appropriate and necessary updated requirements to reflect new and changed regulations and other requirements.

For applications for new NPDES permits and renewal applications with major changes listed in Section II, as well as applications for MS4 Individual Permits, and Individual Stormwater Construction Permits listed in Sections IV and VI, the Department, based upon preliminary reviews, has made a tentative determination of proposed effluent limitations and other terms and conditions for the permit applications. These determinations are published as proposed actions for comments prior to taking final actions.

Unless indicated otherwise, the EPA Region III Administrator has waived the right to review or object to proposed NPDES permit actions under the waiver provision 40 CFR 123.24(d).

Persons wishing to comment on any of these NPDES applications are invited to submit a statement to the contact office noted above the application, within 30 days from the date of this public notice. Persons wishing to comment on any WQM permit application are invited to submit a statement, to the office noted above the application within 15 days from the date of this public notice. Comments received within the respective comment periods will be considered in the final determinations regarding the applications. All comment submittals should include the name, address and telephone number of the writer and a concise statement to inform the Department of the exact basis of a comment and the relevant facts upon which it is based.

The Department will also accept requests for a public hearing on applications, and a public hearing may be held if the responsible office considers the public response significant. If a hearing is scheduled, a notice of the hearing will be published in the *Pennsylvania Bulletin* and a newspaper of general circulation within the relevant geographical area. The Department will postpone its final determination until after any public hearings are held.

Persons with a disability, who require an auxiliary aid, service, including TDD users or other accommodations to seek additional information, should contact the Department through the Pennsylvania AT&T Relay Service at (800) 654-5984.

#### I. NPDES Renewal Applications

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Phone: 717-705-4707.*

<i>NPDES No. (Type)</i>	<i>Facility Name &amp; Address</i>	<i>County &amp; Municipality</i>	<i>Stream Name (Watershed #)</i>	<i>EPA Waived Y/N ?</i>
PA0081370 (Sew)	Timeless Towns of America, Inc. 2636 Emmitsburg Road Gettysburg, PA 17325	Adams County / Cumberland Township	UNT Marsh Creek / 13-D	Y

*Northwest Region: Water Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481*

<i>NPDES No. (Type)</i>	<i>Facility Name &amp; Address</i>	<i>County &amp; Municipality</i>	<i>Stream Name (Watershed#)</i>	<i>EPA Waived Y/N ?</i>
PA0039233 (Sewage)	Blaine E. Rhodes d/b/a Rhodes Country Court P. O. Box 397 Reno, PA 16343-0397	Venango County Cranberry Township	Unnamed Tributary to Sage Run 16-E	Y
PA0098329 (Industrial Waste)	Hawthorn Area WTP 100 Riverside Drive Hawthorn, PA 16230	Armstrong County Redbank Township	Redbank Creek 17-C	Y

## **II. Applications for New or Expanded Facility Permits, Renewal of Major Permits and EPA Nonwaived Permit Applications**

*Southeast Region: Water Management Program Manager, 2 East Main Street, Norristown, PA 19401*

**PA0050423**, Sewage, SIC Code 4952, **Sisters Servants Of The Immaculate Heart Of Mary**, 1140 King Road, Immaculata, PA 19345. Facility Name: Villa Maria STP. This existing facility is located in East Whiteland Township, **Chester County**.

Description of Existing Activity: The application is for a renewal of an NPDES permit for an existing discharge of treated Sewage.

The receiving stream(s), Unnamed Tributary of Ridley Creek, is located in State Water Plan watershed 3-G and is classified for High Quality Waters - Trout Stocking, aquatic life, water supply and recreation. The discharge is not expected to affect public water supplies.

The proposed effluent limits for Outfall 001 are based on a design flow of 0.04 MGD.

<i>Parameters</i>	<i>Mass (lb/day)</i>			<i>Concentration (mg/l)</i>		
	<i>Average Monthly</i>	<i>Daily Maximum</i>	<i>Instant. Minimum</i>	<i>Average Monthly</i>	<i>Daily Maximum</i>	<i>Instant. Maximum</i>
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Dissolved Oxygen	XXX	XXX	6.0	XXX	XXX	XXX
Total Residual Chlorine	XXX	XXX	XXX	0.14	XXX	0.32
CBOD5						
May 1 - Oct 31	XXX	XXX	XXX	20	XXX	40
Nov 1 - Apr 30	XXX	XXX	XXX	25	XXX	50
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200	XXX	1000
Ammonia-Nitrogen						
May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4.0
Nov 1 - Apr 30	XXX	XXX	XXX	6.0	XXX	12.0
Total Phosphorus	XXX	XXX	XXX	Report	XXX	Report

In addition, the permit contains the following major special conditions:

1. Operator Notification
2. Abandon STP When Municipal Sewers Available
3. Remedial Measures if Unsatisfactory Effluent
4. No Stormwater
5. Acquire Necessary Property Rights
6. Change of Ownership
7. Chlorine Minimization
8. Proper Sludge Disposal
9. 2/Month Monitoring
10. Laboratory Certification
11. Fecal Coliform Reporting

You may make an appointment to review the DEP files on this case by calling the File Review Coordinator at 484-250-5910.

The EPA Waiver is in effect.

**PA0053473**, Sewage, SIC 4952, **Thornbury Township STP**, 6 Thornbury Drive, Cheyney, PA 19319.

This proposed facility is located in Thornbury Township, **Delaware County**.

Description of Proposed Activity: Renewal of a NPDES permit to discharge 0.18 MGD of treated sewage into Chester Creek.

The receiving stream, Chester Creek, is in the State Water Plan watershed 3G and is classified for: TSF. The nearest downstream public water supply intake for the Aqua PA Ridley Creek Plant is located on Chester Creek and is 5.1 miles below the point of discharge.

The proposed effluent limits for Outfall 001 are based on a design flow of 0.18 MGD:

<i>Parameters</i>	<i>Average</i>		<i>Maximum</i>	<i>Instantaneous</i>
	<i>Monthly (mg/l)</i>	<i>Weekly (mg/l)</i>	<i>Daily (mg/l)</i>	<i>Maximum (mg/l)</i>
pH	6.0 STD (Min.)			9.0 STD
CBOD <sub>5</sub>	25	40		50
Total Suspended Solids	30	45		60
Ammonia as N (05/01 to 10/31)	4.0			8.0
Ammonia as N (11/01 to 04/30)	12.0			24.0
Phosphorus as P	2.0			4.0
Fecal Coliform	200 #/100 ml			1,000 #/100 ml
Dissolved Oxygen	5.0 Minimum			
Total Residual Chlorine	0.5			1.2

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Phone: 717-705-4707.*

**PA0081264**, Sewage, SIC Code 7999, **Mountainview Thoroughbred Racing Association**, 720 Bow Creek Rd, PO Box 32 Grantville, PA 17028. Facility Name: Penn National Horse Race Track and Hollywood Casino. This existing facility is located in East Hanover Township, **Dauphin County**.

Description of Existing Activity: The application is for a renewal of an NPDES permit for an existing discharge of treated Sewage.

The receiving stream(s), Unnamed Tributary to Swatara Creek, is located in State Water Plan watershed 7-D and is classified for Warm Water Fishes, aquatic life, water supply and recreation. The discharge is not expected to affect public water supplies.

The proposed effluent limits for Outfall 001 are based on a design flow of 0.23 MGD.

<i>Parameters</i>	<i>Mass (lb/day)</i>			<i>Concentration (mg/l)</i>		<i>Instant. Maximum</i>
	<i>Average Monthly</i>	<i>Daily Report</i>	<i>Minimum</i>	<i>Average Monthly</i>	<i>Daily Maximum</i>	
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX
Total Residual Chlorine	XXX	XXX	XXX	0.04	XXX	0.14
CBOD <sub>5</sub>	XXX	XXX	XXX	25	XXX	50
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	XXX
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	XXX
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	1.7	XXX	XXX
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	5.1	XXX	XXX
Total Phosphorus	XXX	XXX	XXX	1.0	XXX	XXX

The proposed monitoring requirements and, where appropriate, effluent limits for implementation of the Chesapeake Bay Tributary Strategy and the Total Maximum Daily Load for UNT Swatara Creek are as follows for Outfall 001.

<i>Parameters</i>	<i>Mass (lbs)</i>		<i>Minimum</i>	<i>Concentration (mg/l)</i>	
	<i>Monthly</i>	<i>Annual</i>		<i>Monthly Average</i>	<i>Maximum</i>
Ammonia---N	Report	Report	XXX	Report	XXX
Kjeldahl---N	Report	XXX	XXX	Report	XXX
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX
Total Nitrogen	Report	Report	XXX	Report	XXX
Total Phosphorus	Report	Report	XXX	Report	XXX
Net Total Nitrogen	Report	5,601	XXX	XXX	XXX
Net Total Phosphorus	Report	700	XXX	XXX	XXX

You may make an appointment to review the DEP files on this case by calling the File Review Coordinator at 717-705-4732.

The EPA Waiver is not in effect.



*Northcentral Regional Office: Regional Water Management Program Manager, 208 W Third Street Suite 101, Williamsport, PA 17701-6448, Telephone: 570.327.0532.*

**PA0037966**, Sewage, SIC Code 4952, **Moshannon Valley Joint Sewer Authority**, 829 North 9th Street, Philipsburg, PA 16866. Facility Name: Moshannon Valley Regional Water Pollution Control Facility. This existing facility is located in Rush Township, **Centre County**.

Description of Existing Activity: The application is for a renewal of an NPDES permit for an existing discharge of treated Sewage.

The receiving stream(s), Moshannon Creek, is located in State Water Plan watershed 8-D and is classified for Trout Stocking, aquatic life, water supply and recreation. The discharge is not expected to affect public water supplies.

The proposed effluent limits for Outfall 001 are based on a design flow of 2.037 MGD.

Parameters	Mass (lb/day)		Minimum	Concentration (mg/l)		Instant. Maximum
	Average Monthly	Weekly Average		Average Monthly	Weekly Average	
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Total Residual Chlorine	XXX	XXX	XXX	1.0	XXX	2.3
CBOD5	424	679	XXX	25	40	50
Total Suspended Solids	509	764	XXX	30	45	60
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	200/100 ml as a geometric mean, nor greater than 1,000/100 ml in more than 10% of the samples tested					
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	2,000/100 ml as a geometric mean					
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX

The proposed monitoring requirements and, where appropriate, effluent limits for implementation of the Chesapeake Bay Tributary Strategy are as follows for Outfall 001.

Parameters	Mass (lbs)		Minimum	Concentration (mg/l)	
	Monthly	Annual		Monthly Average	Maximum
Ammonia---N	Report	Report		Report	
Kjeldahl--N	Report			Report	
Nitrate-Nitrite as N	Report			Report	
Total Nitrogen	Report	Report		Report	
Total Phosphorus	Report	Report		Report	
Net Total Nitrogen (Interim)	Report	Report			
Net Total Nitrogen (Final)	Report	47,891			
Net Total Phosphorus (Interim)	Report	Report			
Net Total Phosphorus (Final)	Report	4,960			

\* This permit contains conditions which authorize the permittee to apply nutrient reduction credits to meet the Net Total Nitrogen and the Net Total Phosphorus effluent mass limits, under the Department's Trading of Nutrients and Sediment Reduction Credits Policy and Guidelines (Document #392-0900-001, December 30, 2006). The condition includes the requirement to report the application of these credits in Supplemental Discharge Monitoring Reports (DMRs) submitted to the Department.

\* The compliance date for Net Total Nitrogen and Net Total Phosphorus will begin on October 1, 2012. Since these reporting requirements are annual loads, the reporting on compliance with the annual limitations will be required to be reported on the Supplemental DMR - Annual Nutrient Summary by November 28, 2013. This facility is required to monitor and report for Net Total Nitrogen and Net Total Phosphorus from the effective date of the permit until September 30, 2012.

\*\* Total Annual Ammonia Load will be required to be reported on the Supplemental DMR - Annual Nutrient Summary by November 28, 2013.

You may make an appointment to review the DEP files on this case by calling the File Review Coordinator at 570-327-3693.

The EPA Waiver is not in effect.

*Northwest Regional Office: Regional Water Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481, Telephone: 814.332.6942.*

**PA0263745**, Sewage, SIC Code 4952, 8811, **T Henry Nolan**, 128 Dalmagro Road, Butler, PA 16002. Facility Name: Nolan SFTF. This proposed facility is located in Clearfield Township, **Butler County**.

Description of Proposed Activity: The application is for a new NPDES permit for a new discharge of treated Sewage.

The receiving stream, an unnamed tributary of Little Buffalo Run, is located in State Water Plan watershed 18-F and is classified for High Quality Water - Trout Stocking, aquatic life, water supply and recreation. The discharge is not expected to affect public water supplies.

The proposed effluent limits for Outfall 001 are based on a design flow of 0.0004 MGD.

Parameters	Mass (lb/day)			Concentration (mg/l)		
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
CBOD5	XXX	XXX	XXX	10	XXX	20
Total Suspended Solids	XXX	XXX	XXX	20	XXX	40
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200	XXX	XXX

You may make an appointment to review the DEP files on this case by calling the File Review Coordinator at 814-332-6340.

The EPA Waiver is in effect.

**PA0263761**, Sewage, NAIC Code 814000, **Allen & Stacy Ryan**, 6618 Pleasant Drive, Warren, PA 16365. Facility Name: Allen & Stacy Ryan SFTF. This proposed facility is located in Pleasant Township, **Warren County**.

Description of Proposed Activity: The application is for a new NPDES permit for a new discharge of treated Sewage.

The receiving stream(s), an unnamed tributary to Hedgehog Run, is located in State Water Plan watershed 16-F and is classified for High Quality Waters - Cold Water Fishes, aquatic life, water supply and recreation. The discharge is not expected to affect public water supplies.

The proposed effluent limits for Outfall 001 are based on a design flow of 0.0004 MGD.

Parameters	Mass (lb/day)			Concentration (mg/l)		
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
CBOD5	XXX	XXX	XXX	10	XXX	20
Total Suspended Solids	XXX	XXX	XXX	10	XXX	20
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200	XXX	XXX
				Geo Mean	XXX	XXX

You may make an appointment to review the DEP files on this case by calling the File Review Coordinator at 814-332-6340.

The EPA Waiver is in effect.

**PA0263516**, Industrial Waste. **Pennsylvania Brine Treatment, Inc. - Rouseville Facility**, 5148 US Route 322, Franklin, PA 16323.

This proposed facility is located in Cornplanter Township, **Venango County**.

Description of Proposed Activity: a new discharge of treated industrial waste.

The receiving water is Oil Creek. The receiving stream is in State Water Plan 16-E and is classified for the following uses: warm water fishes, aquatic life, water supply and recreation. The nearest downstream potable water supply, Aqua Pennsylvania at Emlenton, is located on the Allegheny River and is approximately 44 miles below the point of discharge.

The proposed effluent limits for Outfall 001 based on a design flow of 0.08 MGD.

Parameter	Loadings		Concentrations		
	Average Monthly (lb/day)	Maximum Daily (lb/day)	Average Monthly (mg/l)	Maximum Daily (mg/l)	Instantaneous Maximum (mg/l)
Flow (MGD)		0.08			
Oil and Grease			15		30
TSS			11.3	29.6	29.6
BOD5			53	163	163
Iron (Total)			3	6	7.5
Barium			10	20	25
Strontium			10	20	25
Manganese			2	4	5
Antimony			0.0312	0.111	0.111
Arsenic			0.0199	0.0993	0.0993
Cadmium			0.0102	0.0172	0.0255
Chromium			0.0522	0.167	0.167
Cobalt			0.0703	0.182	0.182
Copper			0.216	0.659	0.659

Parameter	Loadings		Concentrations		
	Average Monthly (lb/day)	Maximum Daily (lb/day)	Average Monthly (mg/l)	Maximum Daily (mg/l)	Instantaneous Maximum (mg/l)
Lead			0.160	0.350	0.4
Mercury			0.000246	0.000641	0.000641
Nickel			0.309	0.794	0.794
Selenium			0.0698	0.176	0.176
Silver			0.722	0.0318	0.0318
Tin			0.0367	0.0955	0.0955
Titanium			0.00612	0.0159	0.0159
Vanadium			0.0518	0.0628	0.130
Zinc			0.420	0.497	1.05
Acetone			7.97	30.2	30.2
Acetophenone			0.0562	0.114	0.141
Butylbenzyl phthalate			0.0887	0.188	0.222
Bis (2-ethylhexyl) phthalate			0.101	0.215	0.253
Carbazole			0.276	0.598	0.69
2-Butanone			1.85	4.81	4.81
o-Cresol			0.561	1.92	1.92
p-Cresol			0.205	0.698	0.698
n-Decane			0.437	0.948	1.09
Fluoranthene			0.0268	0.0537	0.067
n-Octadecane			0.302	0.589	0.755
Phenol			1.08	3.65	3.65
Pyridine			0.182	0.37	0.455
2,4,6-Trichlorophenol			0.106	0.155	0.265
TDS			500	1000	1250
Acidity				Less than	Alkalinity
Chloride			250	500	625
Benzene			XX	XX	
Bromide			XX	XX	
Aluminum			XX	XX	
Alkalinity			XX	XX	
Radium 226/228 (pCi/L)			XX	XX	
Gross Alpha (pCi/L)			XX	XX	
pH					6.0 to 9.0 standard units at all times

XX -- Monitor and report on monthly DMRs.

The EPA Waiver is not in effect.

### III. WQM Industrial Waste and Sewerage Applications under The Clean Streams Law (35 P. S. §§ 691.1—691.1001)

*Northeast Region: Water Management Program Manager, 2 Public Square, Wilkes-Barre, PA 18711-0790*

**WQM Permit No.5810402**, Sewerage, **HIS Camps, Inc.**, RR 1 Box 1601, Hallstead, PA 18822

This proposed facility is located in Liberty Twp., **Susquehanna County**, PA.

Description of Proposed Action/Activity: This project involves construction of a 0.00975 MGD Sewage Treatment Facility with a tested effluent discharge into a tributary to Snake Creek.

**WQM Permit No.5410407**, Sewerage, **Orwigsburg Borough Municipal Authority**, 209 North Warren Street, P. O. Box 128, Orwigsburg, PA 17961

This proposed facility is located in Orwigsburg Boro., **Schuylkill County**, PA.

Description of Proposed Action/Activity: This project involves construction of a pump station and main to connect the Pine Creek Retirement Community to the public sewer system with treatment of the sewage to an Orwigsburg Borough Municipal Authority's existing treatment plant.

*Northwest Region: Water Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481*

**WQM Permit No. 6210402**, Sewerage, **Allen & Stacy Ryan**, 6618 Pleasant Drive, Warren, PA 16365

This proposed facility is located in Pleasant Township, **Warren County**.

Description of Proposed Action/Activity: A Single Residence Small Flow Treatment Facility.

**IV. NPDES Applications for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)****V. Applications for NPDES Waiver Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)****VI. NPDES Individual Permit Applications for Discharges of Stormwater Associated with Construction Activities**

*Northeast Region: Watershed Management Program Manager, 2 Public Square, Wilkes Barre, PA 18711-0790*

*Lackawanna County Conservation District: 1300 Old Plank Road, Mayfield, PA 18433, 570-281-9495.*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI023510004	Richard E. McLaughlin Moosic Lakes, Inc. 829 Taylor Ave. Scranton, PA 18510	Lackawanna	Jefferson Twp.	West Branch of the Wallenpaupack Creek, HQ-CWF, MF; EV Wetlands

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI032810001	David Sciamanna Cumberland Valley Regional Development Corporation 100 Lincoln Way East, Suite A Chambersburg, PA 17201	Cumberland	Southampton Township	Middle Spring Creek/HQ-CWF
PAI032110007	Smith Land & Improvement Corporation Richard E. Jordan, II 2010 State Road Camp Hill, PA 17011	Cumberland	Hampden Township	Trindle Spring Run/HQ

*Northcentral Region: Watershed Management Program Manager, 208 West Third Street, Williamsport, PA 17701*

*Clinton County Conservation District: 45 Cooperation Lane, Mill Hall, PA 17751, (570) 726-3798*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI041810002	Paul Dotterer & Sons, Inc. 6795 Nittany Valley Drive Mill Hall, PA 17751	Clinton	Porter Township	Cedar Run HQ-CWF

**VII. List of NOIs for NPDES and/or Other General Permit Types**

PAG-12	Concentrated Animal Feeding Operations (CAFOs)
PAG-13	Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

**STATE CONSERVATION COMMISSION****NUTRIENT MANAGEMENT PLANS RELATED TO APPLICATIONS FOR NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFO)**

The State Conservation Commission has taken the following actions on previously received applications for nutrient management plans under the act of July 6, 2005 (Act 38 of 2005, 3 Pa.C.S. §§ 501—522) (hereinafter referred to as Act 38), for agricultural operations that have or anticipate submitting applications for new, amended or renewed NPDES permits, or Notices of Intent for coverage under a general permit, for CAFOs, under 25 Pa. Code Chapter 92. This notice is provided in accordance with 25 Pa. Code Chapter 92 and 40 CFR Part 122, §§ implementing The Clean Streams Law (35 P. S. 691.1—691.1001) and the Federal Clean Water Act.

Persons aggrieved by any action may appeal under section 517 of Act 38, section 4 of the Environmental Hearing Board Act (35 P. S. § 7514) and 2 Pa.C.S. §§ 501—508 and 701-704 (relating to Administrative Agency Law) to the Environmental Hearing Board, Second Floor, Rachael Carson State Office Building, 400 Market Street, P. O. Box 8457, Harrisburg, PA 17105-8457, (717) 787-3483. TDD users should contact the Environmental Hearing Board (Board) through the Pennsylvania AT&T Relay Service at (800) 654-5984. Appeals must be filed with the Board within 30 days of publication of this notice in the *Pennsylvania Bulletin*. Copies of the appeal form and the Board's rules of practice and

procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in Braille or on audiotape from the Secretary of the Board at (717) 787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decision law.

For individuals who wish to challenge an action, appeals must reach the Board within 30 days. A lawyer is not needed to file an appeal with the Board.

Important legal rights are at stake, however, so individuals should show this notice to a lawyer at once. Persons who cannot afford a lawyer may qualify for pro bono representation. Call the Secretary of the Board at (717) 787-3483 for more information.

**NUTRIENT MANAGEMENT PLAN—PUBLIC NOTICE SPREADSHEET**

<i>Agricultural Operation Name and Address</i>	<i>County</i>	<i>Total Acres</i>	<i>Animal Equivalent Units</i>	<i>Animal Type</i>	<i>Special Protection Waters (HQ or EV or NA)</i>	<i>Renewal/New</i>
David Zimmerman 2151 Mt. Zion Rd Lebanon, PA 17046	Lebanon	271	400.81	Beef & Poultry	NA	Renewal
Van Blarcom Sow Farm RR 2 Box 54AA Columbia Cross Roads, PA 16914	Bradford	16 ac	2715.95	Swine	N/A	Renewal
Schrack Farm Partnership 860 W Valley Rd Loganton, PA 17747	Clinton	1880	1670	Dairy	Fishing Creek - HQ	Application

**PUBLIC WATER SUPPLY (PWS) PERMIT APPLICATIONS**

Pursuant to the Pennsylvania Safe Drinking Water Act, the following parties have applied for a public water supply permit to construct or substantially modify a public water system.

Persons wishing to comment on the permit application are invited to submit a statement to the office listed above the application within 30 days of this public notice. Comments received within this 30-day comment period will be considered in the formulation of the final determinations regarding this application. Comment responses should include the name, address, and telephone number of the writer and a concise statement to inform the Department of the exact basis of a comment and the relevant facts upon which it is based. A public hearing may be held after consideration of comments received during the 30-day public comment period.

Following the comment period, the Department will make a final determination regarding the proposed permit. Notice of this final determination will be published in the *Pennsylvania Bulletin* at which time this determination may be appealed to the Environmental Hearing Board.

The permit application and any related documents are on file at the office listed above the application and available for public review. Arrangements for inspection and copying information should be made with the office listed above the application.

Persons with a disability that require an auxiliary aid service or other accommodations to participate during the 30-day public comment period should contact the office listed above the application. TDD users may contact the Department through the Pennsylvania AT&T Relay Service at 1-800-654-5984.

**SAFE DRINKING WATER**

**Applications Received under the Pennsylvania Safe Drinking Water Act (35 P.S. §§ 721.1—721.17)**

*Southeast Region: Water Supply Management Program Manager, 2 East Main Street, Norristown, PA 19401*

**Application No. 4610519 Public Water Supply**

Applicant	<b>Aqua Pennsylvania, Inc.</b>
Township	Perkiomen
County	<b>Montgomery</b>
Responsible Official	Mr. Marc Lucca 762 West Lancaster Avenue Bryn Mawr, PA 19010
Type of Facility	PWS
Consulting Engineer	C.E.T. Engineering Services 1240 North Mountain Road Harrisburg, PA 17112
Application Received Date	July 20, 2010
Description of Action	Replacement of well pump at Rahns Well No.

*Northcentral Region: Water Supply Management Program Manager, 208 West Third Street, Williamsport, PA 17701*

**Application No. 4910501 - Construction Public Water Supply.**

Applicant	<b>Line Mountain School District</b>
[Township or Borough]	Lower Mahanoy & Jordan Townships
County	<b>Northumberland</b>

Responsible Official	David M. Campbell, Superintendent Line Mountain School District 185 Line Mountain Road Herndon, PA 17830
Type of Facility	Public Water Supply—Construction
Consulting Engineer	N. Peter Fleszar, P.E. Glace Associates 3705 Trindle Road Camp Hill, PA 17011
Application Received	September 29, 2010
Description of Action	Connection of new Well #3 to High School by installation of pump & connecting raw water line, provision of filtration for borderline arsenic & antimony, and additional contact time to meet current GWR.

*Northwest Region: Water Supply Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481.*

**Application No.2010503**, Public Water Supply

Applicant	<b>Sugarcreek MHP</b>
Township or Borough	WayneTownship/Crawford County
Responsible Official	Toby A. Kopta
Consulting Engineer	Chapin S. Storrar, PE Deiss & Halmi Engineering Inc. 105 Meadville Street Edinboro PA 16412
Application Received Date	09/29/2010
Description of Action	Modify and permit existing water system serving 24-lot MHP w/total population <100.

**Application No.6210502**, Public Water Supply

Applicant	<b>Aqua Pennsylvania Inc</b>
Township or Borough	Clarendon Borough/Warren County
Responsible Official	Marc A. Lucca, PE
Consulting Engineer	William A. LaDieu, PE CET Engineering Services 1240 N Mountain Road Harrisburg PA 17112
Application Received Date	09/30/2010
Description of Action	Construct chlorine contact pipe at existing facility to provide 4-log and GW requirements.

**REGISTRATION FOR RESIDUAL WASTE GENERAL PERMITS**

**Registration for General Permit issued under the Solid Waste Management Act (35 P.S. §§ 6018.101—6018.1003); and Residual Waste Regulations for a General Permit To Operate Residual Waste Processing Facilities (25 Pa. Code § 287.611 relating to authorization for general permit).**

*South Central Regional Office: Waste Management Program, 909 Elmerton Avenue, Harrisburg, PA 17110-8200.*

**General Permit No. WMGR114-SC001. CRS Reprocessing, LLC**, 569 Industrial Road, Lewisberry, PA 17339. The Department of Environmental Protection has issued a registration under General Permit WMGR114 to CRS Reprocessing, LLC, for the processing of spent polyethylene glycol slurry containing silicon and silicon carbide or diamond (waste) for beneficial use in fresh slurry and in production of silicon ingots. This Registration is for their location at 569 Industrial Road, Lewisberry, PA 17339.

Persons interested in reviewing the general permit may contact John Oren, Facilities Manager, Waste Management Program, 909 Elmerton Avenue, Harrisburg, PA 17110, (717) 705-4706. TDD users may contact the Department through the Pennsylvania Relay service, (800) 654-5984.

