Description:
The East Stroudsburg Area School District's Intermediate Mathematics Planned Course reflects the Common Core Standards, Teachers of Mathematics *Principles and Standards for Mathematics Education,* the Pennsylvania State Standards for Mathematics Education and the Pennsylvania Department of Education Assessment Anchors and Eligible Content. It provides a research-based, sequential framework of content designed to maximize successful mastery of mathematics, use and application of the Standards for Mathematical Practices, as well as the Habits of Mind.

Standards for Mathematical Practices	Habits of Mind
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.	1. Persisting 2. Managing Impulsivity 3. Listening to Others with Empathy and Understanding 4. Thinking Flexibly 5. Metacognition 6. Striving for Accuracy and Precision 7. Questioning and Posing Problems 8. Applying Past Knowledge to New Situations 9. Thinking and Communicating with Clarity and Precision 10. Gathering Data through all Senses 11. Creating, Imagining, and Innovating 12. Responding with Wonderment and Awe 13. Taking Responsible Risks 14. Finding Humor

The Mathematics Curriculum is designed to address the needs of a diverse population of learners. The content builds upon student learning styles and provides for differentiated instruction. Each grade level includes opportunities for enrichment and remediation of concepts, as well as activities for English Language Learners.
Resources are provided to enhance mastery of mathematics vocabulary, basic skills, and problem solving strategies. Technology and career applications of mathematical skills are infused throughout the curriculum. As a result, learners will be offered opportunities to reason, communicate and connect mathematically in the real world.

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.

The Math Edge Grade 7 course is designed to scaffold concepts and skills from elementary school and grade 6 in preparation for learning the grade seven content. Students that were not successful on the Grade 6 PSSA Mathematics Assessment, or other state assessments, will receive an additional period of mathematics to facilitate bridging those content deficits. Embedded throughout instruction are problem-solving strategies as described in the table below, enabling students to make connections to their previous instruction and understandings. Teachers will continue to promote independent employment of all problem-solving strategies.

Individual student content area gaps will be identified using assessment data, so that student specific instructional decisions can be made. Unlike the core math classroom, students have been exposed to the curricular content, and the teacher will attempt to help the students to make connections to their prior learning and develop a stronger foundation for their grade-level content.

<u>Problem-Solving Strategies</u>
This document lists universal problem solving skills not explicitly stated in Common Core curriculum. Teachers must incorporate the use of these strategies throughout the instructional sequence while introducing new skills/concepts and through spiral review. These strategies continue to be employed throughout the rest of the students' math instruction.

Use Objects Act It Out Choose an Operation Try, Check, Revise	Look for a Pattern Use Logical Reasoning Draw a Picture Make a Table	Make an Organized List Work Backwards Solve a Simpler Problem Write an Equation to Match the Data	Missing/Extra Information Answering 2 Questions Using Data
(I) = Strategy Introduced	**(A) = Strategy Applied**	**(M) = Strategy Mastered, Independently Employed**	

<u>Grade K</u> Use Objects (I) <u>Grade 1</u> Use Objects (A) Act it Out (I) <u>Grade 2</u> Use Objects (M) Act it Out (A) Draw a Picture (I) Look for a Pattern (I) Missing/Extra Information (I) Try, Check, Revise (I) Answering 2 Questions (I) Using Data (I)	<u>Grade 3</u> Use Objects (M) Act it Out (M) Draw a Picture (A) Look for a Pattern (A) Missing/Extra Information (A) Try, Check, Revise (A) Answering 2 Questions (A) Using Data (A) Make a Table (I) Choose an Operation (I) Write an Equation to Match Data (I)	<u>Grade 4</u> Use Objects (M) Act it Out (M) Draw a Picture (M) Look for a Pattern (M) Missing/Extra Information (M) Try, Check, Revise (M) Answering 2 Questions (M) Using Data (M) Choose an Operation (A) Make a Table (A) Write an Equation to Match Data (A) Work Backwards (I) Make an Organized List (I)	<u>Grade 5</u> Use Objects (M) Act it Out (M) Draw a Picture (M) Look for a Pattern (M) Missing/Extra Information (M) Try, Check, Revise (M) Answering 2 Questions (M) Using Data (M) Choose an Operation (M) Make a Table (M) Write an Equation to Match Data (M) Work Backwards (A) Make an Organized List (A) Use Logical Reasoning (I) Solve a Simpler Problem (I)

Math Practices with Student Actions

1. Make sense of problems and persevere in solving them.	- Explain the problem. - Identify math vocabulary. - Draw a picture or diagram to understand. - Make a plan and solve the problem. - Check your answer.
2. Reason abstractly and quantitatively.	- Show the problem in a different way. - Substitute numbers to solve.
3. Construct viable arguments and critique the reasoning of others.	- Explain what you already know. - Use what you know to solve. - Explain your thinking. - Ask questions to others to help them explain. - Explain why your problem-solving process makes sense.
4. Model with mathematics.	- Relate the problem to real life situations. - Map the relationships. - Use appropriate math vocabulary to explain.
5. Use appropriate tools strategically.	- Decide which tool(s) help solve the problem. - Use tool(s) to solve problems. - Explain how tool(s) help to solve the problem.
6. Attend to precision.	- Define any terms or symbols needed. - Calculate the solution. - Check that the solution is accurate and precise.
7. Look for and make use of structure.	- Find patterns and structure. - Use patterns and structures to solve the problem. - Explain how the structure helped you to solve the problem
8. Look for and express regularity in repeated reasoning.	- Identify any repetition in the solution. - Identify vocabulary to explain reasoning. - Identify a more efficient way to solve the problem. - Identify a method or formula to solve the problem.

Scope of Course - Sequence will vary based upon individual student/class needs, and the time-line of class. The topics below are not presented in any prescribed order; order should be determined by the needs of the students within each class and determined by the assessment data. The order and selection of the instructional content is determined by the teacher.

Basic Math Facts Practice - These skills should be addressed on a daily basis.
- Addition and Subtraction (Including borrowing and regrouping)
- Multiplication and Division (1's through 12's)

Ratios and Proportional Relationships
- Understand ratio concepts and use ratio reasoning to solve problems.

The Number System
- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers.

Expressions and Equations
- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.

Geometry
- Solve real-world and mathematical problems involving area, surface area, and volume.

Statistics and Probability
- Develop understanding of statistical variability.
- Summarize and describe distributions.

Appendices:

A: Pennsylvania Standards for Mathematics

B: National Common Core Standards for Mathematics

C: Mathematics Assessment Anchors and Eligible Content: Grades 6 – 8

D: Formula Sheets: Grades 6 – 8 from PA Core

E: Anchor Checklists: Grades 6 – 8

F: Career Education and Work Standards

G: ISTE Standards

Unit: The Number System

Estimated Course Time: Approximately 15-21 Days. (To Be Determined Based on Assessment Data)

Overview: Students will fluently divide multi-digit numbers using the standard algorithm; fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. Students will build on their knowledge of numbers to differentiate between factors and multiples, as well as their knowledge of factor pairs of whole numbers. Students will identify and differentiate between common factors and common multiples of two whole numbers. Students will 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. Students will find the prime factorization of numbers to identify the greatest common factor and/or the least common multiple of given whole numbers. Students will also apply the distributive property to express a sum of two whole numbers from 1 – 100 with a common factor as a multiple of the sum of two whole numbers with no common factor.

Unit Essential Questions:
● Why is subtraction of rational numbers the same as adding the additive inverse?
● How can you represent addition and subtraction of rational numbers on a horizontal or vertical number line diagram?
● How is computation with rational numbers similar to and different from whole number computation?
● How does the understanding of situations that require multiplying or dividing and an understanding of the inverse relationship between multiplication and division help us to solve problems involving fractions and decimals in a real world context?
● How is mathematics used to quantify, compare, represent, and model numbers?
● How can relationships be represented mathematically?
● What makes a tool and/or strategy appropriate for a given task?
● How can recognizing repetition or regularity assist in solving problems more efficiently?

Assessment Anchor:
● **M06.A-N.1** Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
● **M06.A-N.1.1** Solve real-world and mathematical problems involving division of fractions.
● **M06.A-N.2** Compute with multi-digit numbers and find common factors and multiples.
● **M06.A-N.2.1** Compute with multi-digit numbers using the four arithmetic operations with or without a calculator.
● **M06.A-N.2.2** Apply number theory concepts (specifically, factors and multiples).
● **M06.A-N.3** Apply and extend previous understandings of numbers to the system of rational numbers.
● **M06.A-N.3.1** Understand that positive and negative numbers are used together to describe quantities having opposite directions or values and locations on the number line and coordinate plane.
● **M06.A-N.3.2** Understand ordering and absolute value of rational numbers.
● **M07.A-N.1** Apply and extend previous understandings of operations to add, subtract, multiply, and divide rational numbers.
● **M07.A-N.1.1** Solve real-world and mathematical problems involving the four operations with rational numbers.

PSSA Eligible Content:
- **M06.A-N.1.1.1** Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions.
- **M06.A-N.2.1.1** Solve problems involving operations (+, -, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems.
- **M06.A-N.2.2.1** 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.
- **M06.A-N.2.2.2** Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.
- **M06.A-N.3.1.1** Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge).
- **M06.A-N.3.1.2** Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself (e.g., $^-(^-3) = 3$; 0 is its own opposite).
- **M06.A-N.3.1.3** Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane.
- **M06.A-N.3.2.1** Write, interpret, and explain statements of order for rational numbers in real-world contexts.
- **M06.A-N.3.2.2** Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation.
- **M06.A-N.3.2.3** Solve real-world and mathematical problems by plotting 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.
- **M07.A-N.1.1.1** Apply properties of operations to add and subtract rational numbers, including real-world contexts.
- **M07.A-N.1.1.2** Represent addition and subtraction on a horizontal or vertical number line.
- **M07.A-N.1.1.3** Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.

Pennsylvania Common Core Standard(s):
- **CC.2.1.6.E.1** Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- **CC.2.1.6.E.2** Identify and choose appropriate processes to compute fluently with multi-digit numbers.
- **CC.2.1.6.E.3** Develop and/or apply number theory concepts to find common factors and multiples.
- **CC.2.1.6.E.4** Apply and extend previous understandings of numbers to the system of rational numbers.
- **CC.2.1.7.E.1** Apply and extend previous understandings of operations with fractions to operations with rational numbers.

National Common Core Standard(s):
Compute fluently with multi-digit numbers and find common factors and multiples.
- **CC.6NS.B.2** Fluently divide multi-digit numbers using the standard algorithm.
- **CC.6NS.B.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Apply and extend previous understandings of operations with fractions.
- **CC.7.NS.A.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.
- **CC.7.NS.A.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.
- **CC.7.NS.A.3** Solve real-world and mathematical problems involving the four operations with rational numbers.

ISTE Standards:
1. Creativity and Innovation – Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
   b. Create original works as a means of personal or group expression
   c. Use models and simulations to explore complex systems and issues
2. Communication and Collaboration – Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
   a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
   b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
   d. Contribute to project teams to produce original works or solve problems
3. Research and Information Fluency – Students apply digital tools to gather, evaluate, and use information.
   a. Plan strategies to guide inquiry
   b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
   c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks

       d. Process data and report results
4. Critical Thinking, Problem Solving, and Decision Making – Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
       a. Identify and define authentic problems and significant questions for investigation
       b. Plan and manage activities to develop a solution or complete a project
       c. Collect and analyze data to identify solutions and/or make informed decisions
       d. Use multiple processes and diverse perspectives to explore alternative solutions
5. Digital Citizenship – Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
       a. Advocate and practice safe, legal, and responsible use of information and technology
       b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
       c. Demonstrate personal responsibility for lifelong learning
       d. Exhibit leadership for digital citizenship
6. Technology Operations and Concepts – Students demonstrate a sound understanding of technology concepts, systems, and operations.
       a. Understand and use technology systems
       b. Select and use applications effectively and productively

Career Education and Work Standards

13.1.8.A. Relate careers to individual interests, abilities, and aptitudes.
13.1.8.B. Relate careers to personal interests, abilities, and aptitudes.
13.1.8.C. Explain how both traditional and nontraditional careers offer or hinder career opportunities.
13.1.8.D. Develop an individualized career portfolio including components.
13.1.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.1.8.F. Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation.
13.2.8.A. Identify effective speaking and listening skills used in a job interview.
13.2.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.3.8.C. Explain and demonstrate conflict resolution skills.
13.3.8.E. Identify and apply time management strategies as they relate to both personal and work situations.
13.4.8.C. Identify and describe the basic components of a business plan.

Connecting to Common Core and Other Standards:
    PA Standards found at www.pdesas.org/standards/standardsdownloads
    National Common Core found at www.corestandards.org
    ISTE found at www.iste.org/standards/nets-for-students.aspx
    Career Education and Work found at www.pacareerstandards.com/
    *See Appendix for complete documents.