**DETERMINATION FOR APPLICABILITY FOR RESIDUAL WASTE GENERAL PERMITS**

**Application(s) received for Determination of Applicability under the Solid Waste Management Act (35 P.S. §§ 6018.101—6018.1003); the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§ 4000.101—4000.1904); and Residual Waste Regulations for a General Permit to Operate Residual Waste Processing Facilities and/or the Beneficial Use of Residual Waste Other Than Coal Ash.**

*Southwest Region: Regional Solid Waste Manager, 400 Waterfront Drive, Pittsburgh, PA 15222-4745, telephone 412-442-4000.*

**General Permit No. WMGR121SW002. Somerset Regional Water Resources, LLC**, 888 Stoystown Road, Somerset, PA 15501. Somerset Regional Water Resources Industrial Wastewater Treatment Facility, SR 281, Somerset, PA 15501. Registration for a general permit for processing and beneficial use of gas well wastewater from hydraulic fracturing and extraction of natural gas from the Marcellus shale geologic formation was received in the Regional Office on October 1, 2010.

**AIR QUALITY**

**NOTICE OF PLAN APPROVAL AND OPERATING PERMIT APPLICATIONS**

**NEW SOURCES AND MODIFICATIONS**

The Pennsylvania Department of Environmental Protection (DEP) has developed an "integrated" plan approval, State Operating Permit and Title V Operating Permit program. This integrated approach is designed to make the permitting process more efficient for DEP, the regulated community and the public. This approach allows the owner or operator of a facility to complete and submit all the permitting documents relevant to its application one time, affords an opportunity for public input and provides for sequential issuance of the necessary permits. Notice is hereby given that DEP has received applications for plan approvals and/or operating permits from the following facilities.

Copies of these applications, subsequently prepared draft permits, review summaries and other support materials are available for review in the Regional Office identified in this notice. Persons interested in reviewing the application files should contact the appropriate Regional Office to schedule an appointment.

Persons wishing to receive a copy of the proposed Plan Approval or Operating Permit must indicate their interest

to the DEP Regional Office within 30 days of the date of this notice, and must file protests or comments on a Proposed Plan Approval or Operating Permit within 30 days of the DEP providing a copy of the proposed document to that person or within 30 days of its publication in the *Pennsylvania Bulletin*, whichever comes first. Interested persons may also request that a hearing be held concerning the proposed plan approval and operating permit. Any comments or protests filed with DEP Regional Offices must include a concise statement of the objections to the issuance of the plan approval or operating permit and relevant facts, which serve as the basis for the objections. If DEP schedules a hearing, a notice will be published in the *Pennsylvania Bulletin* at least 30 days prior the date of the hearing.

Persons with a disability who wish to comment and require an auxiliary aid, service or other accommodation to participate should contact the Regional Office identified below. TDD users may contact the Department through the Pennsylvania AT&T Relay Service at (800) 654-5984.

Final plan approvals and operating permits will contain terms and conditions to ensure that the source is constructed and operating in compliance with applicable requirements in 25 Pa. Code Chapters 121 through 143, the Federal Clean Air Act and regulations adopted under the Act.

#### PLAN APPROVALS

**Plan Approval Applications Received under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter B that may have special public interest. These applications are in review and no decision on disposition has been reached.**

*Southwest Region: Air Quality Program, 400 Waterfront Drive, Pittsburgh, PA 15222-4745*

*Contact: M. Gorog & B. Hatch, Environmental Engineer Managers—Telephone: 412-442-4163/5226*

**32-00357B: Rosebud Mining Co.** (301 Market Street, Kittanning, PA 16201-9642) for installation of a wet coal processing and loading facility at their Crooked Creek Plant in Washington Township, **Indiana County**.

**63-00936D: Markwest Liberty Midstream and Resources LLC** (1515 Arapahoe Street Tower 2, Suite 700, Denver, CO 80202-2126) for construction and operation of a fractionation tower at Houston Gas Plant in Chartiers Township, **Washington County**.

*Northwest Region: Air Quality Program, 230 Chestnut Street, Meadville, PA 16335-3481*

*Contact: Mark Gorog, New Source Review Chief—Telephone: 814-332-6940*

**10-309E: Harsco Metals** (8050 Rowan Road, P. O. Box 5003, Cranberry Township, PA 16066) for installation of a slag pot dumping station equipped with water sprays and additional control activities. Harsco Metals will increase slag handling capacity to handle the increased production projected by AK Steel. This action is under Plan Approval 10-309E for the facility adjacent to the AK Steel plant along Route 8, in Butler Township, **Butler County**.

**24-131N: SGL Carbon LLC** (900 Thersia Street, St Marys, PA 15857) for installation of a new reactor. This action is under Plan Approval 24-131N for the facility in the City of St Marys, **Elk County**.

**25-025Q: General Electric Transportation—Erie Plant** (2901 East Lake Road, Bldg 9-201, Erie, PA 16531) for modification of plan approval 25-025O with regards to the test cells in buildings 4E and 63 in Lawrence Park Township, **Erie County**. This is a Title V facility.

**Intent to Issue Plan Approvals and Intent to Issue or Amend Operating Permits under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter B. These actions may include the administrative amendments of an associated operating permit.**

*Southeast Region: Air Quality Program, 2 East Main Street, Norristown, PA 19401*

*Contact: Sachin Shankar, New Source Review Chief—Telephone: 484-250-5920*

**09-0188C: Gamesa Wind PA, LLC** (400 Gamesa Drive, Fairless Hills, PA 19030) for modification of their nacelle assembly operation at USX Industrial Complex in Falls Township, **Bucks County**. This facility is a minor facility. The facility wide VOC emissions will stay below 25 tons per year. The combined HAP emissions will be below 25 tons per year. Each HAP emissions will stay below 10 tons per year. The Plan Approval and Operating Permit will contain recordkeeping requirements and operating restrictions designed to keep the facility operating within all applicable air quality requirements.

*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Q. Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**08-00031A: Appalachia Midstream Services, LLC** (6100 N. Western Avenue, P. O. Box 54382, Oklahoma City, OK 73154-1382) has submitted an application (08-00031A) to the Pennsylvania Department of Environmental Protection for plan approval to construct eight natural gas-fired compressor engines each equipped with oxidation catalysts at the Granville Compressor Station located in Granville Township, **Bradford County**.

The Department's review of the information submitted by Appalachia Midstream Services, LLC indicates that the air contamination sources to be constructed will comply with all regulatory requirements pertaining to air contamination sources and the emission of air contaminants including the best available technology requirement (BAT) of 25 Pa. Code §§ 127.1 and 127.12. Based on this finding, the Department proposes to issue a plan approval for the proposed construction.

The emissions from the control devices associated with the compressor engines will not exceed on a 12-consecutive month period (CMP) basis; 68.56 tons of nitrogen oxides, 26.40 tons of carbon monoxide, 25.92 tons of volatile organic compounds, 1.20 tons of sulfur oxides, 4.08 tons of total particulate matter, and 8.24 tons of formaldehyde (HAPs). To demonstrate compliance with the emissions limitations, Appalachia Midstream Services, LLC is required to conduct EPA reference method testing on the exhausts of the control devices associated with the compressor engines for nitrogen oxides, carbon monoxide, sulfur oxides, volatile organic compounds, formaldehyde and particulate matter emission limitations as stated below:

nitrogen oxides—0.50 g/BHP-hr  
 carbon monoxide—0.19 g/BHP-hr  
 volatile organic compounds—0.18 g/BHP-hr  
 sulfur oxides—0.008 g/BHP-hr  
 formaldehyde—0.06 g/BHP-hr  
 particulate matter—0.03 g/BHP-hr

In addition to the emission limitations above, the following is a summary of the types of conditions the Department intends to place in the Plan Approval to ensure compliance applicable Federal and State regulatory requirements including the best available technology requirements of 25 Pa. Code Sections 127.1 and 127.12.

Work practice requirements to construct and operate the compressor engines and control devices in accordance with the manufacturer's recommendations and good air pollution control practices.

Recordkeeping and Reporting conditions to verify compliance with the emission limitations and all applicable requirements.

A copy of the plan approval application and the Department's review is available for public review between 8 a.m. and 4 p.m. at the Department's Northcentral Regional Office, 208 West Third Street, Suite 101, Williamsport, PA 17701. Appointments for scheduling a review may be made by calling the Department at 570-327-3693. Written comments or requests for a public hearing shall be directed to Muhammad Q. Zaman, Environmental Program Manager, Department of Environmental Protection, Air Quality Program, Northcentral Regional Office, 208 West Third Street, Suite 101, Williamsport, PA 17701, 570-327-3648 within 30 days of the publication date for this notice.

*Northwest Region: Air Quality Program, 230 Chestnut Street, Meadville, PA 16335-3481*

*Contact: Mark Gorog, New Source Review Chief—  
 Telephone: 814-332-6940*

**24-167A: E Carbon America, LLC** (806 Theresia Street, St Marys, PA 15857) for modification of the method of operation for the carbon baking kilns and the construction of the special impregnation process in St Marys City, **Elk County**. This is a Title V facility. The public notice is required for sources required to obtain a Plan Approval in accordance with 25 Pa. Code § 127.44. This plan approval will, in accordance with 25 Pa. Code § 127.450, be incorporated into the State Only operating permit through an administrative amendment at a later date. The source shall comply with the following conditions, which will satisfy the requirements of 25 Pa. Code § 127.12b (pertaining to plan approval terms and conditions) and will demonstrate Best Available Technology for the source:

- Baking Kilns (Source 101):
- Subject to 25 Pa. Code 123.13 and 123.21.
- VOC emissions from this source shall not exceed 62.8 lbs/ton of product averaged over a 12-month rolling period and 70.4 lbs/ton of product at any time.
- The VOC emissions shall not exceed 53.5 tpy based on a consecutive 12-month period.
- Stack test prior to expiration of operating permit for VOC on at least one recirculating muffle furnace and at least one box furnace. Subsequent testing shall be performed on alternate furnaces.

- All recordkeeping shall commence upon startup of the source.
- The company shall maintain a log of all preventative maintenance inspections of the source and control device(s). The inspection logs, at a minimum, shall contain the dates of the inspections, the name of the person performing the inspection, any mechanical repairs and/or adjustments, any potential problems or defects that were encountered, and the steps taken to correct them.
- The company shall maintain a log of the following, at a minimum, from the operational inspections:
  - Flame Grid temperature
  - The times that the flame grids are turned on and off
  - Temperature of the kiln at time when flame grids are turned on and off
  - The permittee shall maintain records of the quantity of parts (in pounds) charged into the kilns and the percent by weight of potential VOC chemicals contained in the parts. This information will be used to calculate the VOC emissions from this source on a quarterly basis. The VOC emissions shall be calculated based on the following equation:
 
$$\text{Lbs of VOC consumed} / \text{Tons of product produced} = \text{Lbs VOC per ton product}$$
  - The permittee shall perform a daily operational inspection of the source and control device.
  - The flame grid for each kiln shall be inspected for proper operation prior to each load being fired in the kiln.
  - A thermocouple or equivalent shall be permanently installed and maintained at a conveniently readable location to indicate the flame grid temperature.
  - All gauges employed by the permittee to monitor the required control device operating parameters shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent (+/- 2%) of full scale reading.
  - Control device operating parameters, including flame grid temperature, shall be operated in a range defined by the manufacturer or in a range developed during compliant stack testing. The operating range shall be determined within 90 days after startup of the control device and shall be indicated to the Department in writing prior to administratively amending into the facility operating permit. The operating range shall be made part of the facility operating permit.
  - The permittee shall turn on the control device prior to the furnace bottom temperature reaching 650F and shall operate the control device whenever the furnace bottom temperature is greater than 650F.
  - The permittee shall maintain and operate the source and control device(s) in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.
  - Special Impregnation Process (Source 102):
    - Subject to 25 Pa. Code 123.13.
    - VOC emissions from this source shall not exceed 25.0 tons in any consecutive twelve (12) month period.
- All recordkeeping shall commence upon startup of the source.
- The company shall maintain a log of all preventative maintenance inspections of the source. The inspection logs, at a minimum, shall contain the dates of the inspections, the name of the person performing the inspection, any mechanical repairs and/or adjustments, any potential problems or defects that were encountered, and the steps taken to correct them.



- The company shall maintain a log of the following, at a minimum, from the operational inspections:
- Performance of the inspection
- The permittee shall keep monthly records to demonstrate compliance with the VOC emission limit for this source. This record shall indicate the type and quantity of solvent used by this source for each month. A running total of solvent usage shall also be maintained. This running total shall be calculated by adding the current month's solvent usage to the usage for the previous eleven (11) months. These records shall be maintained for a period of five (5) years and shall be made available to the Department on request.
- The permittee shall perform a daily operational inspection of the source.
- The permittee shall maintain and operate the source in accordance with the manufacturer's specifications and in accordance with good air pollution control practices.

**62-017S: United Refining Co.** (15 Bradley Street, Warren, PA 16365) for modification of several existing sources to produce reduced benzene gasoline (meet EPA's MSAT II fuel requirements) in Warren City, **Warren County**. This is a Title V facility. The public notice is required for sources required to obtain a Plan Approval in accordance with 25 Pa. Code § 127.44. This plan approval will, in accordance with 25 Pa. Code § 127.450, be incorporated into the State Only operating permit through an administrative amendment at a later date. The source shall comply with the following conditions, which will satisfy the requirements of 25 Pa. Code § 127.12b (pertaining to plan approval terms and conditions) and will demonstrate Best Available Technology for the source:

- All conditions from Title V permit issued on August 20, 2007, and revised on March 10, 2010, remain in effect.
- Source 053 (Sat Gas Plant) will control the DeEthanizer tower operation more precisely to handle an increase in light ends. The Sat Gas KVG compressor will increase its operating speed to handle more light ends. This project will also add a bypass line to bypass the DeEthanizer to minimize the potential for flooding of the trays in the tower. The increase in light ends will result in an increase in firing rate of the Sat gas Reboiler heater and the additional controls will add components which will increase the potential fugitive emissions.
- Source 056 (Prefractionator Reboiler 2) will add a precursor stripper tower to separate a concentrated stream of benzene and its precursors, will add several heat exchangers to cool the stream down, will add a steam reboiler to prevent any increase in firing rate associated with steam production, and will add or replace some control valves and connections. These controls and connectors will increase the potential fugitive emissions.
- Source 1000 (Liquid Hydrogen Unit) will be added to store liquid hydrogen to be used at DHT2. The need for hydrogen stems from a reduction of hydrogen production from the Reformer unit as a result of the required operation to meet the MSAT2 requirements and from an increase in consumption at the Isom unit. The Liquid Hydrogen unit will have no emissions.
- Source 1001 (Lite Stabilizer) which currently receives light ends from the Prefractionator 2 will realize an increase due to shifting of benzene precursors from the bottom of the Prefractionator 2. This project will add Delta V controls to operate the unit more precisely to minimize the amount of butane that goes to the Isom unit. These controls (CV, pressure indicators, and connectors) will increase the potential fugitive emissions.
- Source 1002 (Isomerization Unit) which receives its feed from the Lite Stabilizer unit will see an increase in

throughput due to the benzene precursors. The new stripper will send materials directly to the Isom unit bypassing the Lite Stabilizer. The Isom will minimize benzene from forming; however, the Isom increases the vapor pressure so during the summer months some of the Isomerate will be stored in Tank 248. The Isom is a fugitive emission source and there will not be any downstream emission increases as a result of the Isom feed increase. This project will add some components which will increase the potential fugitive emissions.

- Source 107 (Sat Gas KVG Compressor) will increase its operating speed to handle more light ends.
- Source 109 (NSPS Fug Emissions - Valves/Pumps/etc) and 109A (State Fug Emissions - Valves/Pumps/etc) will pick up the additional components added as part of this project.
- Source 247 (Tank 247) which is permitted under the General Permit will store ethanol required for the RFS-1 standard of 10% ethanol to be added to the finished gasoline products.
- Source 248 (Tank 248) which is permitted under the General Permit will be used to store Isomerate due to the summer RVP issue.

### OPERATING PERMITS

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#### Intent to Issue Title V Operating Permits under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter G.

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*Southcentral Region: Air Quality Program, 909 Elmerton Avenue, Harrisburg, PA 17110*

*Contact: Thomas J. Hanlon, Chief, East Permitting Section—Telephone: 717-705-4862 or Daniel Husted, Chief, West Permitting Section—Telephone: 717-949-7935*

**05-05022: Bedford Reinforced Plastics, Inc.** (264 Reynoldsdale Road, Bedford PA 15522) for pultrusion operations at their facility in East St. Clair Township, **Bedford County**. The facility is subject to 40 CFR Part 63, Subpart WWWW, National Emission Standards for Hazardous Air Pollutants; Reinforced Plastic Composites Production. The primary pollutants are Volatile Organic Compounds (VOCs) and Hazardous Air Pollutant (HAPs). The operating permit will include monitoring, record keeping, work practices and reporting requirements designed to keep the source operating within all applicable air quality requirements. This is a renewal of a Title V Operating Permit issued in February 2004.

*Northwest Region: Air Quality Program, 230 Chestnut Street, Meadville, PA 16335-3481*

*Contact: Matthew Williams, Facilities Permitting Chief—Telephone: 814-332-6940*

**24-00123: Veolia ES Greentree Landfill LLC.** (635 Toby Road, Kersey, PA 15846-1033) to re-issue the Title V Operating Permit for their facility in Fox Township, **Elk County**. Veolia is an active Municipal waste landfill company. The facility's major emission sources include Municipal waste landfill, wastewater treatment plant (250,000 GPD), road/operation dust fugitives, rock crushing and parts washer. Veolia is a major facility due to CO emissions more than 100 tons per year. The flares are subject to CAM plan. Municipal waste landfill source is subject to § 40 CFR Part 60, Subpart WWW and § 40 CFR Part 63, Subpart AAAA.

**Intent to Issue Operating Permits under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter F.**

*Northeast Region: Air Quality Program, 2 Public Square, Wilkes Barre, PA 18711-0790*

*Contact: Ray Kempa, New Source Review Chief—Telephone: 570-826-2507*

**54-00049: US DOJ—Federal Corrections Institute** (P. O. Box 700, Minersville, PA 17954-0700) for operation of three (3) boilers at the facility in Butler Township, **Schuylkill County**. This is a renewal of a State-Only Operating permit.

**48-00095: ECOPAX, LLC** (3600 Glover Road, Easton, PA 18040) for operation of a plastic foam products manufacturing facility consisting of six (6) scrap material grinders located in Forks Township, **Northampton County**. This is an initial State-Only Operating permit.

*Southcentral Region: Air Quality Program, 909 Elmerton Avenue, Harrisburg, PA 17110*

*Contact: Thomas J. Hanlon, Chief, East Permitting Section—Telephone: 717-705-4862 or Daniel Husted, Chief, West Permitting Section—Telephone: 717-949-7935*

**36-05084: Ephrata Community Hospital** (169 Martin Avenue, Ephrata, PA 17522) for operation of two boilers and two emergency generators at their facility in Ephrata Borough, **Lancaster County**. This is a renewal of a synthetic minor operating permit issued in 2005.

**06-03011: Giles & Yeckley Funeral Home and Crematorium, Inc.** (21 Chestnut Street, Mohnton, PA 19540) for operation of their two (2) cremation units at their facility in Mohnton Borough, **Berks County**. This is a renewal of a natural minor operating permit issued in 2005 and revised in 2007.

*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Q. Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**08-00036: Talisman Energy USA, Inc.** (50 Pennwood Place, Warrendale, PA 15086) for the Putnam Compressor Site in Armenia Township, **Bradford County**. The facility's main sources include 12 compressor-engines, and two (2) glycol dehydrators. The main sources are used to process and gather the natural gas from the nearby drilling operations. The facility has the potential to particulate matter (filterable and condensable), and sulfur oxides (SOx) emissions below the major thresholds. The facility has taken synthetic minor restrictions to limit the nitrogen oxides, carbon monoxide, volatile organic compounds, and hazardous air pollutants emissions below the major thresholds. The proposed operating permit contains limitations and requirements including monitoring, recordkeeping, and reporting conditions to ensure compliance with applicable Federal and State air regulations.

**59-00018: Hanson Aggregates (PA) Inc.** (7660 Imperial Way, Suite 103, Allentown, PA 18195-1040) for their Blossburg quarry in Liberty Township, **Tioga County**. The facility's main sources include two crushers and associated various material sizing and conveying equipment and three diesel engines. The facility has the potential to emit CO, VOCs, and HAPs below the major emission thresholds. The facility has taken a synthetic minor restriction to limit the NOx and particulate matter (PM<sub>10</sub>) emissions below the major thresholds. The pro-

posed operating permit contains applicable regulatory requirements including monitoring, recordkeeping, and reporting conditions.

*Southwest Region: Air Quality Program, 400 Waterfront Drive, Pittsburgh, PA 15222-4745*

*Contact: Barbara Hatch, Facilities Permitting Chief—Telephone: 412-442-4174*

**30-00148: Dana Mining Company of Pennsylvania, LLC-4-West Deep Mine** (625 Bald Hill Road, Dilliner, PA 15327) for operation of a coal preparation plant in Dunkard Township, **Greene County**. The operation of the facility's air contamination source consisting of 2-1,200 ton per hour screens, 6 transfer points, stockpile/wind erosion, and truck traffic. The facility is limited to a production rate of 1,980,000 tons per year, coal moisture content of 5 percent or greater at all times, and maximum opacity from any processing equipment of 20 percent. The permit also includes operation requirements, monitoring requirements, and recordkeeping requirements.

*Department of Public Health, Air Management Services: 321 University Avenue, Philadelphia, PA 19104*

*Contact: Edward Brawn, Chief—Telephone: 215-685-9476*

**S10-001: Saint Joseph's University** (5600 City Avenue, Philadelphia, PA 19131) for operation of a university in the City of Philadelphia, **Philadelphia County**. The facility's major air emission source are 2 Boilers rated at 13.4 MMBTU/hr and one Boiler rated at 20.7 MMBTU/hr, 6 emergency generators, 26 boilers less than 5 MMBTU/hr.

The operating permit will be issued under the Pennsylvania Code Title 25, Philadelphia Code Title 3 and Air Management Regulation XIII. Permit copies and other supporting information are available for public inspection at AMS, 321 University Avenue, Philadelphia, PA 19104. For further information, contact Edward Wiener at (215) 685-9426.

Persons wishing to file protest or comments on the above operating permit must submit the protest or comments within 30 days from the date of this notice. Any protests or comments filed with AMS must include a concise statement of the objections to the permit issuance and the relevant facts upon which the objections are based. Based upon the information received during the public comment period, AMS may modify the operating permit or schedule a public hearing. The hearing notice will be published in the *Pennsylvania Bulletin* and a local newspaper at least thirty days before the hearing.

## COAL AND NONCOAL MINING ACTIVITY APPLICATIONS

Applications under the Surface Mining Conservation and Reclamation Act (52 P. S. §§ 1396.1—1396.31); the Noncoal Surface Mining Conservation and Reclamation Act (52 P. S. §§ 3301—3326); the Clean Streams Law (35 P. S. §§ 691.1—691.1001); the Coal Refuse Disposal Act (52 P. S. §§ 30.51—30.66); the Bituminous Mine Subsidence and Land Conservation Act (52 P. S. §§ 1406.1—1406.21). Mining activity permits issued in response to such applications will also address the applicable permitting requirements of the following statutes: the Air Pollution Control Act (35 P. S. §§ 4001—4015); the Dam Safety and Encroachments Act (32 P. S. §§ 693.1—693.27); and the Solid Waste Management Act (35 P. S. §§ 6018.101—6018.1003).

The following permit applications to conduct mining activities have been received by the Department of Environmental Protection (Department). A copy of the application is available for inspection at the District Mining Office indicated above each application. Notices of requests for 401 Water Quality Certifications are included in individual application notices, as noted.

Written comments or objections, or requests for an informal conference, or a public hearing, as applicable, on a mining permit application may be submitted by any person or any officer or head of any federal, state or local government agency or authority to the Department at the address of the District Mining Office indicated above each application within 30 days of this publication, or within 30 days after the last publication of the applicant's newspaper advertisement, as provided by 25 Pa. Code §§ 77.121—123 and 86.31—34 (relating to public notices of filing of permit applications, opportunity for comment, and informal conferences).

Written comments or objections related to a mining permit application should contain the name, address and telephone number of persons submitting comments or objections; application number; and a statement of sufficient detail to inform the Department on the basis of comment or objection and relevant facts upon which it is based.

Requests for an informal conference, or a public hearing, as applicable, on a mining permit application, as provided by 25 Pa. Code § 77.123 (relating to public hearing-informal conferences) or § 86.34 (relating to informal conferences), must contain the name, address and telephone number of the requestor; the application number; a brief summary of the issues to be raised by the requestor at the conference; and a statement whether the requestor desires to have the conference conducted in the locality of the proposed mining activities.

Where a National Pollutant Discharge Elimination System (NPDES) number is listed, the mining activity permit application was accompanied by an application for an individual NPDES permit. The Department has made a tentative determination to issue the NPDES permit in conjunction with the mining activity permit, but the issuance of the NPDES permit is contingent upon the approval of the associated mining activity permit.

For coal mining activities, NPDES permits, when issued, will contain effluent limits that do not exceed the technology-based effluent limitations. The proposed limits are listed in Table 1.

For noncoal mining activities, the proposed limits are found in Table 2 below. Discharges from noncoal mines located in some geologic settings (for example, in the coal

fields) may require additional effluent limits. If additional effluent limits are needed for an NPDES permit associated with a noncoal mining permit, then the permit description below specifies the parameters. The limits will be in the ranges specified in Table 1.

More restrictive effluent limitations, restrictions on discharge volume, or restrictions on the extent of mining that may occur, will be incorporated into an NPDES permit when necessary for compliance with water quality standards and antidegradation requirements (in accordance with 25 Pa. Code Chapters 91 through 96).

The procedures for determining the final effluent limits, using a mass-balance equation or model, are found in Technical Guidance Document 362-0600-001, NPDES Program Implementation-Memorandum of Understanding (MOU) Concerning Water Quality Management, NPDES Program Implementation, and Related Matters. Other specific factors to be considered include public comments and Total Maximum Daily Load(s) (TMDLs).

Persons wishing to comment on an NPDES permit application should submit a statement to the Department at the address of the District Mining Office indicated above each application within 30 days of this public notice. Comments received within the comment period will be considered in the final determinations regarding the NPDES permit applications. Comments must include the name, address and telephone number of the writer and a concise statement to inform the Department of the exact basis of a comment and the relevant facts upon which it is based.

The Department will also accept requests or petitions for a public hearing on NPDES permit applications, as provided in 25 Pa. Code § 92.61. The request or petition for a public hearing shall be filed within 30 days of this public notice and shall contain the name, address, telephone number and the interest of the party filing the request, and shall state the reasons why a hearing is warranted. A public hearing may be held if the Department considers the public interest significant. If a hearing is scheduled, a notice of the hearing on the NPDES permit application will be published in the *Pennsylvania Bulletin* and a newspaper of general circulation within the relevant geographical area. In the case where a public hearing is held, the Department will consider comments from the public hearing in the final determination on the NPDES permit application.

#### *Coal Applications Received*

*Effluent Limits*--The following range of effluent limits will apply to NPDES permits issued in conjunction with the associated coal mining activity permit and, in some cases, noncoal mining permits:

*Table 1*

<i>Parameter</i>	<i>30-Day Average</i>	<i>Daily Maximum</i>	<i>Instantaneous Maximum</i>
Iron (total)	1.5 to 3.0 mg/l	3.0 to 6.0 mg/l	3.5 to 7.0 mg/l
Manganese (total)	1.0 to 2.0 mg/l	2.0 to 4.0 mg/l	2.5 to 5.0 mg/l
Suspended solids	10 to 35 mg/l	20 to 70 mg/l	25 to 90 mg/l
Aluminum (Total)	0.75 to 2.0 mg/l	1.5 to 4.0 mg/l	2.0 to 5.0 mg/l
pH <sup>1</sup>		greater than 6.0; less than 9.0	
Alkalinity greater than acidity <sup>1</sup>			

<sup>1</sup> The parameter is applicable at all times.

A settleable solids instantaneous maximum limit of 0.5 mg/l applied to: surface runoff (resulting from a precipitation event of less than or equal to a 10-year 24-hour event) from active mining areas; active areas disturbed by coal refuse disposal activities; and mined areas backfilled and revegetated; and drainage (resulting from a precipitation event of less than or equal to a 1-year 24-hour event) from coal refuse disposal piles.

*California District Office: 25 Technology Drive, Coal Center, PA 15423, 724-769-1100*

**30841320 and NPDES Permit # PA0213861, Dana Mining Company of PA, LLC**, (308 Dents Run Road, Morgantown, WV 26501), to renew the permit for the Dooley Run Mine in Dunkard Township, **Greene County** and related NPDES permit. No additional discharges. Application received: June 28, 2010.

**10101301 and NPDES Permit # PA0235962, Rosebud Mining Company**, (301 Market Street, Kittanning, PA 16201), to operate the Donegal Mine in Donegal Township, **Butler County** a new underground mine and related NPDES permit. Application also includes a request for a Section 401 Water Quality Certification. Written comments or objection on the permit application and the request for Section 401 water quality application may be submitted to the Department. Surface Acres Proposed 62.6, Underground Acres Proposed 2086.0, Subsidence Control Plan Acres Proposed 2086.0. Receiving stream: Buffalo Creek, classified for the following use: HQ-CWF. Application received: May 13, 2010.

*Greensburg District Mining Office: Armbrust Professional Center, 8205 Route 819, Greensburg, PA 15601, 724-925-5500*

**26900109 and NPDES Permit No. PA059206. Chess Coal Company** (155 Chess Road, Smithfield, PA 15478). Renewal application for continued mining of a bituminous surface mine, located in Georges Township, **Fayette County**, affecting 213 acres. Receiving stream: unnamed tributary to York Run, classified for the following use: WWF. There is no potable water supply intake within 10 miles downstream from the point of discharge. Renewal application received: September 29, 2010.

**26743202 and NPDES Permit No. PA0069736. Bute Coal Recovery, LLC** (P. O. Box 275, West Leisenring, PA 15489). Application received for transfer of permit currently issued to Fayette Coal & Coke, Inc., for continued operation and reclamation of an existing coal refuse reprocessing facility located in Dunbar and North Union Townships, **Fayette County**, affecting 150.1 acres. Receiving streams: Rankin Run to Redstone Creek, to Monongahela River, classified for the following use: warm water fishes. The first potable water supply intake within ten miles downstream from the point of discharge is the North Fayette Municipal Authority. Transfer application received: September 14, 2010.

**65990101 and NPDES Permit No. PA0202428. Coal Loaders, Inc.** (210 East Main Street, Ligonier, PA

15658). Revision application to add 3.6 acres for an existing bituminous surface mine, located in South Huntingdon Township, **Westmoreland County**, affecting 23.4 acres. Receiving streams: unnamed Run to the Youghiogheny River, classified for the following use: WWF. There is no potable water supply intake within 10 miles downstream from the point of discharge. Application received: September 29, 2010.

*Moshannon District Mining Office: 186 Enterprise Drive, Philipsburg, PA 16866, 814-342-8200*

**12040101 and NPDES No. PA0243701. Allegheny Enterprises, Inc.** (3563 Roller Coaster Road, Corsica, PA 15829). Permit revision to an existing bituminous surface mine located in Shippen Township, **Cameron County** affecting 280.8 acres. This revision is to change the post-mining land use from forestland to wildlife habitat. This change will allow the operator to create grazing area for the elk and deer herds. Receiving streams: unnamed tributaries to Finley Run classified for cold water fisheries. There are no potable water supply intakes within 10 miles downstream. Application received: September 17, 2010.

**17814000 and NPDES No. PA0608769. TDK Coal Sales, Inc.** (279 Shannon Road, Monongahela, PA 15063). Permit revision to an existing bituminous surface mine located in Penn Township, **Clearfield County** affecting 204.2 acres. The purpose of this revision is to add auger mining to the existing permit. Receiving streams: Irish Run and unnamed tributaries to Irish Run classified for cold water fisheries. There are no potable water supply intakes within 10 miles downstream. Application received: September 20, 2010.

*Pottsville District Mining Office: 5 West Laurel Boulevard, Pottsville, PA 17901, 570-621-3118*

**49851602T and NPDES Permit No. PA0223662. D. Molesevich & Sons Construction Co., Inc.**, (333 South Pine Street, Mt. Carmel, PA 17851), transfer and correction to add 2.8 to an existing anthracite coal preparation plant operation in Mt. Carmel Township, **Northumberland County** affecting 48.2 acres, receiving stream: Shamokin Creek, classified for the following uses: warm water fishes and migratory fishes. Application received: September 22, 2010.

**49851602R5 and NPDES Permit No. PA0223662. D. Molesevich & Sons Construction Co., Inc.**, (333 South Pine Street, Mt. Carmel, PA 17851), renewal of an existing anthracite coal preparation plant operation in Mt. Carmel Township, **Northumberland County** affecting 48.2 acres, receiving stream: Shamokin Creek, classified for the following uses: warm water fishes and migratory fishes. Application received: September 22, 2010.

*Noncoal Applications Received*

*Effluent Limits*--The following effluent limits will apply to NPDES permits issued in conjunction with a noncoal mining permit:

Table 2

Parameter	30-day Average	Daily Maximum	Instantaneous Maximum
Suspended solids	10 to 35 mg/l	20 to 70 mg/l	25 to 90 mg/l
Alkalinity exceeding acidity* pH*			greater than 6.0; less than 9.0

\* The parameter is applicable at all times.

A settleable solids instantaneous maximum limit of 0.5 ml/l applied to surface runoff resulting from a precipitation event of less than or equal to a 10-year 24-hour event. If coal will be extracted incidental to the extraction of noncoal minerals, at a minimum, the technology-based effluent limitations identified under coal applications will apply to discharges of wastewater to streams.

*Knox District Mining Office: P. O. Box 669, 310 Best Avenue, Knox, PA 16232-0669, 814-797-1191*

**33050304. Glen-Gery Corporation** (1166 Spring Street, P. O. Box 7001, Wyomissing, PA 19610) Renewal of NPDES Permit No. PA0258008, Oliver Township, **Jefferson County**. Receiving streams: Beaver Run (CWF section) to Redbank Creek, classified for the following uses: CWF. There are no potable surface water supply intakes within 10 miles downstream. NPDES renewal application received: September 24, 2010.

**24050301. North Star Aggregates, Inc.** (P. O. Box R, Ridgway, PA 15853) Renewal of an NPDES Permit No. PA0257974, Horton Township, **Elk County**. Receiving streams: Johnson Run and Oyster Run, all to Little Toby Creek to the Clarion River, classified for the following uses: CWF. There are no potable surface water supply intakes within 10 miles downstream. NPDES renewal application received: September 27, 2010.

*Moshannon District Mining Office: 186 Enterprise Drive, Philipsburg, PA 16866, 814-342-8200*

**59050301 and NPDES No. PA0256170. Glenn O. Hawbaker, Inc.** (1952 Waddle Road, Suite 203, State College, PA 16803). Renewal of the NPDES Permit for discharges of treated mine drainage from a quarry operation in Lawrence Township, **Tioga County**. Receiving streams: Mutton Lane Creek to Tioga River classified for Warm Water Fisheries. There are no potable water supply intakes within 10 miles downstream. Application received: September 14, 2010.

*Pottsville District Mining Office: 5 West Laurel Boulevard, Pottsville, PA 17901, 570-621-3118*

**52050801. Randy S. Miller, Inc.**, (232 White Road, Lake Ariel, PA 18436), Stage I & II bond release from a quarry operation in Blooming Grove Township, **Pike County** affecting 2.0 acres on property owned by Vladimir Potiyevsky & Lisa Alexander. Application received: September 22, 2010.

**09890303C3 and NPDES Permit No. PA0594661. Naceville Materials**, (c/o Miller & Son Paving, Inc., 6100 Easton Road, Pipersville, PA 18947), renewal of NPDES Permit for discharge of treated mine drainage from a quarry operation in Plumstead Township, **Bucks County**, receiving stream: North Branch of Neshaminy Creek, classified for the following use: warm water fishes. Application received: September 29, 2010.

## FEDERAL WATER POLLUTION CONTROL ACT, SECTION 401

The following permit applications, requests for Environmental Assessment approval and requests for 401 Water Quality Certification have been received by the Department of Environmental Protection. Section 401 of the Federal Water Pollution Control Act (FWPCA) (33 U.S.C. 1341), requires the state to certify that the involved projects will not violate the applicable provisions of Sections 301—303, 306 and 307 of the FWPCA 33 U.S.C. §§ 1311—1313, 1316 and 1317 as well as relevant state requirements. Persons objecting to approval of a request for certification under Section 401 or to the issuance of a

Dam Permit or Water Obstruction and Encroachment Permit, or the approval of an Environmental Assessment must submit any comments, suggestions or objections within 30 days of the date of this notice as well as any questions to the office noted above the application. Comments should contain the name, address and telephone number of the person commenting, identification of the certification request to which the comments or objections are addressed, and a concise statement of comments, objections or suggestions including the relevant facts upon which they are based.

The Department may conduct a fact-finding hearing or an informal conference in response to comments if deemed necessary. Each individual will be notified, in writing, of the time and place of a scheduled hearing or conference concerning the certification request to which the comment, objection or suggestion relates. Maps, drawings and other data pertinent to the certification request are available for inspection between the hours of 8:00 AM and 4:00 PM on each working day at the office noted above the application.

If you are a person with a disability and wish to attend the hearing and you require an auxiliary aid, service or other accommodation to participate in the proceedings, please contact the specified program. TDD users may contact the Department through the Pennsylvania AT&T Relay Service at 1-800-654-5984.

**Applications Received under the Dam Safety and Encroachments Act (32 P. S. §§ 693.1—693.27) and Section 302 of the Flood Plain Management Act (32 P. S. § 679.302) and Requests for Certification Under Section 401 of the Federal Water Pollution Control Act (33 U.S.C. § 1341(a)).**

### WATER OBSTRUCTIONS AND ENCROACHMENTS

*Northwest Region: Watershed Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481*

**E25-736, Amity Township Supervisors**, 15030 Casler Road, Union City, PA 16438. Tarbell Road Culvert, in Amity Township, **Erie County**, ACOE Pittsburgh District (Union City, PA Quadrangle N: 41°, 56', 50.5"; W: 79°, 46', 31";).

The applicant proposes To remove the existing bridge and to construct and maintain a 40-foot long, 5.6-foot high by 7.9-foot wide CMP pipe arch culvert in Beaver Run on Tarbell Road (T-770) approximately 800 feet south of the intersection of Tarbell Road and Fenno Road in Amity Township, Erie County. Project includes deminimus impacts to Exceptional Value wetlands. Beaver Run is a perennial stream classified as Exceptional Value.

### DAM SAFETY

*Central Office: Bureau of Waterways Engineering, 400 Market Street, Floor 3, PO Box 8554, Harrisburg, PA 17105-8554.*

**D30-074. Freeport Sedimentation Pond. River Processing Corporation**, 158 Portal Road, P. O. Box 1020, Waynesburg, PA 15370. To construct, operate, and maintain Freeport Sedimentation Pond across a tributary to Tenmile Creek (WWF) impacting 1.56 acres of wetlands (PEM) and 508 feet of stream and providing a minimum of 1.56 acres of wetland mitigation, for the purpose of providing sediment control for the proposed Freeport Mine CRDA No. 1. (Mather, PA Quadrangle N: 18.2 inches; W: 2.8 inches) Jefferson Township, **Greene County**.

## ACTIONS

**THE CLEAN STREAMS LAW AND THE FEDERAL CLEAN WATER ACT  
FINAL ACTIONS TAKEN FOR NATIONAL POLLUTION DISCHARGE  
ELIMINATION SYSTEM (NPDES) PERMITS AND WATER QUALITY  
MANAGEMENT (WQM) PERMITS**

The Department of Environmental Protection (Department) has taken the following actions on previously received applications for new, amended and renewed NPDES and WQM permits, applications for permit waivers and Notices of Intent (NOIs) for coverage under General Permits. This Notice of Final Action is provided in accordance with regulations at 25 Pa. Code Chapters 91 and 92 and 40 CFR Part 122, implementing provisions of the Pennsylvania Clean Streams Law, 35 P. S. §§ 691.1 *et seq.*, and the Federal Clean Water Act, 33 USCA §§ 1251 *et seq.*

<i>Location</i>	<i>Permit Authority</i>	<i>Application Type or Category</i>
Section I	NPDES	Renewals
Section II	NPDES	New, Amendment,
Section III	WQM	Industrial, Sewage or Animal Wastes; discharges to groundwater
Section IV	NPDES	MS4 Individual Permit
Section V	NPDES	MS4 Permit Waiver
Section VI	NPDES	Individual Permit Stormwater Construction
Section VII	NPDES	NOI for Coverage under NPDES General Permits

Sections I through VI contain actions related to industrial, animal or sewage wastes discharges, discharges to groundwater, and discharges associated with municipal separate storm sewer systems (MS4), stormwater associated with construction activities and concentrated animal feeding operations (CAFOs). Section VII contains notices for parties who have submitted NOIs for Coverage under General NPDES Permit(s). The approval for coverage under these general NPDES permits is subject to applicable effluent limitations, monitoring, reporting requirements and other conditions set forth in each general permit. The approval of coverage for land application of sewage sludge or residential septage under applicable general permit is subject to pollutant limitations, pathogen and vector attraction reduction requirements, operational standards, general requirements, management practices and other conditions set forth in the respective permit. The permits and related documents, effluent limitations, permitting requirements and other information are on file and may be inspected and arrangements made for copying at the contact office noted above the action.

Any person aggrieved by any of these actions may appeal that action to the Environmental Hearing Board, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P. S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5a. The appeal should be sent to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, PO Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of publication of this notice in the *Pennsylvania Bulletin*, unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the board. The appeal form and the Board's rules of practice and procedure are also available in Braille or on audiotape from the secretary to the board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

If you want to challenge an action, your appeal must reach the Board within 30 days. You do not need a lawyer to file an appeal with the Board.

Important legal rights are at stake, however, so you should contact a lawyer at once. If you cannot afford a lawyer, you may qualify for free pro bono representation. Call the secretary to the board (717-787-3483) for more information.

### **I. NPDES Renewal Permit Actions**

*Northeast Region: Water Management Program Manager, 2 Public Square, Wilkes-Barre, PA 18711-0790*

<i>NPDES No. (Type)</i>	<i>Facility Name &amp; Address</i>	<i>County &amp; Municipality</i>	<i>Stream Name (Watershed #)</i>	<i>EPA Waived Y/N?</i>
PA0060593 (Sewage)	Little Washington Wastewater Company (Laurel Lakes WWTF) 762 West Lancaster Avenue Bryn Mawr, PA 19010-3489	Luzerne County Rice Township	Nuangola Outlet to Little Wapwallopen Creek (5-B)	Y

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Phone: 717-705-4707.*

<i>NPDES No. (Type)</i>	<i>Facility Name &amp; Address</i>	<i>County &amp; Municipality</i>	<i>Stream Name (Watershed #)</i>	<i>EPA Waived Y/N ?</i>
PA0086479 (IW)	Dairy Farmers of America 100 McKinley Avenue Reading, PA 19605-2199	Berks County / Muhlenberg Township	Laurel Run / 3-C	Y

*Northcentral Regional Office: Water Management Program Manager, 208 W Third Street Suite 101, Williamsport, PA 17701-6448. Phone: 570.327.0532.*

<i>NPDES No. (Type)</i>	<i>Facility Name &amp; Address</i>	<i>County &amp; Municipality</i>	<i>Stream Name (Watershed #)</i>	<i>EPA Waived Y/N?</i>
PA0228915 (Sewage)	Osceola Mills Region WWTP Route 970 Osceola Mills, PA 16666	Clearfield County Decatur Township	Moshannon Creek (8-D)	Y
PA0111945 (Industrial Wastewater & Stormwater)	Ward Manufacturing, Inc. PO Box 9 117 Gulick Street Blossburg, PA 16912	Blossburg Borough, Tioga County	Johnson Creek/ Tioga River, 4A	Yes

## II. New or Expanded Facility Permits, Renewal of Major Permits and EPA Nonwaived Permit Actions

*Southeast Region: Water Management Program Manager, 2 East Main Street, Norristown, PA 19401*

**NPDES Permit No. PA0054551**, Sewage, **Jonathan D. Snyder**, 4 Fox Run Lane, Newtown Square, PA 19073-1004.

This proposed facility is located in Willistown Township, **Chester County**.

Description of Proposed Action/Activity: Approval for the renewal to discharge 400 gpd of treated sewage to Unnamed Tributary to Ridley Creek in Watershed 3-G.

**NPDES Permit No. PAG050087**, Industrial Waste, **Frank's Center Auto Service**, 101 South Sycamore Street, Newtown, PA 18940.

This proposed facility is located in Newtown Township, **Bucks County**.

Description of Proposed Action/Activity: Approval for the issuance of an NPDES General Permit to discharge 57,600 gpd of treated groundwater into Newtown Creek via storm drain.

**NPDES Permit No. PA0057967**, Industrial Waste, **RAF Pennsburg, LP**, 165 Township Line Road, Suite 100, Jenkintown, PA 19046.

This proposed facility is located in Upper Hanover Township, **Montgomery County**.

Description of Proposed Action/Activity: Approval for the renewal to discharge 0.020 MGD of treated wastewater to Macoby Creek Branch in Watershed 3-E.

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Phone: 717-705-4707.*

**NPDES Permit No. PA0110361**, Sewage, **Freedom Township Water and Sewer Authority**, 131 Municipal Street, East Freedom, PA 16637-8158.

This proposed facility is located in Blair Township, **Blair County**.

Description of Proposed Action/Activity: Authorization to discharge to Frankstown Branch Juniata River in Watershed 11-A.

*Northcentral Regional Office: Regional Water Management Program Manager, 208 W Third Street Suite 101, Williamsport, PA 17701-6448. Phone: 570.327.0532.*

**NPDES Permit No. PA0024325**, Sewage, SIC Code 4952, **Muncy Borough Municipal Authority Lycoming County**, Muncy Boro Muni Auth, Muncy, PA 17756.

This existing facility is located in Muncy Creek Township, **Lycoming County**.

Description of Existing Action/Activity: Issuance of an NPDES Permit for an existing discharge of treated Sewage.

**NPDES Permit No. PA0028738**, Sewage, SIC Code 4952, **Ralpho Township Municipal Authority**, 206 S Market Street - Suite 2, Elysburg, PA 17824.

This existing facility is located in Shamokin Township, **Northumberland County**.

Description of Existing Action/Activity: Issuance of an NPDES Permit for an existing discharge of treated Sewage.

## III. WQM Industrial Waste and Sewerage Actions under The Clean Streams Law (35 P. S. §§ 691.1—691.1001)

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Phone: 717-705-4707.*

**WQM Permit No. WQG01671001**, Sewage, **Stephen J. and Genevieve E. Moore**, 4350 Old Orchard Road, York, PA 17402.

This proposed facility is located in Springettsbury Township, **York County**.

Description of Proposed Action/Activity: Construction/Operation of a small flow sewage treatment system to serve their existing single family residence.

*Northwest Region: Water Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481.*

**WQM Permit No. WQG018770**, Sewerage, **Stanley F. Slabic**, 9570 Tileyard Road, Waterford, PA 16441

This proposed facility is located in McKean Township, **Erie County**.

Description of Proposed Action/Activity: A Single Residence Small Flow Treatment Facility to replace a malfunctioning on-lot system.

**WQM Permit No. WQG018773**, Sewerage, **John D. Ferguson & Paula Morgan**, 590 Wakefield Court, Naperville, IL 60563

This proposed facility is located in Elk Creek Township, **Erie County**.

Description of Proposed Action/Activity: A Single Residence Small Flow Treatment Facility.

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#### IV. NPDES Stormwater Discharges From Municipal Separate Storm Sewer Systems (MS4) Permit Actions

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#### V. NPDES Waiver Stormwater Discharges From Municipal Separate Storm Sewer Systems (MS4) Actions

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#### VI. NPDES Discharges of Stormwater Associated With Construction Activities Individual Permit Actions

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*Northeast Region: Watershed Management Program Manager, 2 Public Square, Wilkes Barre, PA 18711-0790*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI023907006(1)	S/K Cetronia Associates, L.P. 520 U.S. Highway 22 Bridgewater, NJ 08807	Lehigh	Upper Macungie Twp.	Schaefer Run, HQ-CWF, MF; Iron Run, HQ-CWF, MF
PAI023904011R	Selvaggio Enterprises, Inc. 623 Selvaggio Drive, Suite 200 Nazareth, PA 18064	Lehigh	Salisbury Twp.	Trout Creek, HQ-CWF, MF
PAI025208002	Pennsylvania Department of Transportation Bureau of Office Services Facility Management Division Harrisburg, PA 17105-3451	Pike	Blooming Grove Twp.	Shohola Creek, HQ-CWF, MF

*Southwest Region: Watershed Management Program Manager, 400 Waterfront Drive, Pittsburgh, PA 15222-4745.*

*Allegheny County Conservation District, Lexington Technology Park, Building 1, Suite 102, 400 North Lexington Avenue, Pittsburgh, PA 15208. (412-241-7645)*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI050210001	Allegheny County Department of Public Works 542 Forbes Avenue Pittsburgh, PA 15219	Allegheny	Borough of Turtle Creek & North Versailles Township	Unnamed Tributary to Turtle Creek (TSF) Steels Run (HQ-CWF)
PAI051110002	Highland North LLC 444 East 30th Street, 10th Floor New York, NY 10016	Cambria	Adams, Summerhill, and Portage Townships	South Fork Little Conemaugh and Beaverdam Run (HQ-CWF) Laurel Run (CWF)

*Washington County Conservation District, 602 Courthouse Square, Washington, PA 15301. (724-228-6774)*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI056310006	Brian Kengor, Manager JBT Land Ventures 2639 Diane Drive Washington, PA 15301	Washington	Donegal Township	Dutch Fork (HQ-WWF)

*Westmoreland County Conservation District, 211 Donohoe Road, Greensburg, PA 15601. (724-837-5271)*

<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI056509008	John F. Tierney, President Resort Homes, LLC P. O. Box 234 Stahlstown, PA 15687	Westmoreland	Donegal Township	Unnamed Tributary to Camp Run (EV)



<i>NPDES Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>County</i>	<i>Municipality</i>	<i>Receiving Water/Use</i>
PAI056510002	Municipality of Murrysville 4100 Sardis Road Murrysville, PA 15668	Westmoreland	Murrysville Township	Tributary to Steels Run (HQ-CWF)

### VII. Approvals To Use NPDES And/Or Other General Permits

The EPA Region III Administrator has waived the right to review or object to this permit action under the waiver provision 40 CFR 123.23(d).

#### List of NPDES and/or Other General Permit Types

PAG-1	General Permit for Discharges From Stripper Oil Well Facilities
PAG-2	General Permit for Discharges of Stormwater Associated With Construction Activities (PAR)
PAG-3	General Permit for Discharges of Stormwater From Industrial Activities
PAG-4	General Permit for Discharges From Small Flow Treatment Facilities
PAG-5	General Permit for Discharges From Gasoline Contaminated Ground Water Remediation Systems
PAG-6	General Permit for Wet Weather Overflow Discharges From Combined Sewer Systems (CSO)
PAG-7	General Permit for Beneficial Use of Exceptional Quality Sewage Sludge by Land Application
PAG-8	General Permit for Beneficial Use of Non-Exceptional Quality Sewage Sludge by Land Application to Agricultural Land, Forest, a Public Contact Site or a Land Reclamation Site
PAG-8 (SSN)	Site Suitability Notice for Land Application Under Approved PAG-8 General Permit Coverage
PAG-9	General Permit for Beneficial Use of Residential Septage by Land Application to Agricultural Land, Forest, or a Land Reclamation Site
PAG-9 (SSN)	Site Suitability Notice for Land Application Under Approved PAG-9 General Permit Coverage
PAG-10	General Permit for Discharge Resulting from Hydrostatic Testing of Tanks and Pipelines
PAG-11	(To Be Announced)
PAG-12	Concentrated Animal Feeding Operations (CAFOs)
PAG-13	Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4)

#### General Permit Type—PAG-02

##### Facility Location:

<i>Municipality &amp; County</i>	<i>Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>Receiving Water/Use</i>	<i>Contact Office &amp; Phone No.</i>
City of Scranton, Lackawanna County	PAG2003506007(2)	James Devers University of Scranton 915 Mulberry St. Scranton, PA 18510	Roaring Brook, CWF, MF	Lackawanna Co. Conservation Dist. 570-281-9495
Tunkhannock Borough, Wyoming County	PAG02006610004	Millett Real Estate 101 Old Lackawanna Trail Clarks Summit, PA 18411	Swale Brook, CWF, MF	Wyoming Co. Conservation Dist. 570-836-2589
Smithfield Township, Monroe County	PAG02004510004	PA Department of Transportation District 5-0 1002 Hamilton St. Allentown, PA 18101	Brodhead Creek, TSE, MF	Monroe Co. Conservation Dist. 570-629-3060
Franklin Township York County	PAG2006710007	Glenn Worgan Highland Park Housing, LP 722 Yorklyn Road, Suite 350 Hockessin, DE 19707	UNT to North Branch Bermudian Creek/WWF	York County Conservation District 118 Pleasant Acres Road York, PA 17402-8984 717-840-7430
Fairview Township York County	PAG2006708024-1	B.C. Desai Hari Ohm Hospitality 148 Sheraton Drive Harrisburg, PA 17070	Yellow Breeches Creek/ CWF	York County Conservation District 118 Pleasant Acres Road York, PA 17402-8984 717-840-7430

NOTICES

6025

<i>Facility Location: Municipality &amp; County</i>	<i>Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>Receiving Water / Use</i>	<i>Contact Office &amp; Phone No.</i>
East Manchester Township York County	PAG2006708004	James L. Craft JJ Two, L.P. 2780 York Haven Road P. O. Box 8 York Haven, PA 17370	Hartman Run/ WWF	York County Conservation District 118 Pleasant Acres Road York, PA 17402-8984 717-840-7430
Bethel Township Lebanon County	PAG2003810022	Ray Funck 425 Gravel Hill Road Palmyra, PA 17078	Beach Run-UNT to Beach Run/ WWF	Lebanon County Conservation District 2120 Cornwall Road, Suite 5 Lebanon, PA 17042 717-272-3908, Ext 4
Annville Township Lebanon County	PAG2003810015	Don Santostefano Lebanon Valley College 101 College Avenue Annville, PA 17003	Quittapahilla Creek/ TSF	Lebanon County Conservation District 2120 Cornwall Road, Suite 5 Lebanon, PA 17042 717-272-3908, Ext 4
Lebanon City Lebanon County	PAG2003810020	Gordon Kirkessner City of Lebanon 400 South Eighth Street Lebanon, PA 17042	Quittapahilla Creek/ TSF-MF	Lebanon County Conservation District 2120 Cornwall Road, Suite 5 Lebanon, PA 17042 717-272-3908, Ext 4
Heidelberg Township Millcreek Township Lebanon County	PAG2003810017	Glendon Horst 255 Millbach Road Newmanstown, PA 17073	UNT to Mill Creek/ TSF	Lebanon County Conservation District 2120 Cornwall Road, Suite 5 Lebanon, PA 17042 717-272-3908, Ext 4
Turbot Township Northumberland County	PAG2004910015	Community Mennonite Fellowship Church 2985 Broadway Rd Milton, PA 17847-7864	Limestone Run WWF	Northumberland County Conservation District RR 3, Box 238-C Sunbury, PA 17801 (570) 286-7114, X 4
Middleburg Borough Snyder County	PAG2005508008R	568 E Main St Middleburg, PA 17842	Middle Creek CWF	Snyder County Conservation District 403 West Market Street Middleburg, PA 17842 (570) 837-0007, X 5
Mifflinburg Borough Union County	PAG2006010010	Mifflinburg Area School District 178 Maple Street Mifflinburg, PA 17844	UNT to Buffalo Creek CWF	Union County Conservation District Union County Government Center 155 North 15th Street Lewisburg, PA 17837 (570) 524-3860