ELL Differentiation: Math & LA specifics found at www.pde.sas.org/module/sas/curriculumframework/elloverlay.aspx
Generic found at http://www.easad.net/esl
Todos resources found at www.todos-math.org

Enrichment:
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

Remediation:
- Finding place value
- Using repeated multiplication
- Multiplication and/or division facts
- Whole number operations
- Identifying the parts or components of the coordinate plane
- Plotting points in all four quadrants of the coordinate plane
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary	Materials, Resources, & Instructional Activities	Assessments
M06.A-N.1.1.1￼M06.A-N.2.1.1￼M06.A-N.2.2.1￼M06.A-N.2.2.2￼M06.A-N.3.1.1￼M06.A-N.3.1.2￼M06.A-N.3.1.3￼M06.A-N.3.2.1￼M06.A-N.3.2.2￼M06.A-N.3.2.3￼M07.A-N.1.1.1￼M07.A-N.1.1.2￼M07.A-N.1.1.3	● Solve problems involving operations (+, -, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems.￼● Apply properties of operations to add and subtract rational numbers, including real-world contexts.￼● Represent addition and subtraction on a horizontal or vertical number line.￼● Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	● Read and write numbers to trillions in standard, expanded, and word form, and give the values of specified digits￼● Estimate a sum or difference by rounding￼● Divide multi-digit numbers using the standard algorithm￼● Explain the steps to solve a division problem￼● Express a remainder as a fraction in the quotient￼● Estimate a product by rounding￼● Estimate a quotient using compatible numbers￼● Add multi-digit decimals using the standard algorithm￼● Subtract multi-digit decimals using the standard algorithm￼● Multiply multi-digit decimals using the standard algorithm￼● Divide multi-digit decimal numbers using standard algorithm￼● Use area models for decimal computation situations	● Absolute Value￼● Addend￼● Additive Inverse￼● Associative Property￼● Coefficient￼● Common Denominator￼● Commutative Property￼● Compare Numbers￼● Computation￼● Compute￼● Decimal￼● Denominator￼● Difference￼● Distance￼● Distributive Property￼● Dividend￼● Divisor￼● Equation￼● Equivalent Fractions￼● Expanded Form￼● Fraction￼● Identity Property￼● Improper Fraction￼● Integers￼● Inverse Operations￼● Like Terms￼● Mixed Number	● Supplementary workbooks￼● PSSA Math Assessment￼● Teacher-generated activities￼● Calculators￼● Promethean Boards￼● CPS￼● Study Island￼● moodle.esasd.net/moodle/course/view.php?id=129￼● moodle.esasd.net/moodle/course/view.php?id=234￼● SAS: http://www.pdesas.org/￼● http://map.mathshell.org.uk/materials/tasks.php￼● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default￼● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month￼● http://algebraicthinking.org/assessments￼● www.algebralab.org￼● http://www.smarterbalanced.org/sample-items-and-performance-tasks/￼● http://www.parcconline.org/samples/item-task-prototypes #7	● Teacher generated tests and quizzes￼● Projects￼● Journals￼● Homework￼● Teacher Observations￼● CDT￼● Study Island￼● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (continued from above)	Materials, Resources, & Instructional Activities	Assessments
M06.A-N.1.1.1 M06.A-N.2.1.1 M06.A-N.2.2.1 M06.A-N.2.2.2 M06.A-N.3.1.1 M06.A-N.3.1.2 M06.A-N.3.1.3 M06.A-N.3.2.1 M06.A-N.3.2.2 M06.A-N.3.2.3 M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3	● Solve problems involving operations (+, -, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems. ● Apply properties of operations to add and subtract rational numbers, including real-world contexts. ● Represent addition and subtraction on a horizontal or vertical number line. ● Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	● Use concepts of area, perimeter, and volume to solve problems with whole numbers and decimals ● Use place value to compare and order whole numbers and decimals ● Simplify expressions using the order of operations ● Identify and use the properties of addition and multiplication ● Use the distributive property to multiply mentally ● List and use verbal expressions for math operations ● Graph integers and their opposites on a number line ● Compare and order integers and decimals using a number line ● Solve problems where the two quantities add to make a sum of 0 (additive inverses) ● Describe real-world situation where two quantities add to make a sum of zero	● Multiplicative Inverse ● Number Line ● Numerator ● Numerical Expression ● Opposite ● Opposite Quantities ● Order of Operations ● Place Value ● Product ● Quotient ● Rational Numbers ● Reciprocal ● Repeating Decimal ● Signed Numbers ● Sum ● Terminating Decimal ● Variable ● Visual Fraction Model ● Whole Numbers	● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes #7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments

M06.A-N.1.1.1
M06.A-N.2.1.1
M06.A-N.2.2.1
M06.A-N.2.2.2
M06.A-N.3.1.1
M06.A-N.3.1.2
M06.A-N.3.1.3
M06.A-N.3.2.1
M06.A-N.3.2.2
M06.A-N.3.2.3
M07.A-N.1.1.1
M07.A-N.1.1.2
M07.A-N.1.1.3
	● Apply properties of operations to add and subtract rational numbers, including real-world contexts.
	● Represent addition and subtraction on a horizontal or vertical number line.
	● Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.
		● Define the sum of two rational numbers as the distance one addend is away from the total by the absolute value of the other addend
		● Define the direction of the distance on a number line based on the sign of the addend
		  o Negative is left/down
		  o Positive is right/up
		● Define additive inverse as a rational number added to its negative which results in a sum of zero
		● Solve real-world problems involving adding rational numbers
		● Compare subtracting rational numbers to adding the additive inverse
		● Prove that the distance between two rational numbers is equal to the absolute value of their difference
		● Find the absolute value of rational numbers
		● Apply the commutative, associative, additive inverse, and distributive properties to solve addition and subtraction of rational numbers
				● Supplementary workbooks
				● PSSA Math Assessment
				● Teacher-generated activities
				● Calculators
				● Promethean Boards
				● CPS
				● Study Island
				● moodle.esasd.net/moodle/course/view.php?id=129
				● moodle.esasd.net/moodle/course/view.php?id=234
				● SAS: http://www.pdesas.org/
				● http://map.mathshell.org.uk/materials/tasks.php
				● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default
				● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month
				● http://algebraicthinking.org/assessments
				● www.algebralab.org
				● http://www.smarterbalanced.org/sample-items-and-performance-tasks/
				● http://www.parcconline.org/samples/item-task-prototypes #7
					● Teacher generated tests and quizzes
					● Projects
					● Journals
					● Homework
					● Teacher Observations
					● CDT
					● Study Island
					● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M06.A-N.1.1.1 M06.A-N.2.1.1 M06.A-N.2.2.1 M06.A-N.2.2.2 M06.A-N.3.1.1 M06.A-N.3.1.2 M06.A-N.3.1.3 M06.A-N.3.2.1 M06.A-N.3.2.2 M06.A-N.3.2.3 M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3	● Apply properties of operations to add and subtract rational numbers, including real-world contexts. ● Represent addition and subtraction on a horizontal or vertical number line. ● Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	● Model integer addition on a number line ● Add integers using absolute values ● Find the additive inverse for numbers and real-world values ● Model integer subtraction on a number line ● Subtract integers by adding the opposite ● Evaluate expressions with integers ● Multiply and divide integers ● Solve real-world problems involving the distances between two rational numbers and their absolute values ● Use and apply divisibility rules for 2, 3, 4, 5, 6, 8, 9, and 10 ● List all factors of a given number less than or equal to 100 ● Find the prime factorization of composite numbers less than or equal to 100 ● Write prime factors using a factor tree ● Write prime factors using a ladder diagram ● Find the greatest common factor (GCF) of a set of numbers that are less than or equal to 100		● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M06.A-N.1.1.1 M06.A-N.2.1.1 M06.A-N.2.2.1 M06.A-N.2.2.2 M06.A-N.3.1.1 M06.A-N.3.1.2 M06.A-N.3.1.3 M06.A-N.3.2.1 M06.A-N.3.2.2 M06.A-N.3.2.3 M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3	● Apply properties of operations to add and subtract rational numbers, including real-world contexts. ● Represent addition and subtraction on a horizontal or vertical number line. ● Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	● Use multiples of numbers to find the least common multiple (LCM) of whole numbers that are less than or equal to 12 ● Find the LCM using prime factorization ● Find LCM and/or GCF using Venn diagrams ● Explain procedurally how to find the GCF and LCM of sets of whole numbers ● Identify when there is not a common factor, other than 1, for a given set of whole numbers ● Compute the greatest common factor of two whole numbers written as a sum ● Apply the distributive property to re-write the sum with the GCF written outside the parentheses and the two whole numbers with no common factor written inside the parentheses ● Write and identify decimals as fractions and mixed numbers ● Plot whole numbers, decimals, fractions, and/or mixed numbers on a number line ● Compare and order whole numbers, decimals, fractions, and/or mixed numbers		● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M06.A-N.1.1.1 M06.A-N.2.1.1 M06.A-N.2.2.1 M06.A-N.2.2.2 M06.A-N.3.1.1 M06.A-N.3.1.2 M06.A-N.3.1.3 M06.A-N.3.2.1 M06.A-N.3.2.2 M06.A-N.3.2.3 M07.A-N.1.1.1 M07.A-N.1.1.2 M07.A-N.1.1.3	● Apply properties of operations to add and subtract rational numbers, including real-world contexts. ● Represent addition and subtraction on a horizontal or vertical number line. ● Apply properties of operations to multiply and divide rational numbers, including real-world contexts; demonstrate that the decimal form of a rational number terminates or eventually repeats.	● Write fractions and mixed numbers as decimals ● Write mixed numbers as improper fractions ● Write improper fractions as mixed numbers ● Identify if decimals are terminating or repeating decimals ● Interpret and compute quotients of fractions and mixed numbers ● Use fraction models to show equivalent fractions ● Calculate or identify equivalent fractions ● Use fraction models to show division of fractions ● Add and subtract fractions with common (like) and uncommon (unlike) denominators ● Multiply and divide fractions and mixed numbers ● Use understanding of multiplication of fractions to explain division of fractions ● Interpret the meaning of the quotient ● Divide fractions to find the quotient ● Simplify fractions ● Write and identify equivalent fractions ● Write a story problem that will use division of fractions ● Solve real-world problems involving division of fractions by fractions, as well as the other fraction operations		● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

Unit: Ratios and Proportional Relationships

Estimated Course Time: Approximately 15-21 Days. (To Be Determined Based on Assessment Data)

Overview: Students will review how a ratio expresses the comparison between two quantities. Special types of ratios are rates, unit rates, measurement conversions, and percentages. These concepts are applied to a variety of real world and mathematical situations. Students gain a deeper understanding of proportional reasoning through instruction and practice. They develop and use multiplicative thinking to develop a sense of proportional reasoning as they describe ratio relationships between two quantities.

Unit Essential Questions:
● When is it useful to be able to relate one quantity to another?
● How do you find equivalent fractions?
● How can you use tables and graphs to understand ratios?
● How can you use unit rates to solve problems and make comparisons?
● How are percents related to fractions and decimals?
● How can you use percents to solve problems?
● How can you use ratios to convert measurements from one unit to another?
● How are ratios and rates similar and different?
● What is the connection between a ratio and a fraction?
● How do we translate a situation into a mathematical model?
● How do we choose the appropriate strategy to solve this problem?
● How do changes in constant proportionality affect the graph of its relationship?
● Why do proportional relationships always go through the origin?
● What is the constant of proportionality?
● How do you use formulas to solve proportional relationships?

Assessment Anchor:
● **M06.A-R.1** Understand ratio concepts and use ratio reasoning to solve problems.
● **M06.A-R.1.1** Represent and/or solve real-world and mathematical problems using rates, ratios, and/or percents.
● **M07.A-R.1** Demonstrate an understanding of proportional relationships.
● **M07.A-R.1.1** Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems.

PSSA Eligible Content:
- **M06.A-R.1.1.1** Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities.
- **M06.A-R.1.1.2** Find the unit rate a/b associated with a ratio a:b (with b ≠ 0) and use rate language in the context of a ratio relationship.
- **M06.A-R.1.1.3** Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- **M06.A-R.1.1.4** Solve unit rate problems including those involving unit pricing and constant speed.
- **M06.A-R.1.1.5** 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 percentage.
- **M07.A-R.1.1.1** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.
- **M07.A-R.1.1.2** Determine whether two quantities are proportionally related (e.g., by testing for equivalent ratios in a table, graphing on a coordinate plane and observing whether the graph is a straight line through the origin).
- **M07.A-R.1.1.3** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
- **M07.A-R.1.1.4** Represent proportional relationships by equations.
- **M07.A-R.1.1.5** 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.
- **M07.A-R.1.1.6** Use proportional relationships to solve multi-step ratio and percent problems.