*General Permit Type—PAG-3*

<i>Facility Location: Municipality &amp; County</i>	<i>Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>Receiving Water / Use</i>	<i>Contact Office &amp; Phone No.</i>
Lower Saucon Twp. Northampton County	PAR502205	IESI Bethlehem Landfill	Unnamed Tributary to E. Branch of Saucon Creek, Lehigh River	PA DEP Northeast Regional Office 2 Public Square Wilkes Barre, PA 18701-1915 570-826-2511

*Facility Location:  
Municipality &  
County*Patton Township  
Centre County*Permit No.*  
PAR214825*Applicant Name &  
Address*  
Essroc Ready Mix Inc.  
123 Hawbaker Industrial  
Drive  
State College, PA 16803*Receiving  
Water / Use*  
Unnamed Tributary  
of Big Hollow—  
9-C*Contact Office &  
Phone No.*  
DEP Northcentral  
Regional Office  
Water Management  
208 W Third Street  
Suite 101,  
Williamsport, PA  
17701-6448  
570.327.0532Mount Carmel  
Borough,  
Northumberland  
County

PAR144804

International Paper Company  
2164 Locust Gap Highway  
Mount Carmel, PA 17851Shamokin and  
Locust Creek,  
CWFDEP Northcentral  
Regional Office  
Water Management  
208 W Third Street  
Suite 101,  
Williamsport, PA  
17701-6448  
570.327.0532*General Permit Type—PAG-4**Facility Location &  
Municipality*York County /  
Springettsbury  
Township*Permit No.*  
PAG043904*Applicant Name &  
Address*  
Stephen J. and Genevieve  
Moore  
4350 Old Orchard Road  
York, PA 17402*Receiving  
Water / Use*  
UNT Kreutz Creek /  
CWF*Contact Office &  
Phone No.*  
DEP—SCRO  
909 Elmerton Avenue  
Harrisburg, PA 17110  
717-705-4707McKean Township  
Erie County

PAG041002

Stanley F. Slabic  
9570 Tileyard Road  
Waterford, PA 16441-3338Unnamed Tributary  
to Elk Creek  
15DEP  
NWRO  
Water Management  
230 Chestnut Street  
Meadville, PA  
16335-3481  
814/332-6942Elk Creek Township  
Erie County

PAG041006

John D. Ferguson &  
Paula Morgan  
590 Wakefield Court  
Naperville, IL 60563Unnamed Tributary  
to Little Elk Creek  
15DEP  
NWRO  
Water Management  
230 Chestnut Street  
Meadville, PA  
16335-3481  
814/332-6942*General Permit Type—PAG-7**Facility Location &  
Municipality*Licking Creek and  
Todd Townships  
Fulton County*Permit No.*  
PAG070003  
PAG070005  
PAG073508*Applicant Name &  
Address*  
Synagro  
1605 Dooley Rd.  
PO Box B  
Whiteford, MD 21160*Site Name &  
Location*  
Hess Family Trust  
Farm  
Licking Creek and  
Todd Townships  
Fulton County*Contact Office &  
Phone No.*  
DEP-SCRO  
909 Elmerton Avenue  
Harrisburg, PA  
17110-8200  
717-705-4707*General Permit Type—PAG-8**Facility Location:  
Municipality &  
County*Manor Township  
Lancaster County*Permit No.*  
PAG083556*Applicant Name &  
Address*  
Lancaster Area Sewer  
Authority  
130 Centerville Rd.  
Lancaster, PA 17603-4007*Site Name &  
Location*  
Lancaster Area  
Sewer Authority  
Susquehanna Waer  
Pollution Control  
Facility  
4160 Blue Rock Rd.  
Washington Boro,  
PA 17582*Contact Office &  
Phone No.*  
DEP-SCRO  
909 Elmerton Avenue  
Harrisburg, PA  
17110-8200  
717-705-4707

*General Permit Type—PAG-8 (SSN)**Facility Location:  
Municipality &  
County*Licking Creek and  
Todd Townships  
Fulton County*Permit No.*PAG080002  
PAG080003  
PAG080004  
PAG080008  
PAG080018  
PAG082203  
PAG082211  
PAG083501  
PAG083502  
PAG083506  
PAG083510  
PAG083515  
PAG083517  
PAG083518  
PAG083522  
PAG083535  
PAG083540  
PAG083542  
PAG083547  
PAG083551  
PAG083556  
PAG083565  
PAG083567  
PAG083573  
PAG083596  
PAG083597  
PAG083600  
PAG083825  
PAG089903  
PAG089904  
PAG089905  
PABIG9903  
WMGR-099*Applicant Name &  
Address*Synagro  
1605 Dooley Road  
PO Box B  
Whiteford, MD 21160*Site Name &  
Location*Hess Family Trust  
Farm  
Licking Creek and  
Todd Townships  
Fulton County*Contact Office &  
Phone No.*DEP-SCRO  
909 Elmerton Avenue  
Harrisburg, PA  
17110-8200  
717-705-4707*General Permit Type—PAG-9**Facility Location &  
County/Municipality*Rapho Township  
Lancaster County*Permit No.*

PAG093533

*Applicant Name &  
Address*Ridgewood Manor  
Mobile Home Park Inc.  
98 Breneman Rd.  
Manheim, PA 17545*Site Name &  
Location*Ridgewood Manor  
Mobile Home Park  
98 Breneman Rd.  
Manheim, PA 17545*Contact Office &  
Phone No.*DEP-SCRO  
909 Elmerton Avenue  
Harrisburg, PA  
17110-8200  
717-705-4707*General Permit Type—PAG-12**Facility Location &  
Municipality*Lancaster County /  
East Donegal  
Township*Permit No.*

PAG123661

*Applicant Name &  
Address*Lamar Moyer  
180 Endsloew Road  
Marietta, PA 17547*Receiving  
Water/Use*UNT Susquehanna  
River -  
WWF*Contact Office &  
Phone No.*DEP—SCRO—  
Watershed Management  
Program  
909 Elmerton Avenue  
Harrisburg, PA 17110  
717-705-4802Franklin County /  
Warren Township

PAG123693

Jeff Funk  
Funk Farms CAFO  
18255 Fort Davis Road  
Mercersburg, PA 17236UNT Little Cove  
Creek -  
CWFDEP—SCRO—  
Watershed Management  
Program  
909 Elmerton Avenue  
Harrisburg, PA 17110  
717-705-4802

<i>Facility Location &amp; Municipality</i>	<i>Permit No.</i>	<i>Applicant Name &amp; Address</i>	<i>Receiving Water/Use</i>	<i>Contact Office &amp; Phone No.</i>
Berks County / Penn Township	PAG123587	Mary Ann Rutt Farm CAFO 524 North Garfield Road Bernville, PA 19506	UNT Blue Marsh Reservoir - TSF	DEP—SCRO— Watershed Management Program 909 Elmerton Avenue Harrisburg, PA 17110 717-705-4802

## PUBLIC WATER SUPPLY PERMITS FINAL ACTIONS

The Department of Environmental Protection (Department) has taken the following actions on applications received under the Safe Drinking Water Act for the construction, substantial modification or operation of a public water system.

Any person aggrieved by these actions may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. § 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P. O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of publication of this notice in the *Pennsylvania Bulletin*, unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in Braille or on audiotape from the Secretary of the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

If you want to challenge this action, your appeal must reach the board within 30 days. You do not need a lawyer to file an appeal with the Board.

Important legal rights are at stake, however, so you should show this document to a lawyer at once. If you cannot afford a lawyer, you may qualify for free pro bono representation. Call the secretary to the Board (717-787-3483) for more information.

### SAFE DRINKING WATER

#### Actions taken under the Pennsylvania Safe Drinking Water Act (35 P. S. 721.1—721.17)

*Southeast Region: Water Supply Program Manager, 2 East Main Street, Norristown, PA 19401*

**Operations Permit 1510511** issued to: **Superior Water Company**, 1885 Swamp Pike, Gilbertsville, PA 19525

(PWSID# 1150547) **North Coventry Township, Chester County** on June 02, 2010, for operation of Facilities approved under construction permit # 1509516 for operations to Suburbia Shopping Center Water System located at North Coventry Township, **Chester County**.

**Operations Permit 4610518** issued to: **Audubon Water Company**, 2650 Eisenhower Avenue, Norristown, PA 19403

(PWSID# 1460055) **North Coventry Township, Chester County** on July 7, 2010, for operations Facilities approved under construction permit # 4603503 for

operations to Well No. AWC-14 and Air Stripper located at Lower Providence Township, **Montgomery County**.

**Operations Permit 4610530** issued to: **Schwenksville Borough Authority**, 298 Main Street, Schwenksville, PA 19473.

(PWSID# 1460042) **Schwenksville Borough, Chester County** on July 13, 2010, for operations to Sodium Hypochlorite Feed Systems at Well Nos. 7 and 3 located Schwenksville Borough, **Montgomery County**.

**Operations Permit 0910529** issued to: **Richland Township Water Authority**, 1328 California Road, Suite-D, Quakertown, PA 18951.

(PWSID1090134) **Richland Township, Bucks County** on August 30, 2010, for operation of Facilities approved under construction permit # 0908514 for operations to Quakertown Christian School Well No. 1 located at Richland Township, **Bucks County**.

**Operations Permit 4610528** issued to: **Andorra Spring Water Company**, 2201 Barron Hill Road, Conshohocken, PA 19428

(PWSID# 1466020) **Whitemarsh Township, Montgomery County** on September 20, 2010, for operations of Facilities approved under construction permit # 4610528 for operations to BWV-100 Water Vending Machines at Andorra Springs Water Company located at Whitemarsh Township, **Montgomery County**.

**Operations Permit 4610519** issued to: **Aqua Pennsylvania, Inc.**, 762 West Lancaster Avenue, Bryn Mawr, PA 19010

**Perkiomeen Township, Montgomery County** on July 20, 2010, for operations Facilities to Rahn Well No. 1 New Pump at Aqua Pennsylvania, Inc. located at Perkiomen Township, **Montgomery County**.

**Operations Permit 0910527** issued to: **Tinicum Elementary School**, 162 E. Dark Hollow Road, Pipersville, PA 18947.

(PWSID# 1091299) **Tinicum Township, Bucks County** on August 20, 2010, for operation of Facilities approved under construction permit # 0910515 for operations to Tinicum Elementary School Well located at Tinicum Township **Bucks County**.

*Northcentral Region: Water Supply Management Program Manager, 208 West Third Street, Williamsport, PA 17701*

**Permit No. Minor Amendment—Operation Public Water Supply.**

Applicant	<b>Blossburg Municipal Authority</b>
[Township or Borough]	Blossburg Borough
County	<b>Tioga</b>

Responsible Official Mr. Daniel L. Grinnell  
 Blossburg Municipal Authority  
 245 Main Street  
 Blossburg, PA 16901

Type of Facility Public Water Supply—Operation

Consulting Engineer N/A

Permit Issued Date September 30, 2010

Description of Action 4-log inactivation of viruses at Entry Point 102 (Sportsman Club Well).

**Permit No. Minor Amendment—Operation** Public Water Supply.

Applicant **United Water Pennsylvania, Inc.**

[Township or Borough] Town of Bloomsburg

County **Columbia**

Responsible Official Mr. John D. Hollenbach  
 United Water Pennsylvania, Inc.  
 4211 East Park Circle  
 Harrisburg, PA 17111

Type of Facility Public Water Supply—Operation

Consulting Engineer Arthur C. Saunders, P. E.  
 United Water Pennsylvania  
 4211 East Park Circle  
 Harrisburg, PA 17111

Permit Issued Date September 29, 2010

Description of Action Operation of the chemical feed system at the Irondale water treatment plant to feed DelPAC 2020 coagulant.

**Permit No. 1709505—Operation** Public Water Supply.

Applicant **Pennsylvania American Water Company**

[Township or Borough] Wallaceton Borough

County **Clearfield**

Responsible Official Mr. David R. Kaufman  
 Vice President Engineering  
 Pennsylvania American Water Company  
 800 West Hershey Park Drive  
 Hershey, PA 17033

Type of Facility Public Water Supply—Operation

Consulting Engineer Joel A. Mitchell, P. E.  
 Project Manager  
 Pennsylvania American Water Company  
 852 Wesley Drive  
 Mechanicsburg, PA 17055

Permit Issued Date September 30, 2010

Description of Action Operation of the new 136,000 gallon, glassed-lined Wallaceton water storage tank, which has been constructed to replace the former 80,000 gallon water storage tank.

**Permit No. Minor Amendment (4189509-T1)—Construction and Operation** Public Water Supply.

Applicant **Tiadaghton View Mobile Home Park**

[Township or Borough] Upper Fairfield Township

County **Lycoming**

Responsible Official Mr. Frank Perano  
 GSP Management Company  
 P. O. Box 677  
 Morgantown, PA 19543

Type of Facility Public Water Supply—Construction and Operation

Consulting Engineer James Cieri, P. E.  
 Act One Consultants, Inc.  
 200 S. 41st Street, Suite A  
 Harrisburg, PA 17111

Permit Issued Date October 1, 2010

Description of Action Rehabilitation of Well No. 2.

*Northwest Region: Water Supply Management Program Manager, 230 Chestnut Street, Meadville, PA 16335-3481.*

**Permit No.2009507**, Public Water Supply

Applicant **Saegertown Borough**

Township or Borough Saegertown Borough

County **Crawford County**

Type of Facility Public Water Supply

Consulting Engineer Bruce D. Patterson, PE

Permit to Construct Issued 07/29/2010

**Transfer of Operations Permit** issued to **ILSCO Extrusions Inc.**, PWSID #6431090, Sugar Grove Township, **Mercer County** on October 4, 2010. Action is for change in ownership; the potable water supplier will do business as ILSCO Extrusions Inc. Potable water supply will be operated in accordance with operation permit 4307502, issued May 29, 2008. The new permit number is 4307502-T1.

**SEWAGE FACILITIES ACT PLAN APPROVAL**

**Plan Approvals Granted under the Pennsylvania Sewage Facilities Act (35 P. S. § 750.5)**

*Northcentral Region: Water Management Program Manager, 208 West Third Street, Williamsport, PA 17701*

*Plan Location:*

<i>Borough or Township</i>	<i>Borough or Township Address</i>	<i>County</i>
Troutville Borough	PO Box 81 Sykesville, PA 15866-0081	Clearfield

*Plan Description:* The approved plan provides for sewers to serve 91 homes in Troutville Borough and 71 homes nearby in Brady Township. The new low pressure sewer system will collect and transport the sewage to the existing Sykesville Sewage Treatment Plant for treatment. The Department’s review of the sewage facilities update revision has not identified any significant environmental impacts resulting from this proposal. Any required NPDES Permits or WQM Permits must be obtained in the name of the municipality or authority as appropriate.

## LAND RECYCLING AND ENVIRONMENTAL REMEDIATION

UNDER ACT 2, 1995

### PREAMBLE 3

**The Department has taken action on the following plans and reports under the Land Recycling and Environmental Remediation Standards Act (35 P. S. §§ 6026.101—6026.908).**

Provisions of 25 Pa. Code § 250.8, Administration of the Land Recycling and Environmental Remediation Standards Act (Act) requires the Department of Environmental Protection (Department) to publish in the *Pennsylvania Bulletin* a notice of its final actions on plans and reports. A final report is submitted to document cleanup of a release of a regulated substance at a site to one of the remediation standards of the Act. A final report provides a description of the site investigation to characterize the nature and extent of contaminants in environmental media, the basis of selecting the environmental media of concern, documentation supporting the selection of residential or non-residential exposure factors, a description of the remediation performed and summaries of sampling methodology and analytical results which demonstrate that the remediation has attained the cleanup standard selected. Plans and reports required by provisions of the Act for compliance with selection of remediation to a site-specific standard, in addition to a final report, include a remedial investigation report, risk assessment report, and cleanup plan. A remedial investigation report includes conclusions from the site investigation; concentration of regulated substances in environmental media; benefits of reuse of the property; and, in some circumstances, a fate and transport analysis. If required, a risk assessment report describes potential adverse effects caused by the presence of regulated substances. If required, a cleanup plan evaluates the abilities of potential remedies to achieve remedy requirements. A work plan for conducting a baseline remedial investigation is required by provisions of the Act for compliance with selection of a special industrial area remediation. The baseline remedial investigation, based on the work plan, is compiled into the baseline environmental report to establish a reference point to show existing contamination, describe proposed remediation to be done and include a description of existing or potential public benefits of the use or reuse of the property. The Department may approve or disapprove plans and reports submitted. This notice provides the Department's decision and, if relevant, the basis for disapproval.

For further information concerning the plans and reports, please contact the Environmental Cleanup Program Manager in the Department of Environmental Protection Regional Office under which the notice of the plan or report appears. If information concerning a final report is required in an alternative form, contact the Community Relations Coordinator at the appropriate Regional Office listed. TDD users may telephone the Department through the AT&T Relay Service at (800) 654-5984.

The Department has received the following plans and reports:

*Northeast Region: Environmental Cleanup Program, 2 Public Square, Wilkes-Barre, PA 18701-1915.*

**Packerton Yards**, Intersection of Packerton Hollow Road & Route 209, Mahoning Township, **Carbon County**. James J. Koval, HDR Engineering, Inc., 1720

Spillman Drive, Bethlehem, PA 18015 submitted a combined Remedial Investigation Report/Cleanup Plan/Final Report (on behalf of his client, Carbon County Office of Economic Development, P. O. Box 291, Jim Thorpe, PA 18229), concerning the remediation of soil found to have been impacted by lead, arsenic, selenium, and benzo (a) pyrene. The Remedial Investigation Report and Cleanup Plan sections of the combined report were submitted in partial fulfillment of the Site-Specific Standard for soils within the Business Park area, which is located in northern part of the site, and were approved on September 28, 2010.

**Krause Dodge**, 4315 Route 309 and 4309 Carl Street, North Whitehall Township, **Lehigh County**. James J. Koval, HDR Engineering, Inc., 1720 Spillman Drive, Suite 280, Bethlehem, PA 18015 submitted a Final Report (on behalf of his client, Paul Kobal, P. O. Box 192, Schnecksville, PA 18078), concerning the remediation of soil found to have been impacted by lead as a result of historical operations at the site, which included the operation of a former service station. The report was submitted to document attainment of the Residential Statewide Health Standard for soil and was approved on September 29, 2010.

*Southcentral Region: Environmental Cleanup Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110.*

**East Penn Manufacturing / Western Ore Pit**, Richmond Township, **Berks County**. AECOM Technical Services Inc., 2 Market Plaza Way, Mechanicsburg, PA 17055, on behalf of East Penn Manufacturing, Deka Road, Lyon Station, PA, 19536, submitted a Site-Specific Combined Remedial Investigation Report and Cleanup Plan concerning the remediation of soil contaminated with lead. The Report and Plan were approved by the Department on September 30, 2010.

**Former Pinto Tract**, South Middleton Township, **Cumberland County**. Alternative Environmental Solutions, Inc., 480 New Holland Ave., Ste. 8203, Lancaster, PA 17602-2292, on behalf of LIT Industrial Limited Partnership, 2650 Cedar Springs Rd., Ste. 850, Dallas, TX 75201, submitted a Remedial Investigation Report / Final Report concerning the remediation of site groundwater contaminated with chlorinated solvents. The Final Report demonstrated attainment of the Site-Specific standard, and was approved by the Department on September 30, 2010.

**20 Miller Road**, Providence Township, **Lancaster County**. GCI Environmental Services, 1250 East King St., Lancaster, PA 17602, on behalf of William Osburn, 7720 Newport Rd., Catawba, VA 24070, submitted a Final Report concerning the remediation of site groundwater contaminated with Fuel Oil No. 2. The Final Report demonstrated attainment of the residential Statewide Health standard, and was approved by the Department on September 30, 2010.

*Southwest Region: Environmental Cleanup Program Manager, 400 Waterfront Drive, Pittsburgh, PA 15222-4745*

**YTI McKees Rocks**, McKees Rocks Borough, **Allegheny County**. GZA GeoEnvironmental, Inc., 501 Office Center Drive, Suite 220, Fort Washington, Pennsylvania 19034 on behalf of YRC North American transportation, 10990 Roe Avenue, Overland Park, Kansas 66211 has submitted a Baseline Remedial Investigation Work Plan for the above mentioned site. The Baseline Remedial Investigation Work Plan was submitted on July 6, 2010

with additional information submitted on September 1, 2010. The report was approved by the Department on September 24, 2010.

### RESIDUAL WASTE GENERAL PERMITS

**Permit(s) Issued Under the Solid Waste Management Act (35 P. S. §§ 6018.101—6018.1003); the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P. S. §§ 4000.101—4000.1904); and Residual Waste Regulations for a General Permit to Operate Residual Waste Processing Facilities and the Beneficial Use of Residual Waste other than Coal Ash.**

*Central Office: Division of Municipal and Residual Waste, Rachel Carson State Office Building, Floor 14, 400 Market Street, Harrisburg, PA 17105-8472.*

**General Permit Application No. WMGR123. Hydro Recovery, LP, 7 Riverside Plaza, Blossburg, PA 16912.**

General Permit Numbered WMGR123 is for the processing of wastewater (i.e., flow back gas well water - frac water) from various Marcellus Shale gas drilling operations at the Hydro Recovery Hydraulic Stimulation Fluid (HSF) Manufacturing facility, to be located in the Blossburg Borough, **Tioga County**. The processing treats High Total Dissolved Solids Fluids (HTDSF) flow back wastewater in the production of HSF, without a discharge, that will be sold for reuse in the extraction of natural gas from various Marcellus Shale oil drilling operations. This residual waste general permit was issued by the Central Office on October 4, 2010.

Persons interested in reviewing the general permit may contact C. D. Vu, General Permits and Beneficial Use Section, Division of Municipal and Residual Waste, Bureau of Waste Management, P. O. Box 8472, Harrisburg, PA 17105-8472, (717) 787-7381. TDD users may contact the Department through the Pennsylvania Relay service, (800) 654-5984.

### OPERATE WASTE PROCESSING OR DISPOSAL AREA OR SITE

**Permit(s) issued under the Solid Waste Management Act, of July 7, 1980, P.L. 380, 35 P.S. §§ 6018.101—6018.1003, the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§ 4000.101—4000.1904) and Regulations to Operate Solid Waste Processing or Disposal Area or Site.**

*Southwest Regional Office, Regional Solid Waste Manager, 400 Waterfront Drive, Pittsburgh, PA 15222-4745, Telephone 412.442.4000.*

**Permit ID No. 300657. Route 356 Landfill, 100 River Road, Brackenridge, PA 15014.** Permit renewal of a residual waste landfill in Allegheny Township, **Westmoreland County**, was issued in the Regional Office on September 27, 2010.

**Permit(s) Renewal Issued Under the Solid Waste Management Act (35 P. S. §§ 6018.101—6018.1003), the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P. S. §§ 4000.101—4000.1904) and Regulations to Operate Solid Waste Processing or Disposal Area or Site.**

*Northwest Region: Regional Solid Waste Manager, 230 Chestnut Street, Meadville, PA 16335-3481*

**Permit Application No. 100403. Seneca Landfill, Inc., 421 Hartmann Road, Evans City, PA 16033, Jackson and Lancaster Townships, Butler County.** The application was for a permit renewal to extend the life of the permit for another seven (7) years. No changes were made to the operational conditions or volumes of waste accepted. The permit was issued by the Northwest Regional Office on October 4, 2010.

### AIR QUALITY

**General Plan Approval and Operating Permit Usage Authorized under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code Chapter 127 to construct, modify, reactivate or operate air contamination sources and associated air cleaning devices.**

*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Q. Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**GP3-08-316: Calvin C. Cole, Inc. (27321 Route 220, Milan, PA 18831)** on September 15, 2010, to construct and operate four (4) portable non-metallic mineral crushers, two (2) screeners, and three (3) conveyors all with associated water spray dust suppression systems pursuant to the General Plan Approval And/Or General Operating Permit For Portable Nonmetallic Mineral Processing Plants (BAQ-PGPA/GP-3) at their Bradford County Quarry facility in Burlington Borough, **Bradford County**.

**GP9-08-316: Calvin C. Cole, Inc. (27321 Route 220, Milan, PA 18831)** on September 15, 2010, to construct and operate two (2) diesel-fired engines each rated at 245 brake horsepower (bhp) and one 300 bhp diesel-fired engine pursuant to the General Plan Approval and /or General Operating Permit BAQ-GPA/GP-9: Diesel or #2 fuel-fired Internal Combustion Engines, at thir Bradford County Quarry facility in Burlington Borough, **Bradford County**.

**GP11-08-316: Calvin C. Cole, Inc. (27321 Route 220, Milan, PA 18831)** on September 15, 2010, to operate a 300 brake horsepower diesel-fired engine pursuant to the General Plan Approval and General Operating Permit for Non-road Engine(s) (BAQ-GPA/GP-11), at their Bradford County Quarry facility in Burlington Borough, **Bradford County**.

**GP3-41-634: E&J Construction, LLC (1842 Masten Road, Canton, PA 17724)** on September 20, 2010, to construct and operate a portable non-metallic mineral jaw crusher and a portable non-metallic vibratory screen with associated water spray dust suppression systems pursuant to the General Plan Approval And/Or General Operating Permit For Portable Nonmetallic Mineral Processing Plants (BAQ-PGPA/GP-3) at their Minnier Quarry in McNett Township, **Lycoming County**.

**GP9-41-634: E&J Construction, LLC (1842 Masten Road, Canton, PA 17724)** on September 20, 2010, to construct and operate one Caterpillar Model C-9 diesel-fired engine with a rating of 350 brake horsepower (bhp) and one Caterpillar model C4.4 with a rating of 100.6 bhp pursuant to the General Plan Approval and /or General Operating Permit BAQ-GPA/GP-9: Diesel or #2 fuel-fired Internal Combustion Engines at their Minnier Quarry in McNett Township, **Lycoming County**.

**GP3-59-210: New Enterprise Stone & Lime Co., Inc. (P. O. Box 77, New Enterprise, PA 16664)** on Septem-



ber 21, 2010, to construct and operate a portable non-metallic mineral crusher and a portable non-metallic mineral conveyor with associated water spray dust suppression systems pursuant to the General Plan Approval And/Or General Operating Permit For Portable Nonmetallic Mineral Processing Plants (BAQ-PGPA/GP-3) at their Tioga Quarry located in Middlebury Township, **Tioga County**.

**GP9-59-210: New Enterprise Stone & Lime Co., Inc.** (P. O. Box 77, New Enterprise, PA 16664) on September 21, 2010, to construct and operate one Caterpillar Model 3508 diesel-fired engine with a rating of 1,089 brake horsepower (bhp) pursuant to the General Plan Approval and /or General Operating Permit BAQ-GPA/GP-9: Diesel or #2 fuel-fired Internal Combustion Engines at their Tioga Quarry in Middlebury Township, **Tioga County**.

**GP3-14-334: R. S. Services** (119 Falls Road, Beech Creek, PA 16822) on September 21, 2010, to construct and operate a portable non-metallic mineral jaw crusher and a portable non-metallic mineral vibratory screen with associated water spray dust suppression systems pursuant to the General Plan Approval And/Or General Operating Permit For Portable Nonmetallic Mineral Processing Plants (BAQ-PGPA/GP-3) at a facility in Snow Shoe Township, **Centre County**

**GP11-14-334: R. S. Services** (119 Falls Road, Beech Creek, PA 16822) on September 21, 2010, to construct and operate one Deutz model BF6M1015C diesel-fired engine with a rating of 366 brake horsepower (bhp) and one Deutz model BF4M2012 diesel-fired engine with a rating of 100 bhp pursuant to the General Plan Approval And/Or General Operating Permit (BAQ-GPA/GP-11): Nonroad Engines at a facility in Snow Shoe Township, **Centre County**.

**GP5-08-317: Appalachia Midstream Services, LLC.** (PO Box 54382, Oklahoma City, OK 73154-1382) on September 23, 2010, to construct and operate two (2) tri-ethylene glycol dehydrators each rated at 50.6 MMscf/day with TEG reboilers (each rated at 1.0 MMBtu/hr) under the General Plan Approval and/or General Operating Permit for Natural Gas, Coal Bed Methane Or Gob Gas Production Or Recovery Facilities (BAQ-GPA/GP-5) at their Marshview Compressor Station in Asylum Township, **Bradford County**.

**GP5-14-300A: EXCO Resources (PA), Inc.** (3000 Ericsson Drive, Suite 200, Warrendale, PA 15086) on September 28, 2010, to construct and operate one natural gas-fired compressor engine rated at 1,340 brake-horsepower and one 15 million standard cubic feet per day glycol dehydrator equipped with a 750,000 Btu/hr regenerator under the General Plan Approval and/or General Operating Permit for Natural Gas, Coal Bed Methane Or Gob Gas Production Or Recovery Facilities (BAQ-GPA/GP-5) at the Confer Compressor Station in Burnside Township, **Centre County**.

**GP3-08-321: Simonds Excavating, Inc.** (301 Shepard Road, Sayre, PA 18840) on September 28, 2010, to construct and operate three (3) portable non-metallic mineral crushers, three (3) portable non-metallic screeners, and three (3) portable non-metallic mineral conveyors with associated water spray dust suppression systems pursuant to the General Plan Approval And/Or General Operating Permit For Portable Nonmetallic Mineral Processing Plants (BAQ-PGPA/GP-3) at White's Quarry in Stevens Township, **Bradford County**.

**GP9-08-321: Simonds Excavating, Inc.** (301 Shepard Road, Sayre, PA 18840) on September 28, 2010, to construct and operate two Caterpillar Model C-9 diesel-fired engines with a rating of 300 brake horsepower (bhp), one Caterpillar Model C-12 diesel-fired engine with a rating of 425 brake horsepower (bhp), one Caterpillar model C4.4 with a rating of 129.4 bhp, and two Deutz model BF4M1012C diesel-fired engines rated at 110 bhp pursuant to the General Plan Approval and /or General Operating Permit BAQ-GPA/GP-9: Diesel or #2 fuel-fired Internal Combustion Engines at White's Quarry in Stevens Township, **Bradford County**.

**GP5-59-193A: Ultra Resources, Inc.** (304 Inverness Way South, Suite 295, Englewood, CO 80112) on September 28, 2010, to construct and operate of a 330 brake horsepower natural gas-fired compressor engine with catalytic converter, and to incorporate four (4) natural gas-fired line heaters each rated at 0.75 MMBtu/hr, four (4) natural gas-fired glycol reboilers each rated at 0.085 MMBtu/hr, four (4) glycol still vent combustors each rated at approximately 0.57 MMBtu/hr, and four (4) glycol dehydrators under the General Plan Approval and/or General Operating Permit for Natural Gas, Coal Bed Methane Or Gob Gas Production Or Recovery Facilities (BAQ-GPA/GP-5) at the Kjelgaard Compressor Station in Gaines Township, **Tioga County**.

**GP5-08-306A: Appalachia Midstream Services, L.L.C.** (P. O. Box 54382, Oklahoma City, OK 73154) on September 29, 2010, to construct and operate one 650 bhp natural-gas fired rich-burn emergency generator under the General Plan Approval and/or General Operating Permit for Natural Gas, Coal Bed Methane Or Gob Gas Production Or Recovery Facilities (BAQ-GPA/GP-5) at the Granville #2 Station in Granville Township, **Bradford County**.

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**Plan Approvals Issued under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and regulations in 25 Pa. Code Chapter 127, Subchapter B relating to construction, modification and reactivation of air contamination sources and associated air cleaning devices.**

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*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Q. Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**41-00081A: East Lycoming School District** (349 Cemetery Street, Hughesville, PA 17737-1028) on August 30, 2010, to construct a biomass boiler at their East Lycoming School District educational complex in Hughesville, **Lycoming County**.

**41-302-050A: Wirerope Works, Inc.** (100 Maynard Street, Williamsport, PA 17701) on September 3, 2010, to incorporate revised emission limitations, monitoring, recordkeeping, reporting, work practice, and additional requirements for each of the anthracite coal-fired boilers at their facility in the City of Williamsport, **Lycoming County**.

**17-00017C: Rescar, Inc.** (407 West Brentwood Street, Channelview, PA 77530-3952) on September 29, 2010, to construct an abrasive blasting operation at their facility in DuBois, **Clearfield County**.

*Southwest Region: Air Quality Program, 400 Waterfront Drive, Pittsburgh, PA 15222-4745*

*Contact: Mark Gorog and Barb Hatch, Environmental Engineer Managers—Telephone: 412-442-4163/5226*

**PA-30-00936C: EQT Mark West Liberty Midstream and Resources, LLC** (Tower 2, Suite 700, 1515 Arapahoe Street, Denver, CO, 80202) on September 30, 2010, to allow construction of one (1) New Stabilizer and Depropanizer with a 148.0 MMBTU/hr burner and one (1) New Depropanizer with a 7.6 MMBTU/hr regenerator heater at the Houston Gas Processing Plant, in Chartiers Township, **Washington County**.

**32-00055G: EME Homer City Generation, LP** (1750 Power Plant Road, Homer City, PA 15748) on October 1, 2010, to construct and begin initial operation of activated carbon injection (ACI) systems to control mercury emissions from boiler Units 1 & 2 at Homer City Generating Station in Black Lick and Center Townships, **Indiana County**.

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**Plan Approval Revisions Issued including Extensions, Minor Modifications and Transfers of Ownership under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code §§ 127.13, 127.13a and 127.32.**

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*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Q. Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**08-00002C: E.I. DuPont de Nemours Co.** (Patterson Boulevard, Towanda, PA 18848) on August 26, 2010, to authorize the construction and operation of a thermal color coater (No. 11 Coater) and associated air cleaning device (a regenerative thermal oxidizer) until February 22, 2011 in North Towanda Township, **Bradford County**. The plan approval has been extended.

**53-399-008: PA Pellets, LLC** (958 SR 49 West, Ulysses, PA 16948) on September 8, 2010 to extend the authorization to operate a wood-fired rotary wood chip dryer and associated air cleaning device (multiclone collector), two (2) pellet mills, a hammermill and associated air cleaning device (fabric collector), a pellet cooler and associated air cleaning device (cyclone collector), two (2) dried wood chip storage bins and one wood pellet storage bin on a temporary basis until March 5, 2011, at their facility in Ulysses Borough, **Potter County**. The plan approval has been extended.

**59-00017A: Hitachi Metals Automotive Components USA, LLC** (PO Box 68, Blossburg, PA 16912-0068) on September 13, 2010, to extend the authorization to operate a phenolic urethane cold box core-making machine on a temporary basis until March 10, 2011, at their facility in Lawrence Township, **Tioga County**.

**59-00005G: Dominion Transmission, Inc.** (501 Martindale Street, Suite 400, Pittsburgh, PA 15212-5817) on September 19, 2010, to extend the authorization for construction of a 2,370 horsepower, natural gas-fired reciprocating internal combustion compressor engine controlled by a prechambered combustion system, an LE-54C air/fuel ratio controller and an EAS model EN4YE28 oxidation catalyst, for the construction of a 5,810 horsepower (49.98 million Btu per hour heat input), natural gas-fired compressor turbine, controlled by a dry low NOx (SoLoNOx) combustion system and a Universal Silencer oxidation catalyst and for the construction of eight 65

kilowatt model C65 NG Low NOx Capstone MicroTurbines, at the Sabinsville Station in Clymer Township, **Tioga County**.

**08-00002D: E.I. DuPont de Nemours Co.** (Patterson Boulevard, Towanda, PA 18848) on March 26, 2010, to utilize an existing regenerative thermal oxidizer (RTO) to control the air contaminant emissions from Sources P142, P150 and P159 at their Towanda facility in North Towanda Township, **Bradford County** to March 22, 2011. The plan approval has been extended.

**53-00005C: Dominion Transmission, Inc.** (445 West Main Street, Clarksburg, WV 26302-2450) on July 11, 2010, to limit the emission of fugitive volatile organic compounds from the Greenlick facility to January 7, 2011 located in Stewardson Township, **Potter County**. The plan approval has been extended.

*Southwest Region: Air Quality Program, 400 Waterfront Drive, Pittsburgh, PA 15222-4745*

*Contact: M. Gorog & B. Hatch, Environmental Engineer Managers—Telephone: 412-442-4163/5226*

**32-00059B: RRI Energy Northeast Management Co.—Conemaugh Power Plant** (121 Champion Way, Canonsburg, PA, 15317) on October 4, 2010, for an administrative amendment application to change the responsible official and telephone number for the plan approval in West Wheatfield Township, **Indiana County**. Also, a list of additional responsible officials has been added to the comments section of the plan approval.

**26-00579A: Tri-State Bio Fuels, LLC** (Thompson Recovery Road, Lemont Furnace, PA 15456) on October 1, 2010, for a plan approval extension with an expiration date of April 1, 2011, at their Lemont Pellet Plant, a wood pellet manufacturing plant in North Union Township, **Fayette County**. The plan approval has been extended.

**65-00016H: Latrobe Specialty Steel Co.** (2626 Ligonier Street, Latrobe, PA, 15650) on October 4, 2010, to extend the plan approval until a renewal Title V operating permit can be issued to incorporate the plan approval requirements in Latrobe, **Westmoreland County**. Extension of the plan approval has been approved until March 30, 2011. The plan approval has been extended.

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**Title V Operating Permits Issued under the Air Pollution Control Act (35 P. S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter G.**

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*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**53-00007: Dominion Transmission, Inc.** (501 Martindale St. Suite 400, Pittsburgh, PA 15212-5817) on August 30, 2010, to operate their State Line Compressor Station in Genesee Township, **Potter County**. The renewal Title V Operating Permit contains monitoring, recordkeeping and reporting conditions to ensure compliance with applicable Federal and State regulatory requirements.

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**Operating Permits for Non-Title V Facilities Issued under the Air Pollution Control Act (35 P.S. §§ 4001—4015) and 25 Pa. Code Chapter 127, Subchapter F.**

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*Southeast Region: Air Quality Program, 2 East Main Street, Norristown, PA 19401*

*Contact: Janine Tulloch-Reid, Facilities Permitting Chief—Telephone: 484-250-5920*

**23-00103: Elwyn** (111 Elwyn Road, Elwyn, PA 19063) on October 1, 2010, for a Non-Title V Facility, State-Only, Synthetic Minor Permit in Middletown Township, **Delaware County**. Elwyn is a Residential Facility for the Mentally Challenged. The sources of emissions include boilers and emergency generators. The company took an emission limit of 24.9 tons per year of NO<sub>x</sub>. Monitoring, record keeping and reporting requirements have been added to the permit to address applicable limitations.

**09-00110: Riverside Construction Materials, Inc.** (7900 North Radcliffe Street, Bristol, PA 19007) on October 1, 2010, for renewal of the natural minor operating permit no. 09-00110 for the continued operation of their cement and bulk material handling processes in Bristol Township, **Bucks County**. There are no proposed changes to equipment or operating conditions. The Natural Minor Operating Permit will continue to contain monitoring, recordkeeping, and operating conditions designed to keep the facility operating within the allowable emissions and all applicable air quality requirements.

**23-00092: Abbonizio Recycling Corp.** (2900 West Front Street, Chester, PA 19013) on October 1, 2010, for renewal of a non-Title V, State Only Operating Permit in Chester Township, **Delaware County**. Abbonizio Recycling Corporation operates a 125 ton per hour, portable nonmetallic mineral crushing plant. There are no engines associated with the crusher. The only pollutant of concern is particulate matter (PM/PM-10/PM-2.5). This facility is categorized as a natural minor facility. The permit includes monitoring, record keeping and reporting requirements to address all applicable air quality requirements.

**09-00152: Gelest, Inc.** (11 East Steel Road, Morrisville, PA 19067) on October 1, 2010, for a State-Only, Natural Minor Permit in Falls Township, **Bucks County**. The Company has a specialty chemical operation with mainly seven (7) reactors and an electric dryer controlled by condenser and two scrubbers. This facility is a Natural Minor facility. The estimated total VOC emissions from the facility are less than 21.66 tpy, and total HAPs emissions are less than 17.98 tpy. The permit will contain monitoring, recordkeeping, and reporting requirements designed to address all applicable air quality requirements.

*Northcentral Region: Air Quality Program, 208 West Third Street, Williamsport, PA 17701*

*Contact: Muhammad Q. Zaman, Environmental Program Manager—Telephone: 570-327-3648*

**41-00035: Dynamic Surface Applications, Ltd.** (373 Village Road, Pennsdale, PA 17756) on September 13, 2010, issued a State Only operating permit for their facility in Muncy Township, **Lycoming County**. The facility's main source includes one (1) McCarter Inc. manufactured electrically operated BJ mixer. The State Only operating permit contains all applicable regulatory requirements including monitoring, recordkeeping and reporting conditions.

**41-00021: Buckeye Energy Services LLC** (Five TEK Park, 9999 Hamilton Boulevard, Breinigsville, PA 18031) on September 15, 2010, issued a State Only (Synthetic Minor) operating permit for their petroleum bulk storage and distribution (Williamsport Terminal) facility in Armstrong Township, **Lycoming County**. The facility's main sources include a seven (8) storage tanks and two loading racks. The State Only (Synthetic Minor) operating permit contains all applicable regulatory requirements including monitoring, recordkeeping and reporting conditions.

**49-00030: Sunbury Textile Mills, Inc.** (PO Box 768, Sunbury, PA 17801) on September 1, 2010, issued a State Only operating permit for their broadwoven cotton textile facility in City of Sunbury, **Northumberland County**. The facility's main sources include two (2) natural gas/#2 fuel oil fired boilers. The State Only operating permit contains all applicable regulatory requirements including monitoring, recordkeeping and reporting conditions.

**41-00056: Wenger's Feed Mill, Inc.** (101 West Harrisburg Avenue, P. O. Box 26, Rheems, PA 17570-0026) on September 28, 2010, issued a State Only operating permit for their Muncy Mill in Clinton Township, **Lycoming County**. The facility's main air contaminant sources include two (2) natural gas/#2 fuel oil-fired boilers and seventeen (17) grain processing operations. The State Only operating permit contains requirements including monitoring, recordkeeping and reporting conditions to ensure compliance with applicable Federal and State regulations.

*Northwest Region: Air Quality Program, 230 Chestnut Street, Meadville, PA 16335-3481*

*Contact: Matthew Williams, Facilities Permitting Chief—Telephone: 814-332-6940*

**10-00344: Fannie's Friends, Inc.** (352 Railroad Street, Evans City, PA 16033) on September 29, 2010, to perform animal cremations in Evans City Borough, **Butler County**. Emissions from this facility remain below major source levels.

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**Operating Permit Revisions Issued including Administrative Amendments, Minor Modifications or Transfers of Ownership under the Air Pollution Control Act (35 P.S. §§ 4001—4015) and 25 Pa. Code §§ 127.412, 127.450, 127.462 and 127.464.**

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*Southeast Region: Air Quality Program, 2 East Main Street, Norristown, PA 19401*

*Contact: Janine Tulloch-Reid, Facilities Permitting Chief—Telephone: 484-250-5920*

**09-00157: Barrett Asphalt, Inc.** (Steel Road North, Morrisville, PA 19060) on October 1, 2010, for a Non-Title V Facility, State-Only, Synthetic Minor Operating Permit in Falls Township, **Bucks County**. Barrett Asphalt Inc. operates a Hot Mix Asphalt (HMA) plant, which operates on natural gas and utilizes No. 2 fuel as a backup fuel. This operating permit is being amended to correct two site-wide emission rates reported under Section F of the operating permit, specifically for NO<sub>x</sub> and VOC. The correct emission rate for NO<sub>x</sub> is 12.51 tons per 12-month rolling period. The correct emission rate for VOC is 10.84 tons per 12-month rolling period. The permit contains monitoring, recordkeeping, reporting, and work practice standards designed to keep the facility operating within all applicable air quality requirements.

## ACTIONS ON COAL AND NONCOAL MINING ACTIVITY APPLICATIONS

**Actions on applications under the Surface Mining Conservation and Reclamation Act (52 P. S. §§ 1396.1—1396.31); the Noncoal Surface Mining Conservation and Reclamation Act (52 P. S. §§ 3301—3326); the Clean Streams Law (35 P. S. §§ 691.1—691.1001); the Coal Refuse Disposal Control Act (52 P. S. §§ 30.51—30.66); the Bituminous Mine Subsidence and Land Conservation Act (52 P. S. §§ 1406.1—1406.21). The final action on each application also constitutes action on the NPDES permit application and, if noted, the request for a Section 401 Water Quality Certification. Mining activity permits issued in response to such applications will also address the application permitting requirements of the following statutes; the Air Quality Control Act (35 P. S. §§ 4001—4015); the Dam Safety and Encroachments Act (32 P. S. §§ 693.1—693.27); and the Solid Waste Management Act (35 P. S. §§ 6018.101—6018.1003).**

### Coal Permits Actions

*Knox District Mining Office: P. O. Box 669, 310 Best Avenue, Knox, PA 16232-0669, 814-797-1191*

**33940102 and NPDES Permit No. PA0211923. Mahoning Mining, Inc.** (P. O. Box 44, New Bethlehem, PA 16242) Renewal of an existing bituminous strip and auger operation in Knox Township, **Jefferson County** affecting 101.0 acres. This renewal is issued for reclamation only. Receiving streams: Two unnamed tributaries to Lick Run. Application received: July 30, 2009. Permit Issued: September 28, 2010.

*Moshannon District Mining Office: 186 Enterprise Drive, Philipsburg, PA 16866, 814-342-8200*

**17990118 and NPDES No. PA0242730. Swisher Contracting, Inc.** (P. O. Box 1223, Clearfield, PA 16830). Permit renewal for reclamation only of an existing bituminous surface and auger mine located in Lawrence Township, **Clearfield County** affecting 121.4 acres. Receiving streams: unnamed tributaries to Moose Creek, and Moose Creek classified for high quality cold water fisheries. There are no potable water supply intakes within 10 miles downstream. Application received: July 30, 2010. Permit issued: September 23, 2010.

**17060113 and NPDES No. PA0256471. Black Cat Coal, LLC** (107 West First Avenue, Clearfield, PA 16830). Transfer of an existing bituminous surface mine located in Brady Township, **Clearfield County** affecting 60.9 acres. Receiving streams: unnamed tributaries to Stump Creek classified for cold water fishery and unnamed tributary to Limestone Run classified for cold water fishery. There are no potable water supply intakes within 10 miles downstream. Application received: April 12, 2010. Permit issued: September 27, 2010.

**17030109 and NPDES No. PA0243515. Tamburlin Brothers Coal Co.** (P. O. Box 1419, Clearfield, PA 16830). Permit renewal of an existing bituminous surface mine located in Huston Township, **Clearfield County** affecting 147.5 acres. Receiving streams: Grapevine Run and Heath Run classified for cold water fisheries. Application received: June 14, 2010. Permit issued: September 8, 2010.

*Pottsville District Mining Office: 5 West Laurel Boulevard, Pottsville, PA 17901, 570-621-3118*

**19793201R5. Gilberton Coal Company,** (10 Gilberton Road, Gilberton, PA 17934), renewal of an existing anthracite coal refuse reprocessing operation in Conyngham Township, **Columbia County** affecting 3.4 acres, receiving stream: none. Application received: February 17, 2010. Renewal issued: September 28, 2010.

### Noncoal Permits Actions

*Knox District Mining Office: P. O. Box 669, 310 Best Avenue, Knox, PA 16232-0669, 814-797-1191*

**37050302. Quality Aggregates, Inc.** (4955 Steubenville Pike, Suite 245, Pittsburgh, PA 15205) Renewal of NPDES Permit No. PA042632 in Slippery Rock Township, **Lawrence County**, affecting 100.0 acres. Receiving streams: Unnamed tributaries to Slippery Rock Creek. Application received: August 12, 2010. Permit Issued: September 30, 2010.

*Moshannon District Mining Office: 186 Enterprise Drive, Philipsburg, PA 16866, 814-342-8200*

**08102805. Insinger Excavating, Inc.** (3056 Dushore-Overton Road, Dushore, PA 18614), commencement, operation and restoration of a small noncoal (shale and bluestone) operation in Pike Township, **Bradford County** affecting 5.0 acres. Receiving stream(s): Unnamed Tributary to Gaylord Creek, North Branch Wyalusing Creek to Wyalusing Creek to Susquehanna River. Application received: June 11, 2010. Permit issued: September 23, 2010.

## ACTIONS ON BLASTING ACTIVITY APPLICATIONS

**Actions on applications under the Explosives Acts of 1937 and 1957 (43 P. S. §§ 151—161); and 25 Pa. Code § 211.124 (relating to blasting activity permits). Blasting activity performed as part of a coal or noncoal mining activity will be regulated by the mining permit for that coal or noncoal mining activity.**

### Blasting Permits Actions

*Knox District Mining Office: P. O. Box 669, 310 Best Avenue, Knox, PA 16232-0669, 814-797-1191*

**24104018. Appalachian Geophysical Services, LLC** (2659 State Route 60, P. O. Box 426, Killbuck, OH 44637) Blasting Activity Permit for seismic exploration in Horton Township, **Elk County**. This Blasting Activity Permit will expire on October 31, 2010. Application received: September 27, 2010. Permit Issued: September 29, 2010.

*Moshannon District Mining Office: 186 Enterprise Drive, Philipsburg, PA 16866, 814-342-8200*

**08104022. John Brainard** (3978 SR 2073, Kingsley, PA 18826). Blasting for a well pad located in Tuscarora Township, **Bradford County**. Permit issued: September 28, 2010. Permit expires: July 31, 2011.

**08104023. John Brainard** (3978 SR 2073, Kingsley, PA 18826). Blasting for a well pad located in Canton Township, **Bradford County**. Permit issued: September 28, 2010. Permit expires: July 31, 2011.

**08104125. Meshoppen Blasting, Inc.** (Frantz Road, P. O. Box 127, Meshoppen, PA 18630). Blasting for a well site located in Tuscarora Township, **Bradford County**. Permit issued: September 24, 2010. Permit expires: November 15, 2010.

**14104009. Dynamic Drilling, LLC** (10373 Taylor Hawks Road, Herron, MI 46744). Seismic exploration blasting for the RRC line 20 located in Snow Shoe Township, **Centre County**. Permit issued: September 15, 2010. Permit expires: December 30, 2010.

**14104011. Douglas Explosives, Inc.** (P. O. Box 77, Philipsburg, PA 16866). Construction blasting for the Rockview Prison SCI Project DGS 571-31 located in Benner Township, **Centre County**. Permit issued: September 23, 2010. Permit expires: September 20, 2011.

**53104008. Tesla-Conquest** (504 IST Center—Damiel, Zenker Drive, Horseheads, NY 14845). Seismic exploration blasting located in Ulysses Township, **Potter County**. Permit issued: September 21, 2010. Permit expires: August 14, 2011.

**41104007. Doug Wathen, LLC** (16208 State Highway 13, Suite 100, Branson West, MO 65616). Blasting for Renn to Deitrick & TLT Lateral Natural Gas Pipeline located in Jordan Township, **Lycoming County**. Permit issued: September 28, 2010. Permit expires: March 10, 2011.

**41104008. Doug Wathen, LLC** (16208 State Highway 13, Suite 100, Branson West, MO 65616). Blasting for Jenzano to Renn Natural Gas Pipeline located in Franklin and Jordan Townships, **Lycoming County**. Permit issued: September 28, 2010. Permit expires: March 10, 2011.

**41104111. Midstream Explosives, LLC** (289 Southside Drive, Newville, PA 17241). Blasting for Lone Walnut compressor station revised located in Cummings Township, **Lycoming County**. Permit issued: September 30, 2010. Permit expires: October 1, 2011.

**41104112. Midstream Explosives, LLC** (289 Southside Drive, Newville, PA 17241). Blasting for Breon compressor station revised located in Watson Township, **Lycoming County**. Permit issued: September 30, 2010. Permit expires: October 1, 2011.

**41104113. Midstream Explosives, LLC** (289 Southside Drive, Newville, PA 17241). Blasting for PVR Gathering Line Phase 1 pipeline located in Cummings, Mifflin and Watson Townships, **Lycoming County**. Permit issued: September 30, 2010. Permit expires: October 1, 2011.

*Pottsville District Mining Office: 5 West Laurel Boulevard, Pottsville, PA 17901, 570-621-3118*

**64104115. Holbert Explosives, Inc.**, (237 Mast Hope Plank Road, Lackawaxen, PA 18435), construction blasting for Runaway Farm in Berlin Township, **Wayne County** with an expiration date of September 20, 2011. Permit issued: September 28, 2010.

**22104112. Abel Construction Co., Inc.**, (P. O. Box 476, Mountville, PA 17554), construction blasting for Southpoint Meadows in Derry Township, **Dauphin County** with an expiration date of September 21, 2011. Permit issued: September 29, 2010.

**22104115. Maine Drilling & Blasting**, (P. O. Box 1140, Gardiner, ME 04345), construction blasting for Spring Hill Development in Swatara Township, **Dauphin County** with an expiration date of September 22, 2011. Permit issued: September 29, 2010.

**58104117. Hayduk Enterprises, Inc.**, (257 Riverside Drive, Factoryville, PA 18419), construction blasting for Fraiser 1V Well Pad in Forest Lake Township, **Susquehanna County** with an expiration date of September 30, 2011. Permit issued: September 30, 2010.

**58104118. Hayduk Enterprises, Inc.**, (257 Riverside Drive, Factoryville, PA 18419), construction blasting for Smith 7H—8H Well Pad in Springville Township, **Susquehanna County** with an expiration date of September 30, 2011. Permit issued: September 30, 2010.

**64104114. Hayduk Enterprises, Inc.**, (257 Riverside Drive, Factoryville, PA 18419), construction blasting for Stone Hedge Golf Course in Tunkhannock Township, **Wayne County** with an expiration date of September 30, 2011. Permit issued: September 30, 2010.

**22104114. Maine Drilling & Blasting**, (PO Box 1140, Gardiner, ME 04345), construction blasting for Hershey Next Century in Derry Township, **Dauphin County** with an expiration date of September 27, 2011. Permit issued: October 1, 2010.

## FEDERAL WATER POLLUTION CONTROL ACT SECTION 401

The Department of Environmental Protection has taken the following actions on previously received permit applications, requests for Environmental Assessment approval, and requests for Water Quality Certification under Section 401 of the Federal Water Pollution Control Act (FWPCA) (33 U.S.C.A. 1341).

Except as otherwise noted, the Department of Environmental Protection has granted 401 Water Quality Certification certifying that the construction and operation described will comply with the applicable provisions of Sections 301—303, 306 and 307 of the FWPCA 33 U.S.C. §§ 1311—1313, 1316 and 1317, and that the construction will not violate applicable Federal and State Water Quality Standards.

Any person aggrieved by these actions may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P. S. Section 7514, and the Administrative Agency Law, 2 Pa. C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P. O. Box 8457, Harrisburg, PA 17105-8457, 717-787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800-654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of publication of this notice in the *Pennsylvania Bulletin*, unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717-787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

If you want to challenge this action, your appeal must reach the Board within 30 days. You do not need a lawyer to file an appeal with the Board.

Important legal rights are at stake, however, so you should show this notice to a lawyer at once. If you cannot afford a lawyer, you may qualify for free pro bono representation. Call the secretary to the Board (717-787-3483) for more information.