Pennsylvania Common Core Standard(s):
- **CC.2.1.6.D.1** Understand ratio concepts and use ratio reasoning to solve problems.
- **CC.2.1.7.D.1** Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

National Common Core Standard(s):
Understand ratio concepts and use ratio reasoning to solve problems.
- **CC.6.RP.A.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- **CC.6.RP.A.2** Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.
- **CC.6.RP.A.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.
    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.

Represent and analyze quantitative relationships between dependent and independent variables.
- **CC.6.EE.C.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..

Analyze proportional relationships and use them to solve real-world and mathematical problems.
- **CC.7.RP.A.1** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
- **CC.7.RP.A.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.
  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.
- **CC.7.RP.A.3** Use proportional relationships to solve multi-step ratio and percent problems.

ISTE Standards:
1. Creativity and Innovation – Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
   b. Create original works as a means of personal or group expression
   c. Use models and simulations to explore complex systems and issues
2. Communication and Collaboration – Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
   a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
   b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
   d. Contribute to project teams to produce original works or solve problems
3. Research and Information Fluency – Students apply digital tools to gather, evaluate, and use information.
   a. Plan strategies to guide inquiry
   b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
   c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
   d. Process data and report results
4. Critical Thinking, Problem Solving, and Decision Making – Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
   a. Identify and define authentic problems and significant questions for investigation
   b. Plan and manage activities to develop a solution or complete a project
   c. Collect and analyze data to identify solutions and/or make informed decisions
   d. Use multiple processes and diverse perspectives to explore alternative solutions

5. Digital Citizenship – Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
   a. Advocate and practice safe, legal, and responsible use of information and technology
   b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
   c. Demonstrate personal responsibility for lifelong learning
   d. Exhibit leadership for digital citizenship
6. Technology Operations and Concepts – Students demonstrate a sound understanding of technology concepts, systems, and operations.
   a. Understand and use technology systems
   b. Select and use applications effectively and productively

Career Education and Work Standards

13.1.8.A. Relate careers to individual interests, abilities, and aptitudes.
13.1.8.B. Relate careers to personal interests, abilities, and aptitudes.
13.1.8.C. Explain how both traditional and nontraditional careers offer or hinder career opportunities.
13.1.8.D. Develop an individualized career portfolio including components.
13.1.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.1.8.F.   Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation.
13.2.8.A. Identify effective speaking and listening skills used in a job interview.
13.2.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.3.8.C. Explain and demonstrate conflict resolution skills.
13.3.8.E. Identify and apply time management strategies as they relate to both personal and work situations.
13.4.8.C. Identify and describe the basic components of a business plan.

Connecting to Common Core and Other Standards:
   PA Standards found at www.pdesas.org/standards/standardsdownloads
   National Common Core found at www.corestandards.org
   ISTE found at www.iste.org/standards/nets-for-students.aspx
   Career Education and Work found at www.pacareerstandards.com/
   *See Appendix for complete documents.

ELL Differentiation: Math & LA specifics found at www.pde.sas.org/module/sas/curriculumframework/elloverlay.aspx
               Generic found at http://www.easad.net/esl
               Todos resources found at www.todos-math.org

Enrichment:
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

Remediation:
- Finding place value
- Using repeated multiplication
- Multiplication and/or division facts
- Whole number operations
- Identifying the parts or components of the coordinate plane
- Plotting points in all four quadrants of the coordinate plane
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary	Materials, Resources, & Instructional Activities	Assessments

M06.A-R.1.1.1
M06.A-R.1.1.2
M06.A-R.1.1.3
M07.A-R.1.1.1
M07.A-R.1.1.2
M07.A-R.1.1.3
M07.A-R.1.1.4
M07.A-R.1.1.5
M07.A-R.1.1.6
	●Represent and/or solve real-world and mathematical problems using rates, ratios, and/or percents.
	●Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems.
		●Use ratio language to describe a ratio relationship between two quantities
		●Write a ratio to describe the relationship between two quantities
		●Write a ratio using three different formats:
		  o a/b
		  o a:b
		  o a to b
		●Construct tables of equivalent ratios relating quantities with whole-number measurements
		●Compute the missing value in a table to equivalent ratios
		●Graph/plot pairs of equivalent ratios on a coordinate plane
		●Use a table to find equivalent ratios
		●Write equivalent ratios
		●Use a tape diagram to reason about equivalent ratios
		●Find equal ratios and determine if two ratios form a proportion
		●Use ratio tables and common factors to solve proportions
		●Solve unit rate problems with constant speed
			●Chart
			●Constant Speed
			●Coordinate Grid
			●Coordinate Plane
			●Customary System
			●Customary Units of Measurement
			●Double Number
			●Equation
			●Equivalent Ratio
			●Fraction
			●Graph
			●Line diagram
			●Ordered Pair
			●Part
			●Percent
			●Plot
			●Proportion
			●Quantity
			●Rate
			●Ratio
			●Ratio Relationship
			●Relationship
			●Standard Units of Measurement
			●Table
			●Tape Diagram
			●Unit Pricing
			●Unit Rate
			●Value
			●Whole
				●Supplementary workbooks
				●PSSA Math Assessment
				●Teacher-generated activities
				●Calculators
				●Promethean Boards
				●CPS
				●Study Island
				●moodle.esasd.net/moodle/course/view.php?id=129
				●moodle.esasd.net/moodle/course/view.php?id=234
				●SAS: http://www.pdesas.org/
					●Teacher generated tests and quizzes
					●Projects
					●Journals
					●Homework
					●Teacher Observations
					●CDT
					●Study Island
					●http://www.thatquiz.org/
					●http://map.mathshell.org/