**Actions on applications for the following activities filed under the Dam Safety and Encroachments Act (32 P. S. §§ 693.1—693.27), Section 302 of the Flood Plain Management Act (32 P. S. § 679.302) and the Clean Streams Law (35 §§ 691.1—691.702) and Notice of Final Action for Certification under Section 401 of the Federal Water Pollution Control Act (33 U.S.C. § 1341).**

*Permits, Environmental Assessments and 401 Water Quality Certifications Issued:*

**WATER OBSTRUCTIONS AND ENCROACHMENTS**

*Southcentral Region: Water Management Program Manager, 909 Elmerton Avenue, Harrisburg, PA 17110. Telephone: 717-705-4707.*

**E38-165: Crossings at Sweet Briar**, Clifford Weaver, President, Landmark Homes, 1767 W. Main St., Ephrata, PA 17522-1103, North Lebanon Township, **Lebanon County**, ACOE Baltimore District

To construct and maintain (1) dual 91-foot long, 6-inch depressed, 34-inch by 53-inch elliptical concrete culvert pipes, an 8-inch PVC sanitary sewer line and an 8-inch D1CL water line in and across an UNT to the Brandywine Creek (WWF), impacting 0.08 acres of PEM wetlands, (Lebanon, PA Quadrangle: 21.46 inches N, 3.29 inches W; Latitude: 40° 22' 5.44"N, Longitude: 76° 23' 55.15"W); (2) a 97-foot long, 6-inch depressed 42-inch diameter HDPE culvert pipe in an unnamed tributary to the Brandywine Creek (WWF), impacting 0.17 acres of PFO wetlands (Lebanon, PA Quadrangle: 21.60 inches N, 5.84 inches W; Latitude: 40° 22' 8.23"N, Longitude: 76° 24' 0.85"W); (3) an 8-inch diameter HDPE sanitary sewer line crossing of an unnamed tributary to Brandywine Creek (WWF), temporarily impacting 0.04-acres of PEM wetlands (Lebanon, PA Quadrangle: 21.49 inches N, 3.40 inches W; Latitude: 40° 22' 5.97"N, Longitude: 76° 23' 57.91"W); (4) a 14-foot wide, single span pedestrian bridge having a normal span of 40.0 feet and an underclearance of 2.1 feet across an unnamed tributary to the Brandywine Creek (WWF), temporarily impacting 0.01 acres of PEM wetlands (Lebanon, PA Quadrangle: 21.43 inches N, 3.38 inches W; Latitude: 40° 22' 4.85"N, Longitude: 76° 23' 57.45"W); (5) a 14-foot wide single span pedestrian bridge having a normal span of 25.0 feet and an underclearance of 1.6 feet across an unnamed tributary to the Brandywine Creek (WWF), temporarily impacting 0.004 acres of PEM wetlands (Lebanon, PA Quadrangle: 21.37 inches N, 3.36 inches W; Latitude: 40° 22' 3.73"N, Longitude: 76° 23' 56.75"W); and (6) a 14-foot wide, single span pedestrian bridge having a normal span of 28.0 feet and an underclearance of 1.9 feet across an unnamed tributary to Brandywine Creek (WWF), temporarily impacting 0.005 acres of PEM wetlands (Lebanon, PA Quadrangle: 21.36 inches N, 3.34 inches W; Latitude: 40° 22' 3.49"N, Longitude: 76° 23' 56.29"W), all for the purpose of developing a residential and commercial subdivision in North Lebanon Township, **Lebanon County**. Wetland mitigation in the amount of 0.42-acres will occur onsite.

*Northcentral Region: Watershed Management Program Manager, 208 West Third Street, Williamsport, PA 17701, 570-327-3636*

**E08-465. East Resources, Inc.**, 301 Brush Creek Road, Warrendale, PA 15086. Water Obstruction and Encroachment Joint Permit Application, T-C Palmer/Castle Gathering Pipeline in Canton Township, **Bradford County**, ACOE Baltimore District (Grover, PA Quadrangle N: 41° 37' 22.6"; W: 76° 50' 29.6").

To construct, operate, and maintain:

(1) a 8.0-inch diameter natural gas gathering line impacting 34.0-feet of an unnamed tributary to Towanda Creek (CWF-MF) (Grover, PA Quadrangle; Latitude: 41°37'26", Longitude -76°50'38"),

(2) a timber mat bridge with 20 lineal feet of 30-inch culvert pipes for structural support for a temporary road crossing of an unnamed tributary to Towanda Creek (CWF, MF) (Grover, PA Quadrangle Latitude: 41°37'26", Longitude 76°50'38"),

(3) a 8-inch diameter natural gas gathering line impacting 3,447 square feet (0.079 acre) PEM wetland crossing (Canton, PA Quadrangle Latitude: 41°37'44", Longitude -76°50'53"),

(4) a 8-inch diameter natural gas gathering line impacting 5,406 square feet (0.124 acre) PEM wetland crossing (Canton, PA Quadrangle Latitude: 41°37'46", Longitude -76°50'53"),

(5) a 8-inch diameter natural gas gathering line impacting 11 square feet (0.001 acre) PEM wetland crossing (Grover, PA Quadrangle Latitude: 41°37'22", Longitude -76°50'35"),

(6) a 8-inch diameter natural gas gathering line impacting 1,577 square feet (0.036 acre) Exceptional Value PEM wetland crossing (Grover, PA Quadrangle Latitude: 41°37'23", Longitude -76°50'52"),

(7) a 8-inch diameter natural gas gathering line impacting 2,297 square feet (0.053 acre) Exceptional Value PEM wetland crossing (Grover, PA Quadrangle Latitude: 41°37'30", Longitude -76°49'41"),

The project will result in 34.0 linear feet of temporary channel impacts, and 0.292 acre of temporary PEM wetland impacts all for the purpose of installing a natural gas gathering line.

**E59-498. Ultra Resources, Inc.**, 304 Inverness Way South, Englewood, CO 80112-5828. Water Obstruction and Encroachment Joint Permit, PL-130 Marshlands Play Pipeline, in Gaines Township, **Tioga County**, ACOE Baltimore District (Marshlands, PA Quadrangle N: 41° 42' 31.4"; W: 77° 35' 48.3").

To construct and maintain 4800 linear feet of 8-inch natural gas pipeline, to include two (2) wetland and one (1) stream crossing under Babylon Run (High-Quality Cold Water Fishery, MF—Wild Trout) along Babylon Road approximately 1 mile west of the intersection with SR 3001 outside the Village of Marshlands, Tioga County.

**E59-499. East Resources, Inc.**, 301 Brush Creek Road, Warrendale, PA 15086. Water Obstruction and Encroachment Joint Permit Application, in Sullivan Township, **Tioga County**, ACOE Susquehanna River Basin District (Roseville, PA Quadrangle N: 41° 49' 05"; W: 76° 56' 01").

To remove an existing 80-inch diameter metal culvert and construct and maintain a pre-fabricated steel bridge having a span of 33 feet, width of 13 feet and an underclearance of 7 feet over an UNT to Elk Run (CWF). The bridge is located off Huslander Road, 0.5 mile south of the intersection with SR 1010 in Sullivan Township, Tioga County. This project proposes to permanently impact 20 linear feet of the UNT to Elk Run, which is designated a Cold Water Fishery and proposes no impacts to jurisdictional wetlands.

**E59-500. East Resources, Inc.**, 301 Brush Creek Road, Warrendale, PA 15086. Water Obstruction and Encroachment Joint Permit Application, in Osceola Town-

ship, **Tioga County**, ACOE Susquehanna River Basin District (Elkland, PA Quadrangle N: 41° 59' 14.8"; W: 77° 21' 14.2").

To place 15 cubic yard of clean-fill material in the floodway of a UNT to Holden Creek to construct a well pad access road. The fill is located off SR 4017, 0.5 miles north of the intersection with SR 0049 in Osceola Township, Tioga County. This project proposes to impact 28 linear feet of the jurisdictional floodway associated with the UNT to Holden Creek, which is designated a Warm Water Fishery and proposes no impacts to jurisdictional wetlands.

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## SPECIAL NOTICES

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### **Plan Revision Approval under the Municipal Waste Planning, Recycling and Waste Planning, Recycling and Waste Reduction Act of 1988, Act 101**

*Southcentral Region: Waste Management Program Manager, 909 Elmerton Avenue Harrisburg, PA 17110.*

The Department of Environmental Protection (Department) approved the Fulton County Municipal Waste Management Plan Revision on September 17, 2010.

Persons aggrieved by an action may appeal, under section 4 of the Environmental Hearing Board Act (35 P. S. 7514) and 2 Pa. C.S. 501—508 and 701—704 (relating to the Administratively Agency Law), to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P. O. Box 8457, Harrisburg, PA 17105-8457, (717) 787-3483. TDD users may contact the Environmental Hearing Board (Board) through the Pennsylvania Relay Service, (800) 654-5984. Appeals must be filed with the Board within 30 days of publication of this notice in the *Pennsylvania Bulletin*, unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and

procedure are also available in Braille or on audiotape from the Secretary of the Board at (717) 787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decision law.

For individuals who wish to challenge an action, appeals must reach the Board within 30 days. A lawyer is not needed to file an appeal with the Board.

Important legal rights are at stake, however, so individuals should show this notice to a lawyer at once. Persons who cannot afford a lawyer may qualify for free pro bono representation. Call the Secretary to the board at (717) 787-3483 for more information.

The plan revision is a public document and may be viewed at the Department Regional Office previously noted.

Questions concerning this approval should be directed to Anthony Rathfon, Program Manager, Department of Environmental Protection, Waste Management Program at the previous Regional Office.

### **Notice of Certification to Perform Radon-Related Activities in Pennsylvania**

In the month of September 2010 the Department of Environmental Protection of the Commonwealth of Pennsylvania, under the authority contained in the Radon Certification Act, act of July 9, 1987, P. L. 238, No. 43 (63 P. S. Sections 2001-2014) and regulations promulgated thereunder at 25 Pa. Code Chapter 240, has certified the persons listed below to perform radon-related activities in Pennsylvania. The period of certification is two years. (For a complete list of persons currently certified to perform radon-related activities in Pennsylvania and for information as to the specific testing devices that persons certified for testing or laboratory are certified to use, contact the Bureau of Radiation Protection, Radon Division, P. O. Box 8469, Harrisburg, PA 17105-8469, (1-800-23RADON).

<i>Name</i>	<i>Address</i>	<i>Type of Certification</i>
A-1 Realty Services, Inc.	99 Kohler Road Kutztown, PA 19530	Testing
John Bertone	420 William Street Downingtown, PA 19335	Testing
James Bucciarelli Certified Testing Services, Inc.	474 Easton Road Horsham, PA 19044	Testing
Nathaniel Burden, Jr. Fidelity Inspection & Consulting Services	626 Jacksonville Road Suite 200 Warminster, PA 18974	Testing
Certified Testing Services, Inc.	474 Easton Road Horsham, PA 19044	Mitigation
Andrew Dionne	421 West Chocolate Avenue Hershey, PA 10733	Testing
Stephen Fiorelli	700 Braxton Road Ridley Park, PA 19078	Testing
Walter Hanes	5216 Paradise Valley Road St. Marys, PA 15857	Testing
J.L. Camp Inspection Services, Inc.	6006 Forest Drive Monaca, PA 15061	Testing

<i>Name</i>	<i>Address</i>	<i>Type of Certification</i>
Douglas Kaup	263 Sewickley Oakmont Road Pittsburgh, PA 15237	Testing
Robert Klebanoff	6 Greenwood Place Wyncote, PA 19095	Testing
Deborah Mancini-Wilson Safeguard Home Inspection Services, Inc.	P. O. Box 748	Testing
John Moreck	201 Cooper Street Courtdale, PA 18704	Testing
Wesley Morgan	338 Rockhill Road Pittsburgh, PA 15243	Testing
David Mull	14 Crestmont Court Lititz, PA 17543	Testing
Jeffrey Nicholls	P. O. Box 400 Henryville, PA 18332	Testing
Onega LLC—Amerispec	333 Lindsay Road Zelienopole, PA 16063	Testing
Property Inspectors, Inc.	485 East College Avenue Pleasant Gap, PA 16823	Testing
Richard D. Malin & Associates, Inc.	2075 Haymaker Road Monroeville, PA 15146	Testing
Jeffrey Schlaline	800 Locust Grove Road York, PA 17402	Testing
Kimberly Skladanowski	5140 Amherst Road Erie, PA 16506	Testing
James Wandless	1424 West 30th Street Erie, PA 16508	Mitigation

#### Categorical Exclusion

*Northeast Region: Water Management Program, 2 Public Square, Wilkes-Barre, PA 18711-0790*

*Project Information:*

<i>Project Applicant</i>	<i>Project Applicant's Address</i>	<i>Project Location (Municipality)</i>	<i>Project Location (County)</i>
Scranton Sewer Authority	312-314 Adams Avenue Scranton, PA 18503	Scranton City	Lackawanna

*Description:* The Authority proposes to upgrade its wastewater treatment facility to a biological nutrient reduction (BNR) process in order to meet Chesapeake Bay Nutrient Reduction requirements. This will include addition of a new primary treatment tank; new secondary treatment tank reactors; modification of existing tanks; supplemental carbon feed system; chemical feed system; plus upgrades to various process equipment. Project will also hydraulically maximize use of the treatment plant in accordance with EPA Compliance Order and Authority's CSO Long Term Control Plan. The Pennsylvania Infrastructure Investment Authority, which administers the Commonwealth's State Revolving Fund, is intended to be the funding source for this proposed project. The Department's review of the project and the information received has not identified any significant adverse environmental impact resulting from this proposal. The Department hereby categorically excludes this project from the State Environmental Review Process.

[Pa.B. Doc. No. 10-1967. Filed for public inspection October 15, 2010, 9:00 a.m.]

#### Availability of Technical Guidance

Technical guidance documents are available on the Department of Environmental Protection's (Department) web site at <http://www.depweb.state.pa.us> (DEP Key-words: "eLibrary"). The "Technical Guidance Final Documents" heading is the link to a menu of the various Department bureaus where each bureau's final technical guidance documents are posted. The "Technical Guidance Draft Documents" heading is the link to the Department's draft technical guidance documents.

The Department will continue to revise its nonregulatory documents, as necessary, throughout 2010.

#### Ordering Paper Copies of Department Technical Guidance

The Department encourages the use of the Internet to view and download technical guidance documents. When this option is not available, persons can order a paper copy of any of the Department's draft or final technical guidance documents by contacting the Department at (717) 783-8727.

In addition, bound copies of some of the Department's documents are available as Department publications. Check with the appropriate bureau for more information about the availability of a particular document as a publication.



*Changes to Technical Guidance Documents*

Following is the current list of recent changes. Persons who have questions or comments about a particular document should call the contact person whose name and phone number is listed with each document.

*Final Technical Guidance—Substantive Revision*

DEP ID: 257-3120-003. Title: Guidelines for Conducting Underground Storage Tank Facility Operations Inspections. Description: Storage Tank Regulations require periodic inspection of the operation of underground storage tank facilities. The purposes of the inspections are to determine if a facility's underground storage tanks have been installed and are being operated, and maintained in accordance with Storage Tank Regulations. Third-party inspectors, certified by the Department, perform routine facility operations inspections. This guidance clarifies the procedures certified inspectors should follow when completing an underground storage tank facility operations inspection. Substantive revisions were made to the guidance to update the procedures Department-certified inspectors should follow when completing an underground storage tank facility operations inspection. Contact: Questions regarding this technical guidance document should be directed to Kris Shiffer at (717) 772-5809 or kshiffer@state.pa.us.

Effective Date: October 16, 2010.

DEP ID: 257-2300-001. Title: Underground Storage Tank Class A and Class B Operator Training Courses. Description: Storage Tank Regulations require that underground storage tank operators be designated by tank owners and trained as soon as practicable, contingent upon availability of approved training providers, but not later than August 8, 2012 (See Section 245.436 relating to operator training). There are three distinct classes of operators: Class A, B and C. Class A and B operators require formal training, testing and certification of training completion. Enactment of the Federal Energy Policy Act of 2005 requires states receiving funds under RCRA, Subtitle I to implement an underground storage tank operator training program. Contact: Questions regarding this technical guidance document should be directed to Kris Shiffer at (717) 772-5809 or kshiffer@state.pa.us.

Effective Date: October 16, 2010.

JOHN HANGER,  
*Secretary*

[Pa.B. Doc. No. 10-1968. Filed for public inspection October 15, 2010, 9:00 a.m.]

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### Bid Opportunity

**BOGM 09-13, Cleaning out and plugging 12 abandoned and orphan oil wells, (Diane Crone, Richard L. Lyle, Rose J. Servidio, Richard A. Smith, I.L. Green, Joan K. Nichols, Ralph Brent Ordway, Mr. and Mrs. Charles Grinnen and John Chapman Urbaitis Properties), Warren City and Glade Township, Warren County.** The principal items of work include cleaning out and plugging 12 abandoned and orphan oil wells, estimated to be 800 feet in depth, to the Department of Environmental Protection specifications, preparing and restoring well site and mobilizing and demobilizing plugging equipment. This project issues on October 15, 2010, and bids will be opened on November 18, 2010, at 2 p.m. Bid documents cost \$10 per set and

will not be mailed until payment has been received. A prebid conference is planned for this project but a date has not been set. Use the contact information contained in this advertisement to find out more about the prebid. Contact the Construction Contracts Section at (717) 787-7820 or joelmiller@state.pa.us for more information on this bid.

JOHN HANGER,  
*Secretary*

[Pa.B. Doc. No. 10-1969. Filed for public inspection October 15, 2010, 9:00 a.m.]

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### Final NPDES General Permit for Stormwater Associated with Mining Activities (BMR GP-104)

In accordance with The Clean Streams Law (35 P. S. §§ 691.1—691.1001), the Clean Water Act (33 U.S.C.A. §§ 1251—1387) and 25 Pa. Code Chapters 92a and 102 (relating to National Pollutant Discharge Elimination System permitting, monitoring and compliance; and erosion and sediment control and stormwater management), the Department of Environmental Protection (Department) by this notice announces the availability of an NPDES General Permit for Stormwater Associated with Mining Activities (BMR GP-104).

*Applicability*

This general permit applies to earth disturbance activity of 1 acre or greater associated with mining. This general permit is issued in conjunction with a separate mining permit or exploration where the only potential discharge to surface waters of this Commonwealth will be composed entirely of stormwater, in which the main potential pollutant is sediment. Mining activity types eligible for coverage under this permit include surface and underground coal mining permits, large noncoal mining permits, small noncoal mining permits, general permits (for mining) and coal/noncoal exploration.

The general permit will not apply to those sites that have an individual NPDES permit or other NPDES general permit or to those activities where one or more of the conditions listed in 25 Pa. Code § 92a.54(e)(1)—(9) (relating to general permits) exist. An individual NPDES permit is necessary if the associated mining activity will or has the potential to discharge to HQ or EV designated waters, including EV wetlands, or to streams designated as “impaired waters” for sediment.

Under 25 Pa. Code § 92a.32 (relating to stormwater discharges) (incorporating by reference 40 CFR 122.26(a), (b), (c)(1), (d), (e)(1), (3)—(9) and (f)—(g) (relating to storm water discharges (applicable to State NPDES programs, see § 123.25))), an NPDES permit is required for discharges associated with a mining operation which are composed entirely of stormwater. A mining operation is required to have an individual NPDES permit, or coverage under a general NPDES permit, if the site has expected or potential discharges of stormwater runoff.

This general permit will apply to mining activities (as defined in 25 Pa. Code §§ 87.1 and 88.1 as “Surface mining activities” and in 25 Pa. Code § 77.1 (relating to definitions) as “Noncoal surface mining activities”) where the only potential source of pollution is suspended solids from stormwater runoff. This general permit will address stormwater in association with mining activities and adjacent areas that may not be part of the mining permit but are integral to it (such as access roads and processing

facilities). An effort has been made to minimize the overlap of information between the mining permit activity applications and coverage under this general permit. Therefore, the information submitted by the operator in support of coverage under this General Permit is directly correlated to the information supplied in the associated mining permit or exploration.

This general permit will include provisions for coverage for a permitted area of one acre or greater, and is for stormwater-related discharges only, not process water or pumped groundwater.

Coverage under this general permit is not a replacement for an individual NPDES if there is substantive reason for an individual discharge permit to be issued.

#### *Public Participation*

Public notice of this proposed permit was published at 39 Pa.B. 734 (February 7, 2009).

There was a 30-day comment period during which interested persons had an opportunity to submit written comments. Written comments received during the 30-day comment period as well as comments from the United States Environmental Protection Agency (EPA), Region III, were considered in the formulation of the final permit. There were seven commentators in addition to the EPA. The Department reviewed and prepared a Comment and Response document which has been published on the Department web site in the final package for this General Permit.

Documents pertaining to this General Permit are located at <http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-9709>.

JOHN HANGER,  
*Secretary*

[Pa.B. Doc. No. 10-1970. Filed for public inspection October 15, 2010, 9:00 a.m.]

### **Public Notice of Proposed Draft Renewal of the National Pollutant Discharge Elimination System General Permit for Discharges of Stormwater Associated with Industrial Activities (PAG-03)**

Under The Clean Streams Law (35 P.S. §§ 691.1—691.1001) and sections 1905-A, 1917-A and 1920-A of The Administrative Code of 1929 (71 P.S. §§ 510-5, 510-17 and 510-20), the Department of Environmental Protection (Department) by this notice informs the public of the availability of the draft renewed NPDES General Permit for Discharges of Stormwater Associated With Industrial Activities (PAG-03). The current General Permit will expire at 12 a.m. on December 4, 2010, unless rescinded by the Department at an earlier date.

This General Permit will continue to be not applicable for stormwater discharges to “high quality” and “exceptional value” waters designated under 25 Pa. Code Chapter 93 (relating to water quality standards). An individual permit is required for such discharges.

The Department will continue to use Standard Industrial Classification Codes, per the United States Environmental Protection Agency’s 2008 final Multi-Sector General Permit, to define the categories of industrial activities covered by this permit.

There are several changes to this General Permit compared to the current PAG-03 that will expire on December 4, 2010. The key changes are:

- Introduction of new terms: Exposed salt storage and distribution piles, Discharge, Significant spills, have been added and defined to make the permit clearer.
- Several parameters have been removed from monitoring requirements in Appendices A, B, C, D and J as a result of the Tetra Tech study report and agreement with ALCOA, while appendix L (Petroleum Marketing Terminals) was revised to include 15/30mg/L for oil and grease limitations.
- Appendix M (Non-Classified Facilities) was added. Facilities cannot choose coverage under this section, but can only be assigned coverage by the Department.
- The Notice of Intent (NOI) form now has some new blocks to get more useful information from the permittees. Examples include applicable appendix which the industrial activity falls under, Superfund Amendments, thermal impacts analysis and Reauthorization Act (SARA) Title 3 questions about reportable quantities are now much clearer.
- The NOI filing fees have changed from \$100 to \$750.
- All Discharge Monitoring Reports (DMRs) have added space for naming the watershed where the monitoring took place, and the certification language has been corrected and standardized.
- A new paragraph has been included to clarify what constitutes “No Exposure,” making it possible for more facilities to qualify for “No Exposure Certification,” while the No Exposure Certification questions have included a question about the development of a comprehensive Preparedness, Prevention and Contingency plan.

The permit documents package will be available at the Department’s central and regional offices and can still be accessed at the Department’s web site at [www.depweb.state.pa.us](http://www.depweb.state.pa.us) by selecting Permits, Licensing and Certification; Program-Specific Permit/Authorization Packages; Water Management; NPDES; General Permits; PAG-03; Discharges of Stormwater Associated with Industrial Activities.

The Department, by this notice, invites public comments on the draft renewed permit and seeks input on the documents. If there is significant public interest in the General Permit or if requested, the comment period may be extended at the discretion of the Department for an additional 15-day period. Only the comments received within the specified period will be considered in the preparation of the final documents for the General Permit. Persons who wish to comment should include their name, address, telephone number and a concise comment statement to inform the Department of the exact basis of the comment and the relevant facts upon which it is based. If significant issues of public interest are raised, the Department may schedule a public meeting. Comments must be submitted by November 15, 2010. Interested persons may send comments to the Department’s Bureau of Water Standards and Facility Regulation, P. O. Box 8467, Harrisburg, PA 17105-8467, (717) 787-8184, or e-mail Geoffrey O. Maduka at [gmaduka@state.pa.us](mailto:gmaduka@state.pa.us). Comments will not be accepted by facsimile or on voice mail.

Persons with a disability may use the Pennsylvania AT&T Relay Service by calling (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). Following the specified comment period, the Department will review all submitted comments, prepare a written comments and

response document, and prepare final documents package for this permit. An availability notice of the final permit documents will be published in the *Pennsylvania Bulletin*.

JOHN HANGER,  
*Secretary*

[Pa.B. Doc. No. 10-1971. Filed for public inspection October 15, 2010, 9:00 a.m.]

## DEPARTMENT OF GENERAL SERVICES

### Real Estate for Sale Erie County

The Department of General Services (Department) will accept bids for the purchase of 0.48-acre ± of land and building containing 10,985 square feet ±, formerly known as the Corry National Guard Armory located at 215 East Washington Street, City of Corry, Erie County. Bids are due Tuesday, February 8, 2011. Interested parties wishing to receive a copy of Solicitation No. 94391 should view the Department's web site at [www.dgs.state.pa.us](http://www.dgs.state.pa.us) or call Lisa Kettering at (717) 787-1321.

ELIZABETH A. O'REILLY,  
*Acting Secretary*

[Pa.B. Doc. No. 10-1972. Filed for public inspection October 15, 2010, 9:00 a.m.]

## DEPARTMENT OF HEALTH

### Long-Term Care Nursing Facilities; Requests for Exception

The following long-term care nursing facility is seeking an exception to 28 Pa. Code § 205.25(a) (relating to kitchen).

Evergreen Health Care Center  
701 Clay Avenue  
Scranton, PA 18510  
FAC ID 133802

The following long-term care nursing facility is seeking an exception to 28 Pa. Code § 205.27 (relating to lounge and recreation rooms).

ManorCare Health Services—York South  
200 Pauline Drive  
York, PA 17402

These requests are on file with the Department of Health (Department). Persons may receive a copy of a request for exception by requesting a copy from the Division of Nursing Care Facilities, Room 526, Health and Welfare Building, Harrisburg, PA 17120, (717) 787-1816, fax (717) 772-2163, [ra-paexcept@state.pa.us](mailto:ra-paexcept@state.pa.us).

Persons who wish to comment on an exception request may do so by sending a letter by mail, e-mail or facsimile to the Division at the address listed previously.

Comments received by the Department within 15 days after the date of publication of this notice will be reviewed by the Department before it decides whether to approve or disapprove the request for exception.

Persons with a disability who wish to obtain a copy of the request and/or provide comments to the Department and require an auxiliary aid, service or other accommodation to do so, should contact V/TT (717) 783-6514 for speech and/or hearing impaired persons or the Pennsylvania AT&T Relay Service at (800) 654-5984 (TT).

MICHAEL K. HUFF,  
*Acting Secretary*

[Pa.B. Doc. No. 10-1973. Filed for public inspection October 15, 2010, 9:00 a.m.]

### Renal Disease Advisory Committee Meeting

The Renal Disease Advisory Committee, established by section 4 of the act of June 23, 1970 (P. L. 419, No. 140) (35 P. S. § 6204), will hold a public meeting on Friday, October 22, 2010, from 10 a.m. to 2 p.m. The meeting will be held in Conference Room 327 of the Health and Welfare Building, 625 Forster Street, Harrisburg, PA 17120.

Questions regarding this notice should be directed to Carolyn S. Cass, Director, Division of Child and Adult Health, Department of Health, Health and Welfare Building, 625 Forster Street, Seventh Floor—East Wing, Harrisburg, PA 17120. Persons with a disability may submit questions to Carolyn S. Cass in alternative formats, such as audiotape, Braille or TDD (717) 783-6514 or TT (800) 654-5984. Persons with a disability who require an alternative format of this document (for example, large print, audio tape or Braille) should contact Carolyn S. Cass to make the necessary arrangements.

This meeting is subject to cancellation without notice.

MICHAEL K. HUFF,  
*Acting Secretary*

[Pa.B. Doc. No. 10-1974. Filed for public inspection October 15, 2010, 9:00 a.m.]

## DEPARTMENT OF PUBLIC WELFARE

### Preventable Serious Adverse Events in Nonpublic and County Nursing Facilities

#### *Purpose of Notice*

The purpose of this notice is to announce that the Department of Public Welfare (Department) intends to issue the following proposed bulletin under 35 P. S. § 449.94(d) (relating to nursing facility preventable serious adverse events bulletin).

#### *Public Comment*

Interested persons are invited to submit written comments regarding the bulletin to the Department at the following address: Commonwealth of Pennsylvania, Department of Public Welfare/Department of Aging, Office of Long-Term Living, 555 Walnut Street, 5th Floor, Harrisburg, PA 17101-1919, Attention: Yvette Sanchez-Roberts. Comments received within 30 days will be reviewed and considered in developing the final bulletin.

Persons with a disability who require an auxiliary aid or service may submit comments using the Pennsylvania AT&T Relay Service at (800) 654-5984 (TDD users) or (800) 654-5988 (voice users).

MICHAEL P. NARDONE,  
*Acting Secretary*

**Fiscal Note:** 14-NOT-661. No fiscal impact; (8) recommends adoption.

## PROPOSED PSAE BULLETIN

### SUBJECT

Preventable Serious Adverse Events in Nonpublic and County Nursing Facilities

### PURPOSE

The purpose of this bulletin is to identify Preventable Serious Adverse Events (PSAEs) for nursing facilities that are enrolled in the Medical Assistance (MA) Program and to notify those facilities how they may fulfill the obligations not to knowingly seek payment from the MA Program for PSAEs or for services required to correct or treat PSAEs. This bulletin also describes the MA Program's payment policies relating to PSAEs.

### SCOPE

This bulletin applies to all MA-enrolled county and non-public (general, hospital-based, and special rehabilitation) nursing facilities.

### BACKGROUND/INTRODUCTION

In June of 2009, the General Assembly enacted the Preventable Serious Adverse Events Act. Act of June 10, 2009, P.L. 1, No. 1, codified at, 35 P.S. §§ 449.91—449.97 ("Act 1"). Act 1 prohibits health care providers, including nursing facilities, from knowingly seeking payment from a health payor or patient (1) for a preventable serious adverse event ("PSAE"); or (2) for any services required to correct or treat the problem created by a PSAE. In addition, Act 1 also requires a health care provider that unknowingly receives payment for services associated with a PSAE or for the services to correct the PSAE to immediately notify the health payor or patient and refund the payment within 30 days of discovery or receipt of payment, whichever is later.

Act 1 defines a PSAE as "[a]n event that occurs in a health care facility that is within the health care provider's control to avoid, but that occurs because of an error or other system failure and results in a patient's death, loss of body part, disfigurement, disability or loss of bodily function lasting more than seven days or still present at the time of discharge from a health care facility." Act 1 also specifies that PSAEs "shall be included on the list of reportable serious adverse events adopted by the national quality forum or in a bulletin as provided under this act."

Act 1 directs the Department of Public Welfare ("the Department") to issue a PSAE bulletin for nursing facilities, and specifies that "[f]or a nursing facility, preventable serious adverse events shall be those listed in [the] bulletin." As required by Act 1, this bulletin lists the events. The bulletin also highlights the criteria that must be satisfied in order for an event to be classified as a PSAE. In developing this bulletin, the Department consulted representatives of the nursing facility trade associations, representatives of individual nursing facilities and the Long-Term Care Subcommittee of the Medical Assistance Advisory Committee.

### PSAEs

The events listed in Appendix A qualify as a PSAE if all of the following criteria are satisfied:

1. The event was preventable. To be preventable, the event could have been anticipated and prepared for, but, nonetheless, occurred because of an error or other system failure; and
2. The event was serious. The event is serious if the event subsequently results in death or loss of body part, disfigurement, disability or loss of bodily function lasting more than seven days or still present at the time of discharge from a nursing facility; and
3. The event was within the control of the nursing facility. Control means that the nursing facility had the power to avoid the error or other system failure; and
4. The event occurred as a result of an error or other system failure within the nursing facility.

The Department may modify the list of PSAEs identified in Appendix A and its payment policies and procedures in the future. Before making any modification to the PSAEs, the Department will consult with representatives of the nursing facility trade associations, representatives of individual nursing facilities, and the Long Term Care Subcommittee of the Medical Assistance Advisory Committee. The Department will also provide for a 30-day public comment period.

### COMPLIANCE WITH ACT 1:

Under Act 1, an MA-enrolled nursing facility may not knowingly seek payment for a PSAE, or for any services required to correct or treat a PSAE.

#### 1. Identification and Review of a PSAE and Services Required to Correct or Treat a PSAE

##### a. Responsibilities of the Nursing Facility

To comply with Act 1, whenever an event listed in Appendix A occurs in a nursing facility, the nursing facility must determine whether the event meets the PSAE criteria specified above. If the event meets those criteria, the event is a PSAE. If the nursing facility concludes that a PSAE has occurred, the nursing facility may not submit a claim for the event or for any services required to correct or treat a PSAE. If a nursing facility discovers that it has inadvertently submitted a claim and received payment from the MA Program or an MA recipient for a PSAE or services required to correct or treat a PSAE, the nursing facility must refund the payment within 30 days of the discovery of the event or receipt of the payment, whichever is later. The Department will consider a nursing facility as meeting obligations if the facility follows the guidelines in Section 2 below.

##### b. Authority of the Department

The Department may identify potential PSAEs or the services required to correct or treat PSAEs and seek recovery of money through its exiting claims review process, its utilization management review process, or its program integrity review process. See 55 Pa. Code §§ 1101.71, 1101.77 and 1101.83.

With both facility-reported PSAEs and Department-identified PSAEs, the Department will determine whether the event meets the criteria of a PSAE; the duration of the PSAE; whether services were required to correct or treat the PSAE; the duration of the services to correct or treat the PSAE; and the amount of MA payments associated with the PSAE or with the services to correct or

treat the PSAE. Once the event has been either self-reported or identified, the Department will notify the nursing facility, in writing, that it has initiated its review. As part of its review, the Department may request documentation from the facility concerning the facility's policies and/or procedures, the resident and/or the event. Based on its review, the Department may recover or adjust MA payments or return money already refunded by the nursing facility. The Department's review process, including how the Department's physicians will be used in the case review and the opportunities that a nursing facility's designated staff will have to interact with the Department through the review process is available on the DPW website. The Department will notify all nursing facilities when revisions to the review process have been posted on the DPW website.

The Department will send a written notice of its determination to the nursing facility. In the event of an adverse determination, the Department's notice to the nursing facility will outline the reasons for the determination and whether the Department will recover or adjust MA payments. If the nursing facility does not agree with the Department's determination, the nursing facility may appeal to the Bureau of Hearings and Appeals pursuant to 55 Pa. Code Chapter 41.

## **2. Guidelines Relating to PSAEs and Services to Correct or Treat the PSAE**

### **a. Claims relating to PSAEs**

The Department pays MA-enrolled nursing facilities for services provided to MA-eligible persons through a prospective per diem rate and other additional payments (e.g., for hospital reserve days and for exceptional durable medical equipment). 55 Pa. Code Chapters 1187 and 1189. With respect to those payments, an MA-enrolled nursing facility may not knowingly submit a claim or otherwise receive payment for a PSAE. In those instances where a PSAE occurs on a single day, the nursing facility may not submit a claim for payment of the resident care portion of the MA per diem rate. For certain PSAEs, such as a PSAE-identified Stage 3 or Stage 4 decubitus ulcer, the PSAE may occur over multiple days. Because Act 1 prohibits a nursing facility from knowingly seeking payment for a PSAE, in those instances where the PSAE occurs over several days, the nursing facility may not submit a claim or otherwise receive payment of the resident care portion of the MA per diem rate for any day that the PSAE occurs.

If the resident is transferred to a hospital or other institution as a result of the PSAE, then the nursing facility may not submit a claim to the Department, or otherwise receive payment, to reserve the resident's nursing facility bed during the resident's absence (the nursing facility remains obligated to reserve the bed in accordance with federal and state requirements).

### **b. Claims Relating to Services to Correct or Treat a PSAE**

Nursing facilities may use the following guidance to fulfill their obligation under Act 1 not to seek payment for services required as a result of a PSAE. Nonetheless, the Department will determine whether the actual value of subsequent services needed to correct or treat the PSAE is more or less than the payment adjustment made by the nursing facility.

A nursing facility may fulfill its obligation under Act 1 to not seek payment for services required as a result of a PSAE by comparing certain resident Case Mix Index ("CMI") scores and by reducing the resident care portion

of the MA per diem rate and the patient pay amount by any percent increase in those scores. Which CMI scores are compared to determine whether there was any increase will depend on whether the resident is hospitalized or transferred as a result of the PSAE. Furthermore, to reduce the resident care component, the CMI scores should be calculated using the RUG III 5.12 44 Grouper and related CMI table.

### **i. No Hospitalization or Transfer**

In the event that the resident is not transferred, the resident's CMI score based on the assessment immediately following the PSAE ("post-PSAE CMI score") should be compared to the resident's CMI score from the resident assessment immediately prior to the occurrence of the PSAE ("pre-PSAE CMI score"). If the post-PSAE CMI score is higher than the pre-PSAE score, then the resident care portion of the MA per diem rate and the patient pay amount may be reduced by the percentage increase in the scores (i.e., (post-PSAE CMI score minus pre-PSAE CMI score) divided by pre-PSAE CMI score). If the post-PSAE CMI score is equal to or lower than the pre-PSAE CMI score, then there will be no reduction in the MA per diem rate as result of the PSAE.

### **ii. Hospitalization—Medicare is Payor of First Resort Upon Admission to the Same Nursing Facility**

In the event of hospitalization due to a PSAE, Medicare may be the payor of first resort upon the resident's return to the nursing facility; therefore, consideration must be given to both the Medicare coinsurance payment and to the MA per diem rate when MA resumes payments. With respect to the Medicare coinsurance, if the resident's CMI score based upon the readmission assessment ("readmission CMI score") is greater than the resident's pre-PSAE CMI score, then the Department will not pay the Medicare coinsurance payment. If the Department does not pay the nursing facility for the Medicare coinsurance, in this circumstance, the nursing facility may not bill the resident. If the readmission CMI score is not higher, then the nursing facility may seek payment from the Department for the Medicare coinsurance payment. Payment of Medicare coinsurance is subject to 55 Pa. Code §§ 1101.64, 1187.102, and 1189.102.

When MA resumes payment, the resident's CMI score based on the resident assessment immediately after MA resumes payment may be compared to the pre-PSAE CMI score. If the former is greater than the latter, then the resident care portion of the MA per diem rate and the patient pay amount should be reduced by the percentage increase in those two scores. If the scores are equal or the pre-PSAE CMI is the greater of the two, then there will be no reduction in the MA per diem rate as a result of the PSAE.

### **iii. Hospitalization or Transfer—Medicare is not Payor of First Resort upon Admission to the Same Nursing Facility**

When the MA Program pays for the resident's stay immediately upon return to the same nursing facility from another institution, then the readmission CMI score should be compared to the pre-PSAE CMI score. If the former is greater than the latter, then the resident care portion of the MA per diem rate and the patient pay amount should be reduced by the percentage increase in those two scores. If the scores are equal or the pre-PSAE CMI score is the greater of the two, then there will be no reduction in the MA per diem rate as a result of the PSAE.

#### iv. Durable Medical Equipment

In any circumstance, the nursing facility may not seek any payment through an exceptional durable medical equipment (DME) grant for equipment or services required to correct or treat a problem created by a PSAE.

#### v. Duration of the Payment Restrictions

The duration of the payment restrictions (prohibition or reduction) should also be based on the afore-mentioned CMI scores. If a payment restriction is imposed, then the payment restriction should continue until the resident's CMI score upon reassessment under normal procedures is equal to or less than the pre-PSAE CMI score or until the Department determines that resident's higher post-PSAE CMI score is attributable to reasons other than the PSAE.

If the nursing facility's Medical Director or the resident's attending physician concludes and documents in the resident's medical record that the resident's higher CMI is no longer a result of the PSAE, the nursing facility may request in writing that the Department conduct a clinical review to determine whether the PSAE-related rate reduction should continue. Likewise, if there is a change in a resident's medical condition unrelated to the PSAE which results in a higher CMI, as determined by the nursing facility's Medical Director or the attending physician, the nursing facility may request that the Department conduct a clinical review and redetermination. The nursing facility shall include the resident's medical record and any other supporting documentation with their request.

The Department will use its best efforts to complete its review and make a determination of all such requests within 30 days of receipt of the resident's medical record and any other supporting documentation from the facility.

The Department will send a written notice of the results of its review to the nursing facility. If the Department determines that the resident's CMI score is no longer the result of the PSAE, then the payment reduction shall cease effective on the date determined by the Department that the PSAE-related services are (were) no longer the cause of the higher CMI. If the Department determines that the resident's higher CMI score is the result of the PSAE, the payment reduction will continue. If the nursing facility does not agree with the Department's determination, the nursing facility may appeal to the Bureau of Hearings and Appeals pursuant to 55 Pa. Code Chapter 41.

Whether or not the facility files an appeal, the facility may ask the Department to conduct a clinical review and redetermination once every 90 days.

### Appendix A

#### Preventable Serious Adverse Events ("PSAEs") for Nursing Facilities Enrolled in the Medical Assistance Program

If an event listed below occurs in a nursing facility, then the event is a PSAE when all of the following criteria are satisfied:

1. The event was preventable. To be preventable, the event could have been anticipated and prepared for, but, nonetheless, occurred because of an error or other system failure; and

2. The event was serious. The event is serious if the event subsequently results in death or loss of body part, disfigurement, disability or loss of bodily function lasting more than seven days or still present at the time of discharge from a nursing facility; and

3. The event was within the control of the nursing facility. Control means that the nursing facility had the power to avoid the error or other system failure; and

4. The event is the result of an error or other system failure within the nursing facility.

#### 1. Surgical Events

A. Surgery performed on the wrong body part

B. Wrong surgical procedure performed on a resident

C. Surgery performed on the wrong resident

D. Unintended retention of a foreign object in a resident after surgery or other procedure

#### 2. Product or Device Events

A. An event associated with the use of contaminated drugs, devices or biologics provided by the nursing facility

B. An event associated with the use or function of a device in resident care in which the device is used or functions other than as intended

C. An intravascular air embolism that occurs while being cared for in a nursing facility

#### 3. Resident Protection Events

A. Resident suicide or attempted suicide

B. Resident elopement (disappearance for more than four hours)

#### 4. Care Management Events

A. A medication error (such as, errors involving the wrong drug, wrong dose, wrong resident, wrong time, wrong rate, wrong preparation, or wrong route of administration)

B. Severe allergic reaction

C. A hemolytic reaction due to the administration of ABO/HLA-incompatible blood or blood products

D. Stage 3 or 4 pressure ulcers acquired after admission to the nursing facility

E. Catheter-associated Urinary Tract Infection

F. An event related to spinal manipulative therapy

G. Vascular catheter-associated infection

H. An event related to hyper- or hypoglycemia (Diabetic ketoacidosis, Nonketotic hyperosmolar coma, Diabetic coma, Hypoglycemic coma) the onset of which occurs while the resident is being cared for in a nursing facility.

#### 5. Environmental Events

A. A burn incurred from any source while being cared for in a nursing facility

B. An event related to a fall (fractures/dislocations/intracranial injuries/crush injuries/burns) while being cared for in a nursing facility

C. An electric shock while being cared for in a nursing facility

D. Any incident in which a line designated for oxygen or other gas to be delivered to a resident contains the wrong gas or is contaminated by toxic substances

E. An event associated with the use of restraints or bedrails while being cared for in a nursing facility.

#### 6. Criminal Events and Unlawful Activities

A. Any instance of care ordered by or provided by someone impersonating a physician, nurse, pharmacist, or other licensed healthcare provider.

B. Abduction of a resident

C. Sexual assault on a resident

D. A physical assault (that is battery).

[Pa.B. Doc. No. 10-1975. Filed for public inspection October 15, 2010, 9:00 a.m.]

# INDEPENDENT REGULATORY REVIEW COMMISSION

## Notice of Filing of Final Rulemakings

The Independent Regulatory Review Commission (Commission) received the following regulations. They are scheduled to be considered on the dates noted. The Commission's public meetings are held at 333 Market Street, 14th Floor, Harrisburg, PA at 10 a.m. To obtain a copy of the regulation, interested parties should first contact the promulgating agency. If a copy cannot be obtained from the promulgating agency, the Commission will provide a copy or a copy can be obtained on the web site, [www.irrc.state.pa.us](http://www.irrc.state.pa.us).

### Final-Form

Reg. No.	Agency/Title	Received	Public Meeting
16A-7101	State Board of Crane Operators Crane Operators; Initial Rulemaking	9/30/10	11/4/10
16A-427	State Board of Barber Examiners Student Records and Curriculum	9/30/10	11/4/10
7-428	Environmental Quality Board Adhesives, Sealants, Primers and Solvents	10/1/10	11/4/10
7-437	Environmental Quality Board Lead and Copper Rule Short Term Revisions	10/1/10	11/4/10
7-447	Environmental Quality Board Flat Wood Paneling Surface Coating Processes	10/1/10	11/4/10

ARTHUR COCCODRILLI,  
*Chairperson*

[Pa.B. Doc. No. 10-1976. Filed for public inspection October 15, 2010, 9:00 a.m.]

## INSURANCE DEPARTMENT

### Aetna Health, Inc. (HMO); Changes to Experience Rating Methodology and Portfolio Rating Methodology; Rate Filing

On September 30, 2010, Aetna Health, Inc. (HMO) submitted a filing requesting revisions to their Experience Rating Methodology for employer groups with 125 or more eligible subscribers and Portfolio Rating for existing employer groups with more than 50 but less than 125 eligible subscribers.

Unless formal administrative action is taken prior to December 30, 2010, the subject filing may be deemed approved by operation of law.

A copy of the filing is available on the Insurance Department's (Department) web site at [www.insurance.pa.gov](http://www.insurance.pa.gov). To access the filing, under "How to Find . . ." click on "View Current Rate Filings."

Copies of the filing are also available for public inspection, by appointment, during normal working hours at the Department's Harrisburg office.

Interested parties are invited to submit written comments, suggestions or objections to James Sabater, Insurance Department, Insurance Product Regulation and Market Enforcement, Room 1311, Strawberry Square, Harrisburg, PA 17120, [jsabater@state.pa.us](mailto:jsabater@state.pa.us) within 30 days after publication of this notice in the *Pennsylvania Bulletin*.

ROBERT L. PRATTER,  
*Acting Insurance Commissioner*

[Pa.B. Doc. No. 10-1977. Filed for public inspection October 15, 2010, 9:00 a.m.]

### Application for Approval to Acquire Control of Philadelphia-United Life Insurance Company and Philadelphia-United Fire Insurance Company

Baltimore Life Insurance Company has filed an application for approval to acquire control of Philadelphia-United Life Insurance Company, a domestic life insurance company, and Philadelphia-United Fire Insurance Company, a domestic property insurance company. The filing was made under Article XIV of The Insurance Company Law of 1921 (40 P. S. §§ 991.1401—991.1413).

Persons wishing to comment on the acquisition are invited to submit a written statement to the Insurance Department (Department) within 30 days from the date of this issue of the *Pennsylvania Bulletin*. Each written statement must include name, address and telephone number of the interested party; identification of the application to which the statement is addressed; and a concise statement with sufficient detail and relevant facts to inform the Department of the exact basis of the statement. Written statements should be directed to Robert Brackbill, Company Licensing Division, Insurance Department, 1345 Strawberry Square, Harrisburg, PA 17120, fax (717) 787-8557 or e-mail [rbrackbill@state.pa.us](mailto:rbrackbill@state.pa.us).

ROBERT L. PRATTER,  
*Acting Insurance Commissioner*

[Pa.B. Doc. No. 10-1978. Filed for public inspection October 15, 2010, 9:00 a.m.]

**Application for Voluntary Surrender of Pennsylvania Certificate of Authority Filed by Washington Mutual Fire Insurance Company of Lawrence County**

Washington Mutual Fire Insurance Company of Lawrence County, a domestic mutual fire insurance company, has submitted an application for approval to surrender its Insurance Department (Department) Certificate of Authority.

Persons wishing to comment on the grounds of public or private interest concerning the surrender are invited to submit a written statement to the Department within 7 days from the date of this issue of the *Pennsylvania Bulletin*. Each written statement must include the name, address and telephone number of the writer; identification of the application to which the comment is addressed; and a concise statement with sufficient detail to inform the Department of the exact basis of the comment and the relevant facts upon which it is based. Written statements should be directed to Robert Brackbill, Company Licensing Division, 1345 Strawberry Square, Harrisburg, PA 17120, fax (717) 787-8557 or rbrackbill@state.pa.us.

ROBERT L. PRATTER,  
*Acting Insurance Commissioner*

[Pa.B. Doc. No. 10-1979. Filed for public inspection October 15, 2010, 9:00 a.m.]

**Capital Advantage Insurance Co. Rate Filing; Medical-Surgical/Major Medical Supp. Portion of Traditional Non-Group Individual Direct Pay Basic Hospitalization/Medical-Surgical/Major Medical Preferred Provide Benefit Contract; CBC Filing No. 10-WWW**

On September 29, 2010, the Insurance Department (Department) received from Capital Advantage Insurance Co. a filing for a rate increase for the medical-surgical/major medical supp. portion of its Traditional Non-Group Individual Direct Pay Basic Hospitalization/Medical-Surgical/Major Medical Plan to reflect the anticipated cost of the Patient Protection and Affordable Care Act, signed into law on March 23, 2010.

The company requests a 7.9% rate increase to reflect these required changes.

The requested effective date of the change is January 1, 2011, although the newly mandated benefits will become effective for new policies issued on or after September 23, 2010.

Unless formal administrative action is taken prior to December 30, 2010, the subject filing may be deemed approved by operation of law.

A copy of the filing is available on the Department's web site at [www.insurance.pa.gov](http://www.insurance.pa.gov). To access the filing, under "How to Find..." click on "View Current Rate Filings."

Copies of the filing are also available for public inspection, by appointment, during normal working hours at the Department's Harrisburg office.

Interested parties are invited to submit written comments, suggestions or objections to James Sabater, Insurance Department, Insurance Product Regulation and

Market Enforcement, Room 1311, Strawberry Square, Harrisburg, PA 17120, [jsabater@state.pa.us](mailto:jsabater@state.pa.us) within 30 days after publication of this notice in the *Pennsylvania Bulletin*.

ROBERT L. PRATTER,  
*Acting Insurance Commissioner*

[Pa.B. Doc. No. 10-1980. Filed for public inspection October 15, 2010, 9:00 a.m.]

**Capital BlueCross and Capital Advantage Insurance Co.; Individual Direct Pay Comprehensive Major Medical Benefit contract with a \$750 or \$1,500 Deductible for HIPAA and HCTC Eligible Individuals (Form No. IA-Comph-C); Capital Filing No. 10-YYYY; Rate Filing**

On September 29, 2010, the Insurance Department (Department) received from Capital BlueCross and Capital Advantage Insurance Co. a filing for a rate increase for the Individual Direct Pay Comprehensive Major Medical Benefit contract for HIPAA and HCTC Eligible Individuals with a \$750 or \$1,500 Deductible (Form No. IA-Comph-C).

The company requests a rate increase of 5.1% or \$38.08 per contract per month on average. This will affect about 510 contract holders and will produce additional income of about \$233,000 annually. The requested effective date of the change is January 1, 2011.

Unless formal administrative action is taken prior to December 30, 2010, the subject filing may be deemed approved by operation of law.

A copy of the filing is available on the Department's web site at [www.insurance.pa.gov](http://www.insurance.pa.gov). To access the filing, under "How to Find..." click on "View Current Rate Filings."

Copies of the filing are also available for public inspection, by appointment, during normal working hours at the Department's Harrisburg office.

Interested parties are invited to submit written comments, suggestions or objections to James Sabater, Insurance Department, Insurance Product Regulation and Market Enforcement, Room 1311, Strawberry Square, Harrisburg, PA 17120, [jsabater@state.pa.us](mailto:jsabater@state.pa.us) within 30 days after publication of this notice in the *Pennsylvania Bulletin*.

ROBERT L. PRATTER,  
*Acting Insurance Commissioner*

[Pa.B. Doc. No. 10-1981. Filed for public inspection October 15, 2010, 9:00 a.m.]

**Capital BlueCross Co. Rate Filing; Hospitalization Portion of Traditional Non-Group Individual Direct Pay Basic Hospitalization/Medical-Surgical/Major Medical Preferred Provide Benefit Contract; CBC Filing No. 10-ZZZZ**

On September 29, 2010, the Insurance Department (Department) received from Capital BlueCross Co. a filing for a rate increase for the medical-surgical/major medical supp. portion of its Traditional Non-Group Individual Direct Pay Basic Hospitalization/Medical-Surgical/Major



Medical Plan to reflect the anticipated cost of the Patient Protection and Affordable Care Act, signed into law on March 23, 2010.

The company requests a 3.2% rate increase to reflect these required changes.

The requested effective date of the change is January 1, 2011, although the newly mandated benefits will become effective for new policies issued on or after September 23, 2010.

Unless formal administrative action is taken prior to December 30, 2010, the subject filing may be deemed approved by operation of law.

A copy of the filing is available on the Department's web site at [www.insurance.pa.gov](http://www.insurance.pa.gov). To access the filing, under "How to Find..." click on "View Current Rate Filings."

Copies of the filing are also available for public inspection, by appointment, during normal working hours at the Department's Harrisburg office.

Interested parties are invited to submit written comments, suggestions or objections to James Sabater, Insurance Department, Insurance Product Regulation and Market Enforcement, Room 1311, Strawberry Square, Harrisburg, PA 17120, [jsabater@state.pa.us](mailto:jsabater@state.pa.us) within 30 days after publication of this notice in the *Pennsylvania Bulletin*.

ROBERT L. PRATTER,  
*Acting Insurance Commissioner*

[Pa.B. Doc. No. 10-1982. Filed for public inspection October 15, 2010, 9:00 a.m.]

## LEGISLATIVE REFERENCE BUREAU

### Documents Filed But Not Published

The Legislative Reference Bureau (Bureau) accepted the following documents during the preceding calendar month for filing without publication under 1 Pa. Code § 3.13(b) (relating to contents of *Bulletin*). The Bureau will continue to publish on a monthly basis either a summary table identifying the documents accepted during the preceding calendar month under this subsection or a statement that no documents have been received. For questions concerning or copies of documents filed, but not published, call (717) 783-1530.

#### *Governor's Office*

Manual 110.1—2011-12 Budget Instructions, Amended August 16, 2010.

Management Directive No. 205.40—Commonwealth Branding and Social Networking, Amended August 31, 2010.

Management Directive No. 215.16—Contract Compliance Program, Amended September 1, 2010.

Management Directive No. 580.30—Civil Service Leave of Absence and Return Rights, Amended September 7, 2010.

Administrative Circular No. 10-11—Availability—Commonwealth Telephone Directory, Dated August 10, 2010.

Administrative Circular No. 10-12—2011-12 Budget Instructions, Dated August 16, 2010.

Administrative Circular No. 10-13—Holidays—2011,  
Dated September 16, 2010.

MARY JANE PHELPS,  
*Director*  
*Pennsylvania Code and Bulletin*

[Pa.B. Doc. No. 10-1983. Filed for public inspection October 15, 2010, 9:00 a.m.]

## PATIENT SAFETY AUTHORITY

### Public Meeting

The Patient Safety Authority (Authority), established by section 303 of the Medical Care Availability and Reduction of Error (MCARE) Act (40 P. S. § 1303.303), announces a meeting of the Authority's Board to be held at the Harrisburg Area Community College, One HACC Drive, Harrisburg, PA at 10 a.m. on Tuesday, October 26, 2010.

Individuals having questions regarding this meeting, which is open to the public, should contact the Authority at (717) 346-0469.

MICHAEL C. DOERING,  
*Executive Director*

[Pa.B. Doc. No. 10-1984. Filed for public inspection October 15, 2010, 9:00 a.m.]