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (continued from above)	Materials, Resources, & Instructional Activities	Assessments
M06.A-R.1.1.1 M06.A-R.1.1.2 M06.A-R.1.1.3 M07.A-R.1.1.1 M07.A-R.1.1.2 M07.A-R.1.1.3 M07.A-R.1.1.4 M07.A-R.1.1.5 M07.A-R.1.1.6	●Represent and/or solve real-world and mathematical problems using rates, ratios, and/or percents. ●Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems.	●Use the distance formula to solve problems involving distance, rate, and time ●Solve unit rate problems involving unit pricing ●Write a proportion and solve problems with unit rates ●Compare and use rates to identify the better buy or the lower rate ●Write a percent as a fraction out of 100 ●Find the percent of a quantity as a rate out of 100 ●Write percents as decimals ●Write decimals as percents ●Write fractions as percents ●Convert measurement units using ratio reasoning ●Use an equation to reason about equivalent ratios ●Use a double number line diagram to reason about equivalent ratios ●Use tables and graphs to represent equivalent ratios ●Solve percent word problems to find the whole, given the part and percent ●Solve percent word problems by setting up a proportion ●Solve percent word problems to find the part, given the whole and percent	●x-Axis ●x-Coordinate ●y-Axis ●y-Coordinate	●Supplementary workbooks ●PSSA Math Assessment ●Teacher-generated activities ●Calculators ●Promethean Boards ●CPS ●Study Island ●moodle.esasd.net/moodle/course/view.php?id=129 ●moodle.esasd.net/moodle/course/view.php?id=234 ●SAS: http://www.pdesas.org/ ●http://map.mathshell.org.uk/materials/tasks.php ●http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ●http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ●http://algebraicthinking.org/assessments ●www.algebralab.org ●http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ●http://www.parcconline.org/samples/item-task-prototypes #7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

| PSSA Eligible Content | Unit Concepts
What students need to know: | Unit Competencies
What students need to be able to do (skills): (Students will:) | Content Vocabulary
(see above) | Materials, Resources, & Instructional Activities | Assessments |
|---|---|---|---|---|---|
| M06.A-R.1.1.1
M06.A-R.1.1.2
M06.A-R.1.1.3
M07.A-R.1.1.1
M07.A-R.1.1.2
M07.A-R.1.1.3
M07.A-R.1.1.4
M07.A-R.1.1.5
M07.A-R.1.1.6 | ● Represent and/or solve real-world and mathematical problems using rates, ratios, and/or percents.
● Analyze, recognize, and represent proportional relationships and use them to solve real-world and mathematical problems. | ● Convert measurement using ratios and proportions
● Manipulate and transform measurement units appropriately when multiplying quantities
● Manipulate and transform measurement units appropriately when dividing quantities
● Solve real-world problems, including problems involving maps and scale drawings | | ● Supplementary workbooks
● PSSA Math Assessment
● Teacher-generated activities
● Calculators
● Promethean Boards
● CPS
● Study Island
● moodle.esasd.net/moodle/course/view.php?id=129
● moodle.esasd.net/moodle/course/view.php?id=234
● SAS: http://www.pdesas.org/
● http://map.mathshell.org.uk/materials/tasks.php
● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default
● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month
● http://algebraicthinking.org/assessments
● www.algebralab.org
● http://www.smarterbalanced.org/sample-items-and-performance-tasks/
● http://www.parcconline.org/samples/item-task-prototypes#7 | ● Teacher generated tests and quizzes
● Projects
● Journals
● Homework
● Teacher Observations
● CDT
● Study Island
● NWEA |

Unit: Statistics and Probability

Estimated Course Time: Approximately 15-21 Days. (To Be Determined Based on Assessment Data)

Overview: Students will practice recognizing a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. Students will 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. Students will 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. Students will understand the appropriate use of mean, median, mode, range, interquartile range, etc. and the appropriate use of each concept and how to apply them to various data sets. Students will use a variety of data displays (e.g., number line, dot plot, histogram, box plot) to understand the meaning of data. Students will review and practice finding simple probabilities in preparation for finding the probability of compound events.

Unit Essential Questions:
● How can you summarize and display numerical data?
● How can you use measures of center and variability to describe a data set?
● How are fractions and percents related to stating the probability of an event?
● How can you use a sample to gain information about a population?
● How can you use samples to make and compare predictions about populations?
● How can you use measures of center and variability to compare two populations?
● How can you describe the likelihood of an event? What is the difference between dependent and independent events?
● How can you find the theoretical probability of an event? How do find the experimental probability of an event?
● Does experimental probability reflect theoretical probability? Why or why not?
● How can you use a stem and leaf plots to organize a set of numbers?
● How do histograms show the differences in distributions of data?
● How can you use a circle graph to show the results of a survey?
● How do we interpret data from statistical representations?
● How do you predict future probabilities based on data?

Assessment Anchor:
● **M06.D-S.1** Demonstrate understanding of statistical variability by summarizing and describing distributions.
● **M06.D-S.1.1** Display, analyze, and summarize numerical data sets in relation to their context.
● **M07.D-S.1** Use random sampling to draw inferences about a population.
● **M07.D-S.1.1** Use random samples.
● **M07.D-S.2** Draw comparative inferences about populations.
● **M07.D-S.2.1** Use statistical measures to compare two numerical data distributions.
● **M07.D-S.3** Investigate chance processes and develop, use, and evaluate probability models.
● **M07.D-S.3.1** Predict or determine the likelihood of outcomes.
● **M07.D-S.3.2** Use probability to predict outcomes.

PSSA Eligible Content:
- **M06.D-S.1.1.1** Display numerical data in plots on a number line, including line plots, histograms, and box-and-whisker plots.
- **M06.D-S.1.1.2** Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, interquartile range, mean absolute deviation).
- **M06.D-S.1.1.3** Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered.
- **M06.D-S.1.1.4** Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
- **M07.D-S.1.1.1** Determine whether a sample is a random sample given a real-world situation.
- **M07.D-S.1.1.2** Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.
- **M07.D-S.2.1.1** Compare two numerical data distributions using measures of center and variability.
- **M07.D-S.3.1.1** Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible (i.e., 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).
- **M07.D-S.3.2.1** Determine the probability of a chance event given relative frequency. Predict the approximate relative frequency given the probability.
- **M07.D-S.3.2.2** Find the probability of a simple event, including the probability of a simple event not occurring.

Pennsylvania Common Core Standard(s):
- **CC.2.4.6.B.1** Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.
- **CC.2.4.7.B.1** Draw inferences about populations based on random sampling concepts.
- **CC.2.4.7.B.2** Draw informal comparative inferences about two populations.
- **CC.2.4.7.B.3** Investigate chance processes and develop, use, and evaluate probability models.

National Common Core Standard(s):
Develop understanding of statistical variability.
- **CC.6.SP.A.1** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- **CC.6.SP.A.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.
- **CC.6.SP.A.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.
- **CC.6.SP.B.4** Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- **CC.6.SP.B.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.

Use random sampling to draw inferences about a population.
- **CC.7.SP.A.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.
- **CC.7.SP.A.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.