## PENNSYLVANIA PUBLIC UTILITY COMMISSION

### Gas Service

**A-2010-2202545. UGI Central Penn Gas, Inc.** Application of UGI Central Penn Gas, Inc. for approval to begin to offer, render, furnish or supply gas utility service to the public in the service territories of Upper Augusta, Point, West Chillisquaque and East Chillisquaque Townships, Northumberland County; Buffalo, East Buffalo and Kelly Townships, Union County; Wolf Township, Lycoming County; the Borough of Yatesville, Luzerne County; and the Pittston Township, Luzerne County.

Formal protests and petitions to intervene must be filed in accordance with 52 Pa. Code (relating to public utilities). Filings must be made with the Secretary of the Pennsylvania Public Utility Commission, P. O. Box 3265, Harrisburg, PA 17105-3265, with a copy served on the applicant, on or before November 1, 2010. The documents filed in support of the application are available for inspection and copying at the Office of the Secretary between 8 a.m. and 4:30 p.m., Monday through Friday, on the Pennsylvania Public Utility Commission's web site at [www.puc.state.pa.us](http://www.puc.state.pa.us), and at the applicant's business address.

*Applicant:* UGI Central Penn Gas, Inc.

*Through and By Counsel:* Kent D. Murphy, Esquire, Melanie J. Tambolas, Esquire, UGI Corporation, 460 North Gulph Road, King of Prussia, PA 19406

ROSEMARY CHIAVETTA,  
*Secretary*

[Pa.B. Doc. No. 10-1985. Filed for public inspection October 15, 2010, 9:00 a.m.]

### Gas Service

**A-2010-2202547. UGI Penn Natural Gas, Inc.** Application of UGI Penn Natural Gas, Inc. for approval to begin to offer, render, furnish or supply gas utility service to the public in the service territories of Pine Creek Township, Clinton County; Buffalo, West Buffalo, East Buffalo, Kelly and Union Townships, Union County; Pittston and Jenkins Townships, Luzerne County; the Boroughs of Exeter, Laflin and Yatesville, Luzerne County; and the City of Pittston, Luzerne County.

Formal protests and petitions to intervene must be filed in accordance with 52 Pa. Code (relating to public utilities). Filings must be made with the Secretary of the Pennsylvania Public Utility Commission, P. O. Box 3265, Harrisburg, PA 17105-3265, with a copy served on the applicant, on or before November 1, 2010. The documents filed in support of the application are available for inspection and copying at the Office of the Secretary between 8 a.m. and 4:30 p.m., Monday through Friday, on the Pennsylvania Public Utility Commission's web site at [www.puc.state.pa.us](http://www.puc.state.pa.us), and at the applicant's business address.

*Applicant:* UGI Penn Natural Gas, Inc.

*Through and By Counsel:* Kent D. Murphy, Esquire, Melanie J. Tambolas, Esquire, UGI Corporation, 460 North Gulph Road, King of Prussia, PA 19406

ROSEMARY CHIAVETTA,  
*Secretary*

[Pa.B. Doc. No. 10-1986. Filed for public inspection October 15, 2010, 9:00 a.m.]

### Service of Notice of Motor Carrier Applications

The following temporary authority and/or permanent authority applications for the right to render service as a common carrier or contract carrier in this Commonwealth have been filed with the Pennsylvania Public Utility Commission. Formal protests and petitions to intervene must be filed in accordance with 52 Pa. Code (relating to public utilities). A protest shall indicate whether it applies to the temporary authority application, the permanent authority application, or both. Filings must be made with the Secretary, Pennsylvania Public Utility Commission, P. O. Box 3265, Harrisburg, PA 17105-3265, with a copy served on the applicant by November 1, 2010. Documents filed in support of the applications are available for inspection and copying at the Office of the Secretary between 8 a.m. and 4:30 p.m., Monday through Friday, and at the business address of the respective applicant.

**Application of the following for approval of the beginning of the exercise of the right and privilege of operating motor vehicles as common carriers for the transportation of persons by transfer of rights as described under the application.**

**A-2010-2202290. Lifestar Response of NJ—Lifestar Response Corp.** (657 Union Boulevard, Totowa, NJ 07512), a corporation of the State of New York—persons in paratransit service, from points in the Counties of Lehigh, Northampton and Berks, to points in Pennsylvania, and return, which is to be a transfer of all the right authorized under the certificate issued at A-00122191 to S. Erbrick Enterprises, Inc., subject to the following condition: That no right, power or privilege is granted to

originate service within the boroughs of Wilson and West Easton, all in Northampton County, except that service may be provided west of Route 33 and from Old Orchard Manor Care Nursing Facility in Bethlehem Township, Northampton County, which is to be a transfer of all the right authorized under the certificate issued at A-00122191 to S. Erbrick Enterprises, Inc. *Attorney:* Christopher M. McLean, 4400 Walbert Avenue, Allentown, PA 18104.

**Application of the following for approval of the beginning of the exercise of the right and privilege of operating motor vehicles as common carriers for the transportation of household goods by transfer of rights as described under the application.**

**A-2010-2201670. Chester County Moving & Storage, LLC** (103 Chesley Drive, Media, Delaware County, PA 19063)—a limited liability company of the Commonwealth—for the right to transport, as a common carrier, by motor vehicle, household goods in use, from points in Chester and Delaware Counties, and sections of Lancaster and Montgomery Counties, within 10 miles of the usually traveled highways of the limits of Chester and Delaware Counties, to points in Pennsylvania; which is to be a transfer of all of the operating rights under the certificate issued at A-00083135, F. 2, to Ralph G. Smith, subject to the same limitations and conditions. *Attorney:* Arthur Sagnor, 144 West Market Street, West Chester, PA 19382.

**Application of the following for the approval of the right and privilege to discontinue/abandon operating as common carriers by motor vehicle and for cancellation of the certificate of public convenience as described under the application.**

**A-2010-2201983. American Eagle Bus & Limo, Inc.** (1000 Remington Avenue, Scranton, Lackawanna County, PA 18505)—to discontinue service as a common carrier by motor vehicle, at A-00119245F0002, authorizing the transportation, as a common carrier, by motor vehicle, persons in limousine service, between points in Pennsylvania.

*Pennsylvania Public Utility Commission, Bureau of Transportation and Safety v. United Taxi Company;*  
*Doc. No. C-2010-2150673*

### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That United Taxi Company, Respondent, maintains its principal place of business at 250 Mercer Street, Phillipsburg, NJ 08865.

2. That, Respondent, was issued a certificate of public convenience by this Commission on June 30, 2008, at Application A-00123614.

3. That, on March 30, 2009, Eastern Regional Manager David W. Loucks was unable to contact Respondent, by

telephone, to arrange for a vehicle inspection. A certified letter was mailed, on March 31, 2009, requiring Respondent to contact the Commission to submit to an annual taxicab inspection by a Commission Enforcement Officer. The certified mail was returned by the U.S. Post Office on April 27, 2009, as not deliverable as addressed and unable to forward.

4. That, as of May 7, 2010, respondent has failed to contact the Commission, and has failed to have an annual taxicab inspection.

5. Pursuant to 66 Pa.C.S. § 506, duly authorized officers of the Pennsylvania Public Utility Commission have power and authority to inspect, inquire, and investigate all property, records, books, papers, accounts, and documents, of any public utility, whenever necessary, in carrying out their duties.

6. Pursuant to 66 Pa.C.S. § 1103, the Commission is responsible for ensuring that public utilities hold certificates of public convenience for the convenience, safety, accommodation and service of the public. Pursuant to 52 Pa. Code § 41.14(b), the Commission may withhold granting a carrier authority to operate if it is demonstrated that the carrier lacks a propensity to operate safely and legally. Respondent has demonstrated and convinced the Bureau of Transportation and Safety that it should not have the right to continue as a public utility. Therefore, for the safety of the public, the Bureau of Transportation and Safety Motor Carrier Services and Enforcement's Prosecutory staff's proposed civil penalty for this violation is the cancellation of Respondent's Certificate.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission revoke United Taxi Company certificate of public convenience at A-00123614 for the illegal activity described in this complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services & Enforcement Division  
Bureau of Transportation and Safety  
P. O. Box 3265  
Harrisburg, PA 17105-3265

#### VERIFICATION

I, Wendy J. Keezel, Chief of Enforcement for the Motor Carrier Services and Enforcement Division of the Bureau of Transportation and Safety, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect the Bureau will be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: \_\_\_\_\_  
Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services and Enforcement  
Division  
Bureau of Transportation and Safety

#### NOTICE

A. You must file an answer within twenty (20) days of the date of service of this complaint. The date of service is the mailing date as indicated at the top of the Secretarial cover letter for this complaint and notice, 52 Pa. Code § 1.56(a). An answer is a written explanation of circumstances wished to be considered in determining the

outcome. The answer shall raise all factual and legal arguments that you wish to claim in your defense and must include the reference number of this complaint. Your answer must be verified and the original and three (3) copies sent to:

Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

B. If you fail to answer this complaint within twenty (20) days, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty, which will include the revocation of your Certificate of Public Convenience. In such case, the Bureau of Transportation and Safety will request that the Commission direct the Department of Transportation, pursuant to the Vehicle Code, 75 Pa.C.S. § 1375, to suspend the registration of any vehicle(s) involved in the alleged violations.

C. If you file an answer, which either admits or fails to deny the allegations of the complaint, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty, which will include the revocation of your Certificate of Public Convenience.

D. If you file an Answer, which contests the complaint, the matter will be assigned to an administrative law judge for hearing and decision. The judge is not bound by the optional fine set forth above.

E. If you have questions regarding this Complaint, or if you would like an alternative format of the Complaint (for persons with disabilities), please contacting the Compliance Office at (717) 787-1227.

*Pennsylvania Public Utility Commission, Bureau of  
Transportation and Safety v. Jhaj, Inc.;*  
*Doc. No. C-2010-2131221, A-00118840*

#### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That Jhaj, Inc., Respondent, maintains a principal place of business at 16 Kenmore Road, Upper Darby, PA 19082.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on June 18, 2002, at A-00118840.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated September 4, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respon-

dent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The Bureau of Transportation and Safety's Motor Carrier Services and Enforcement Prosecutory Staff's proposed civil penalty for this violation is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine Jhaj, Inc., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services & Enforcement Division  
Bureau of Transportation and Safety  
P. O. Box 3265  
Harrisburg, PA 17105-3265

#### VERIFICATION

I, Wendy J. Keezel, Chief of Enforcement for the Motor Carrier Services and Enforcement Division of the Bureau of Transportation and Safety, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect the Bureau will be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: \_\_\_\_\_

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services and Enforcement  
Division  
Bureau of Transportation and Safety

#### NOTICE

A. You must file an answer within twenty (20) days of the date of service of this complaint. The date of service is the mailing date as indicated at the top of the Secretarial cover letter for this complaint and notice, 52 Pa. Code § 1.56(a). An answer is a written explanation of circumstances wished to be considered in determining the outcome. The answer shall raise all factual and legal arguments that you wish to claim in your defense and must include the reference number of this complaint. Your answer must be verified and the original and three (3) copies sent to:

Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

B. If you fail to answer this complaint within twenty (20) days of the date of service, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty. Each day you continue to violate any regulation, direction, requirement or Order of the Commission is a separate and distinct offense, subject to additional penalties.

C. You may elect not to contest this complaint by filing an acceptable tariff and by paying the fine proposed in this Complaint by certified check or money order. The tariff must be filed with the:

Compliance Office, Bureau of Transportation and Safety  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

The fine payment must be made to the Commonwealth of Pennsylvania and should be forwarded to:

Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

Your payment is an admission that you committed the alleged violation and an agreement to cease and desist from further violations. Upon receipt of an acceptable tariff and payment of the proposed fine, the complaint proceeding shall be closed.

D. If you file an Answer, which admits or fails to deny the allegations of the Complaint, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty.

E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law Judge for hearing and decision. The judge is not bound by the optional fine set forth above.

F. If you have questions regarding this Complaint or if you would like an alternative format to this Complaint (for persons with disabilities), please contact the Compliance Office at (717) 787-1227.

*Pennsylvania Public Utility Commission, Bureau of  
Transportation and Safety v. Chardi Kala Cab Co.;*  
*Doc. No. C-2010-2129773, A-00120102*

#### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That Chardi Kala Cab Co., Respondent, maintains a principal place of business at 125 Wellington Road, Upper Darby, PA 19082.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on October 16, 2003, A-00120102.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated August 31, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The Bureau of Transportation and Safety's Motor Carrier Services and Enforcement Prosecutory Staff's proposed civil penalty for this violation is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine Chardi Kala Cab Co., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in

the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services & Enforcement Division  
Bureau of Transportation and Safety  
P. O. Box 3265  
Harrisburg, PA 17105-3265

#### VERIFICATION

I, Wendy J. Keezel, Chief of Enforcement for the Motor Carrier Services and Enforcement Division of the Bureau of Transportation and Safety, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect the Bureau will be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: \_\_\_\_\_

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services and Enforcement  
Division  
Bureau of Transportation and Safety

#### NOTICE

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Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

B. If you fail to answer this complaint within twenty (20) days of the date of service, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty. Each day you continue to violate any regulation, direction, requirement or Order of the Commission is a separate and distinct offense, subject to additional penalties.

C. You may elect not to contest this complaint by filing an acceptable tariff and by paying the fine proposed in this Complaint by certified check or money order. The tariff must be filed with the:

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Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

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Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

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from further violations. Upon receipt of an acceptable tariff and payment of the proposed fine, the complaint proceeding shall be closed.

D. If you file an Answer, which admits or fails to deny the allegations of the Complaint, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty.

E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law Judge for hearing and decision. The judge is not bound by the optional fine set forth above.

F. If you have questions regarding this Complaint or if you would like an alternative format to this Complaint (for persons with disabilities), please contact the Compliance Office at (717) 787-1227.

\_\_\_\_\_  
*Pennsylvania Public Utility Commission, Bureau of  
Transportation and Safety v. GSD Cab Co.;*  
*Doc. No. C-2010-2128665, A-00111905*

#### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That GSD Cab Co., Respondent, maintains a principal place of business at 1843 Wynnewood Road, Philadelphia, PA 19151.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on May 23, 1995, at A-00111905.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated August 31, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The penalty is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine GSD Cab Co., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services & Enforcement Division  
Bureau of Transportation and Safety  
P. O. Box 3265  
Harrisburg, PA 17105-3265

VERIFICATION

I, Wendy J. Keezel, Chief of Enforcement for the Motor Carrier Services and Enforcement Division of the Bureau of Transportation and Safety, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect the Bureau will be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: \_\_\_\_\_

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services and Enforcement  
Division  
Bureau of Transportation and Safety

NOTICE

A. You must file an answer within twenty (20) days of the date of service of this complaint. The date of service is the mailing date as indicated at the top of the Secretarial cover letter for this complaint and notice, 52 Pa. Code § 1.56(a). An answer is a written explanation of circumstances wished to be considered in determining the outcome. The answer shall raise all factual and legal arguments that you wish to claim in your defense and must include the reference number of this complaint. Your answer must be verified and the original and three (3) copies sent to:

Rosemary Chiavetta, Secretary  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

B. If you fail to answer this complaint within twenty (20) days of the date of service, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty. Each day you continue to violate any regulation, direction, requirement or Order of the Commission is a separate and distinct offense, subject to additional penalties.

C. You may elect not to contest this complaint by filing an acceptable tariff and by paying the fine proposed in this Complaint by certified check or money order. The tariff must be filed with the:

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and Safety  
Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

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Pennsylvania Public Utility Commission  
P. O. Box 3265  
Harrisburg, PA 17105-3265

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E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law

Judge for hearing and decision. The judge is not bound by the optional fine set forth above.

F. If you have questions regarding this Complaint or if you would like an alternative format to this Complaint (for persons with disabilities), please contact the Compliance Office at (717) 787-1227.

\_\_\_\_\_  
*Pennsylvania Public Utility Commission, Bureau of  
Transportation and Safety v. Denis M Cab Co.;*  
*Doc. No. C-2010-2128699, A-00114502*

COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That Denis M Cab Co., Respondent, maintains a principal place of business at 521 Jansen Avenue, Essington, PA 19029.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on February 2, 1998, at A-00114502.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated August 31, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The penalty is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine Denis M Cab Co., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
Motor Carrier Services & Enforcement Division  
Bureau of Transportation and Safety  
P. O. Box 3265  
Harrisburg, PA 17105-3265

VERIFICATION

I, Wendy J. Keezel, Chief of Enforcement for the Motor Carrier Services and Enforcement Division of the Bureau of Transportation and Safety, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect the Bureau will be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: \_\_\_\_\_  
 Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services and Enforcement  
 Division  
 Bureau of Transportation and Safety

NOTICE

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Rosemary Chiavetta, Secretary  
 Pennsylvania Public Utility Commission  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

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C. You may elect not to contest this complaint by filing an acceptable tariff and by paying the fine proposed in this Complaint by certified check or money order. The tariff must be filed with the:

Compliance Office, Bureau of Transportation and Safety  
 Pennsylvania Public Utility Commission  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

The fine payment must be made to the Commonwealth of Pennsylvania and should be forwarded to:

Rosemary Chiavetta, Secretary  
 Pennsylvania Public Utility Commission  
 P. O. Box 3265  
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Your payment is an admission that you committed the alleged violation and an agreement to cease and desist from further violations. Upon receipt of an acceptable tariff and payment of the proposed fine, the complaint proceeding shall be closed.

D. If you file an Answer, which admits or fails to deny the allegations of the Complaint, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty.

E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law Judge for hearing and decision. The judge is not bound by the optional fine set forth above.

F. If you have questions regarding this Complaint or if you would like an alternative format to this Complaint (for persons with disabilities), please contact the Compliance Office at (717) 787-1227.

*Pennsylvania Public Utility Commission, Bureau of  
 Transportation and Safety v. Deep Cab, Inc.;*  
*Doc. No. C-2010-2129829, A-00120709*

COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That Deep Cab, Inc., Respondent, maintains a principal place of business at 41 Winfield Circle, Sewell, NJ 08080.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on June 29, 2004, A-00120709.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated September 11, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The penalty is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine Deep Cab, Inc., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services & Enforcement Division  
 Bureau of Transportation and Safety  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

VERIFICATION

I, Wendy J. Keezel, Chief of Enforcement for the Motor Carrier Services and Enforcement Division of the Bureau of Transportation and Safety, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect the Bureau will be able to prove the same at any hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: \_\_\_\_\_  
 Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services and Enforcement  
 Division  
 Bureau of Transportation and Safety

NOTICE

A. You must file an answer within twenty (20) days of the date of service of this complaint. The date of service is

the mailing date as indicated at the top of the Secretarial cover letter for this complaint and notice, 52 Pa. Code § 1.56(a). An answer is a written explanation of circumstances wished to be considered in determining the outcome. The answer shall raise all factual and legal arguments that you wish to claim in your defense and must include the reference number of this complaint. Your answer must be verified and the original and three (3) copies sent to:

Rosemary Chiavetta, Secretary  
 Pennsylvania Public Utility Commission  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

B. If you fail to answer this complaint within twenty (20) days of the date of service, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty. Each day you continue to violate any regulation, direction, requirement or Order of the Commission is a separate and distinct offense, subject to additional penalties.

C. You may elect not to contest this complaint by filing an acceptable tariff and by paying the fine proposed in this Complaint by certified check or money order. The tariff must be filed with the:

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 Pennsylvania Public Utility Commission  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

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Your payment is an admission that you committed the alleged violation and an agreement to cease and desist from further violations. Upon receipt of an acceptable tariff and payment of the proposed fine, the complaint proceeding shall be closed.

D. If you file an Answer, which admits or fails to deny the allegations of the Complaint, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty.

E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law Judge for hearing and decision. The judge is not bound by the optional fine set forth above.

F. If you have questions regarding this Complaint or if you would like an alternative format to this Complaint (for persons with disabilities), please contact the Compliance Office at (717) 787-1227.

\_\_\_\_\_  
*Pennsylvania Public Utility Commission, Bureau of  
 Transportation and Safety v. LPIB, Inc.;*  
*Doc. No. C-2010-2131188, A-00110973*

#### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsi-

bilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That LPIB, Inc., Respondent, maintains a principal place of business at 441 Tomlinson Road, Apt E-10, Philadelphia, PA 19116.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on February 2, 1996, at A-00110973.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated September 4, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The penalty is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine LPIB, Inc., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services & Enforcement Division  
 Bureau of Transportation and Safety  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

#### VERIFICATION

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Date: \_\_\_\_\_

Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services and Enforcement  
 Division  
 Bureau of Transportation and Safety

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D. If you file an Answer, which admits or fails to deny the allegations of the Complaint, the Bureau of Transportation and Safety will request that the Commission issue a Secretarial Letter imposing a penalty.

E. If you file an Answer which contests the Complaint, the matter will be assigned to an Administrative Law Judge for hearing and decision. The judge is not bound by the optional fine set forth above.

F. If you have questions regarding this Complaint or if you would like an alternative format to this Complaint (for persons with disabilities), please contact the Compliance Office at (717) 787-1227.

\_\_\_\_\_  
*Pennsylvania Public Utility Commission, Bureau of  
 Transportation and Safety v. Jean & Serge Cab Co.;*  
*Doc. No. C-2010-2131193, A-00111502*

#### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That Jean & Serge Cab Co., Respondent, maintains a principal place of business at 6533 Linmore Avenue, Philadelphia, PA 19142.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on July 25, 1995, A-00111502.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated September 4, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The penalty is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine Jean & Serge Cab Co., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services & Enforcement Division  
 Bureau of Transportation and Safety  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

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Date: \_\_\_\_\_

Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services and Enforcement  
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 Bureau of Transportation and Safety

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Rosemary Chiavetta, Secretary  
 Pennsylvania Public Utility Commission  
 P. O. Box 3265  
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*Pennsylvania Public Utility Commission, Bureau of Transportation and Safety v. JIP, Inc.;  
 Doc. No. C-2010-2131203, A-00115294*

#### COMPLAINT

The Pennsylvania Public Utility Commission (Commission) is a duly constituted agency of the Commonwealth of Pennsylvania empowered to regulate public utilities within the Commonwealth. The Commission has delegated its authority to initiate proceedings, which are prosecutory in nature to the Bureau of Transportation and Safety and other bureaus with enforcement responsibilities. Pursuant to that delegated authority and Section 701 of the Public Utility Code, the Bureau of Transportation and Safety Prosecutory Staff hereby represents as follows:

1. That JIP, Inc., Respondent, maintains a principal place of business at 6437 Emlen Street, Philadelphia, PA 19119.

2. That Respondent was issued a Certificate of Public Convenience by this Commission on November 16, 1998, at A-00115294.

3. That Respondent was advised by letter dated May 10, 2005, that its medallion authority was being transferred to the Philadelphia Parking Authority. At that time, Respondent was advised that its taxicab service which had an origin and destination outside of the City of Philadelphia remained subject to the regulatory oversight of the PA PUC.

4. That Respondent was advised by letter dated September 4, 2009, that it failed to file a valid tariff with this Commission as required by 52 Pa. Code § 23.11. Respondent was provided 60 days to file an acceptable tariff. To date, Respondent has not filed an acceptable tariff. The penalty is \$250.00.

Wherefore, the Bureau of Transportation and Safety Prosecutory Staff hereby requests that the Commission fine JIP, Inc., the sum of two hundred and fifty dollars (\$250.00) for the illegal activity described in the complaint and order such other remedy as the Commission may deem to be appropriate.

Respectfully submitted,

Wendy J. Keezel, Chief of Enforcement  
 Motor Carrier Services & Enforcement Division  
 Bureau of Transportation and Safety  
 P. O. Box 3265  
 Harrisburg, PA 17105-3265

#### VERIFICATION

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 Motor Carrier Services and Enforcement  
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4. Project Sponsor and Facility: Buck Ridge Stone, LLC (Salt Lick Creek), New Milford Township, Susquehanna County, PA. Surface water withdrawal of up to 0.083 mgd.

5. Project Sponsor and Facility: Chesapeake Appalachia, LLC (Susquehanna River), Mehoopany Township, Wyoming County, PA. Modification to project features of the withdrawal approval (Docket No. 20080923).

6. Project Sponsor and Facility: Citrus Energy (Susquehanna River), Washington Township, Wyoming County, PA. Surface water withdrawal of up to 1.994 mgd.

7. Project Sponsor and Facility: Geary Enterprises (Buttermilk Creek), Falls Township, Wyoming County, PA. Surface water withdrawal of up to 0.099 mgd.

8. Project Sponsor: New Morgan Landfill Company, Inc. Project Facility: Conestoga Landfill, New Morgan Borough, Berks County, PA. Groundwater withdrawal of up to 0.003 mgd from the Shop Well and surface water withdrawal of up to 0.249 mgd from the Quarry Pond.

9. Project Sponsor and Facility: Novus Operating, LLC (Cowanessque River), Westfield Township, Tioga County, PA. Surface water withdrawal of up to 0.750 mgd.

10. Project Sponsor and Facility: Smith Transport Warehouse (Bald Eagle Creek), Snyder Township, Blair County, PA. Surface water withdrawal of up to 0.160 mgd.

11. Project Sponsor and Facility: Sugar Hollow Trout Park and Hatchery, Eaton Township, Wyoming County, PA. Groundwater withdrawal of up to 0.864 mgd combined total from Wells 1, 2 and 3 (Hatchery Well Field).

12. Project Sponsor and Facility: Talisman Energy USA, Inc. (Seeley Creek), Wells Township, Bradford County, PA. Surface water withdrawal of up to 0.750 mgd.

13. Project Sponsor and Facility: Talisman Energy USA, Inc. (Wyalusing Creek), Stevens Township, Bradford County, PA. Surface water withdrawal of up to 2.000 mgd.

14. Project Sponsor and Facility: Williams Production Appalachia, LLC (Snake Creek), Liberty Township, Susquehanna County, PA. Modification to project features of the withdrawal approval (Docket No. 20090302).

*Public Hearing—Projects Tabled:*

1. Project Sponsor and Facility: Anadarko E&P Company, LP (Wolf Run), Snow Shoe Township, Centre County, PA. Application for surface water withdrawal of up to 0.499 mgd.

2. Project Sponsor and Facility: Chief Oil & Gas, LLC (Martins Creek), Hop Bottom Borough, Susquehanna County, PA. Application for surface water withdrawal of up to 0.360 mgd.

3. Project Sponsor and Facility: Mansfield Borough Municipal Authority, Richmond Township, Tioga County, PA. Application for groundwater withdrawal of up to 0.079 mgd from Well 3.

4. Project Sponsor and Facility: Novus Operating, LLC (Tioga River), Covington Township, Tioga County, PA. Application for surface water withdrawal of up to 1.750 mgd.

5. Project Sponsor and Facility: Walker Township Water Association, Walker Township, Centre County, PA. Modification to increase the total groundwater system withdrawal limit (30-day average) from 0.523 mgd to 0.962 mgd (Docket No. 20070905).

*Public Hearing—Diversion Project Approved:*

1. Project Sponsor: Gettysburg Municipal Authority. Project Facility: Hunterstown Wastewater Treatment Plant, Straban Township, Adams County, PA. Application for an existing into-basin diversion of up to 0.123 mgd from the Potomac River Basin.

*Public Hearing—Rescission of Project Approvals:*

1. Project Sponsor: McNeil PPC. Project Facility: Johnson & Johnson (Docket No. 20050906), Lititz Borough, Lancaster County, PA.

2. Project Sponsor: Northampton Fuel Supply Company, Inc. Project Facility: Loomis Bank Operation (Docket No. 20040904), Hanover Township, Luzerne County, PA.

*Authority:* Pub. L. No. 91-575, 84 Stat. 1509 et seq., 18 CFR Parts 806—808.

Dated: September 30, 2010.

PAUL O. SWARTZ,  
*Executive Director*

[Pa.B. Doc. No. 10-1989. Filed for public inspection October 15, 2010, 9:00 a.m.]