Draw informal comparative inferences about two populations.
- **CC.7.SP.B.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.
- **CC.7.SP.B.4** Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Investigate chance processes and develop, use, and evaluate probability models.
- **CC.7.SP.C.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.
- **CC.7.SP.C.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.
- **CC.7.SP.C.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.
  b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

ISTE Standards:
1. Creativity and Innovation – Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
      b. Create original works as a means of personal or group expression
      c. Use models and simulations to explore complex systems and issues

2. Communication and Collaboration – Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
    a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
    b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
    d. Contribute to project teams to produce original works or solve problems
3. Research and Information Fluency – Students apply digital tools to gather, evaluate, and use information.
    a. Plan strategies to guide inquiry
    b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
    c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
    d. Process data and report results
4. Critical Thinking, Problem Solving, and Decision Making – Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
    a. Identify and define authentic problems and significant questions for investigation
    b. Plan and manage activities to develop a solution or complete a project
    c. Collect and analyze data to identify solutions and/or make informed decisions
    d. Use multiple processes and diverse perspectives to explore alternative solutions
5. Digital Citizenship – Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
    a. Advocate and practice safe, legal, and responsible use of information and technology
    b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
    c. Demonstrate personal responsibility for lifelong learning
    d. Exhibit leadership for digital citizenship
6. Technology Operations and Concepts – Students demonstrate a sound understanding of technology concepts, systems, and operations.
    a. Understand and use technology systems
    b. Select and use applications effectively and productively

Career Education and Work Standards

13.1.8.A. Relate careers to individual interests, abilities, and aptitudes.
13.1.8.B. Relate careers to personal interests, abilities, and aptitudes.
13.1.8.C. Explain how both traditional and nontraditional careers offer or hinder career opportunities.
13.1.8.D. Develop an individualized career portfolio including components.
13.1.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.1.8.F.   Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation.
13.2.8.A. Identify effective speaking and listening skills used in a job interview.
13.2.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.3.8.C. Explain and demonstrate conflict resolution skills.
13.3.8.E. Identify and apply time management strategies as they relate to both personal and work situations.
13.4.8.C. Identify and describe the basic components of a business plan.

Connecting to Common Core and Other Standards:
> PA Standards found at www.pdesas.org/standards/standardsdownloads
> National Common Core found at www.corestandards.org
> ISTE found at www.iste.org/standards/nets-for-students.aspx
> Career Education and Work found at www.pacareerstandards.com/
> *See Appendix for complete documents.

ELL Differentiation: Math & LA specifics found at www.pde.sas.org/module/sas/curriculumframework/elloverlay.aspx
> Generic found at http://www.easad.net/esl
> Todos resources found at www.todos-math.org

Enrichment:
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

Remediation:
- Finding place value
- Using repeated multiplication
- Multiplication and/or division facts
- Whole number operations
- Identifying the parts or components of the coordinate plane
- Plotting points in all four quadrants of the coordinate plane
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary	Materials, Resources, & Instructional Activities	Assessments
M06.D-S.1.1.1 M06.D-S.1.1.2 M06.D-S.1.1.3 M06.D-S.1.1.4 M07.D-S.1.1.1 M07.D-S.1.1.2 M07.D-S.2.1.1 M07.D-S.3.1.1 M07.D-S.3.2.1 M07.D-S.3.2.2	● Demonstrate understanding of statistical variability by summarizing and describing distributions. ● Display, analyze, and summarize numerical data sets in relation to their context.	● Identify statistical questions ● Contrast statistical and non-statistical questions ● Recognize that a statistical question will have variability in answers ● Describe a set of data in terms of its center (mean, median), spread (range, interquartile range, mean absolute deviation), and overall shape ● Display numerical data using o Number Lines o Dot Plots o Histograms o Box-and-Whisker Plots ● Record the number of observations within a numerical data set ● Describe how a data set was measured and its units of measurement ● Calculate mean, median, and/or range (measures of center) ● Calculate range, interquartile range, and/or mean absolute deviation (measures of variability) ● Describe any overall patterns or deviations from the overall pattern in relation to the context of the data collection	● Average ● Box Plot (Box and Whisker) ● Cluster ● Context of Data Collection ● Data/Data Set ● Distribution ● Dot plot ● Frequency Table ● Histogram ● Interquartile Range ● Line Plot ● Maximum (Upper Extreme) ● Mean ● Mean Absolute Deviation ● Measures of Center ● Measures of Variability ● Median ● Mode ● Non-Statistical Question ● Number Line ● Observations ● Outlier ● Overall Pattern ● Overall Shape ● Peak/Gap ● Probability ● Range ● Spread ● Statistical Question ● Units of Measurement ● Variability	● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M06.D-S.1.1.1 M06.D-S.1.1.2 M06.D-S.1.1.3 M06.D-S.1.1.4 M07.D-S.1.1.1 M07.D-S.1.1.2 M07.D-S.2.1.1 M07.D-S.3.1.1 M07.D-S.3.2.1 M07.D-S.3.2.2	● Demonstrate understanding of statistical variability by summarizing and describing distributions. ● Display, analyze, and summarize numerical data sets in relation to their context.	● Find the center of a set of data ● Compare and contrast the measures of center to the data distribution in the context of the data collection ● Compare and contrast the measures of variability to the data distribution in the context of the data collection ● Know that median is a single number that is a measure of center and it summarizes all values in a set of data ● Know that range is a single measure of variation and it describes how values vary in the set of data ● Identify outliers and their meaning in terms of the data and data set ● Solve real-world problems using statistical measures ● Use a table to find combinations ● Use a tree diagram to find possible combinations ● Find the probability of simple events		● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

Unit: Expressions and Equations

Estimated Course Time: Approximately 15-21 Days. (To Be Determined Based on Assessment Data)

Overview: Expressions are foundational for Algebra, and they serve as building blocks for work with equations and functions. Students will write and evaluate numerical expressions involving whole-number exponents. Students will write, read, and evaluate expressions in which letters stand for numbers. Students will also apply the properties of operations to generate equivalent expressions, and identify when two expressions are equivalent. Variables are tools for expressing mathematical ideas clearly and concisely and have many different meanings, depending on the context and purpose.

Unit Essential Questions:
● How can algebraic equations be used to solve problems in daily life?
● How are variables used to express relationships among quantities and contexts?
● How can you use variables and constants to write algebraic expressions?
● How do you identify and describe parts of an expression?
● How do you evaluate expressions?
● What are the connections among the different representations of a linear relationship?
● What are the components of a linear function, and what do these mean in a real-world context?
● How do we generate equivalent expressions?
● How do we solve real-world and mathematical problems using numerical and algebraic expressions and equations?
● How can we best represent a pattern/relationship in a given situation?

Assessment Anchor:
● **M06.B-E.1** Apply and extend previous understandings of arithmetic to numerical and algebraic expressions.
● **M06.B-E.1.1** Identify, write, and evaluate numerical and algebraic expressions.
● **M06.B-E.2** Interpret and solve one-variable equations and inequalities.
● **M06.B-E.2.1** Create, solve, and interpret one-variable equations or inequalities in real-world and mathematical problems.
● **M07.B-E.1** Represent expressions in equivalent forms.
● **M07.B-E.1.1** Use properties of operations to generate equivalent expressions.
● **M07.B-E.2** Solve real-world and mathematical problems using numerical and algebraic expressions, equations, and inequalities.
● **M07.B-E.2.1** Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers.
● **M07.B-E.2.2** Use variables to represent quantities in a real-world or mathematical problem and construct simple equations and inequalities to solve problems.
● **M07.B-E.2.3** Determine the reasonableness of the answer(s) in problem-solving situations.

PSSA Eligible Content:
- **M06.B-E.1.1.1** Write and evaluate numerical expressions involving whole-number exponents.
- **M06.B-E.1.1.2** Write algebraic expressions from verbal descriptions.
- **M06.B-E.1.1.3** Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity).
- **M06.B-E.1.1.4** Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems.
- **M06.B-E.1.1.5** Apply the properties of operations to generate equivalent expressions.
- **M06.B-E.2.1.1** Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- **M06.B-E.2.1.2** Write algebraic expressions to represent real-world or mathematical problems.
- **M07.B-E.1.1.1** Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.
- **M07.B-E.2.1.1** Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.
- **M07.B-E.2.2.1** 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.
- **M07.B-E.2.2.2** 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, and graph the solution set of the inequality.
- **M07.B-E.2.3.1** Determine the reasonableness of answer(s) or interpret the solution(s) in the context of the problem.

Pennsylvania Common Core Standard(s):
- **CC.2.2.6.B.1** Apply and extend previous understandings of arithmetic to algebraic expressions.
- **CC.2.2.6.B.2** Understand the process of solving a one-variable equation or inequality and apply to real-world and mathematical problems.
- **CC.2.2.7.B.1** Apply properties of operations to generate equivalent expressions.
- **CC.2.2.7.B.3** Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

National Common Core Standard(s):
Apply and extend previous understandings of arithmetic to algebraic expressions.
- **CC.6.EE.A.1** Write and evaluate numerical expressions involving whole-number exponents.
- **CC.6.EE.A.2** Write, read, and evaluate expressions in which letters stand for numbers.
  a. Write expressions that record operations with numbers and with letters standing in for numbers.
  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.
  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).
- **CC.6.EE.A.3** Apply the properties of operations to generate equivalent expressions.
- **CC.6.EE.A.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).

Reason about and solve one-variable equations and inequalities.
- **CC.6.EE.B.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.
- **CC.6.EE.B.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.
- **CC.6.EE.B.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 non-negative rational numbers.

Use properties of operations to generate equivalent expressions.
- **CC.7.EE.A.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- **CC.7.EE.A.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.

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
- **CC.7.EE.B.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.
- **CC.7.EE.B.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.
  b. 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. 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.

ISTE Standards:
1. Creativity and Innovation – Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
   b. Create original works as a means of personal or group expression
   c. Use models and simulations to explore complex systems and issues
2. Communication and Collaboration – Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
   a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
   b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
   d. Contribute to project teams to produce original works or solve problems
3. Research and Information Fluency – Students apply digital tools to gather, evaluate, and use information.
   a. Plan strategies to guide inquiry
   b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media

      c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
      d. Process data and report results

4. Critical Thinking, Problem Solving, and Decision Making – Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
      a. Identify and define authentic problems and significant questions for investigation
      b. Plan and manage activities to develop a solution or complete a project
      c. Collect and analyze data to identify solutions and/or make informed decisions
      d. Use multiple processes and diverse perspectives to explore alternative solutions

5. Digital Citizenship – Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
      a. Advocate and practice safe, legal, and responsible use of information and technology
      b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
      c. Demonstrate personal responsibility for lifelong learning
      d. Exhibit leadership for digital citizenship

6. Technology Operations and Concepts – Students demonstrate a sound understanding of technology concepts, systems, and operations.
      a. Understand and use technology systems
      b. Select and use applications effectively and productively

Career Education and Work Standards

13.1.8.A. Relate careers to individual interests, abilities, and aptitudes.
13.1.8.B. Relate careers to personal interests, abilities, and aptitudes.
13.1.8.C. Explain how both traditional and nontraditional careers offer or hinder career opportunities.
13.1.8.D. Develop an individualized career portfolio including components.
13.1.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.1.8.F.   Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation.
13.2.8.A. Identify effective speaking and listening skills used in a job interview.
13.2.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.3.8.C. Explain and demonstrate conflict resolution skills.
13.3.8.E. Identify and apply time management strategies as they relate to both personal and work situations.
13.4.8.C. Identify and describe the basic components of a business plan.

Connecting to Common Core and Other Standards:
      PA Standards found at www.pdesas.org/standards/standardsdownloads
      National Common Core found at www.corestandards.org
      ISTE found at www.iste.org/standards/nets-for-students.aspx
      Career Education and Work found at www.pacareerstandards.com/
      *See Appendix for complete documents.

ELL Differentiation: Math & LA specifics found at www.pde.sas.org/module/sas/curriculumframework/elloverlay.aspx
Generic found at http://www.easad.net/esl
Todos resources found at www.todos-math.org

Enrichment:
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

Remediation:
- Finding place value
- Using repeated multiplication
- Multiplication and/or division facts
- Whole number operations
- Identifying the parts or components of the coordinate plane
- Plotting points in all four quadrants of the coordinate plane
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary	Materials, Resources, & Instructional Activities	Assessments
M06.B-E.1.1.1 M06.B-E.1.1.2 M06.B-E.1.1.4 M06.B-E.1.1.4 M06.B-E.1.1.5 M06.B-E.2.1.1 M06.B-E.2.1.2 M07.B-E.1.1.1 M07.B-E.2.1.1 M07.B-E.2.2.1 M07.B-E.2.2.2 M07.B-E.2.3.1	- Apply and extend previous understandings of arithmetic to numerical and algebraic expressions. - Identify, write, and evaluate numerical and algebraic expressions. - Use combinations of symbols and numbers to create expressions, equations, and inequalities that model mathematical situations. - Write, read, and evaluate expressions in which letters stand for numbers. - Use the concept of equality to demonstrate understanding of the distributive property. - Create, solve, and interpret one-variable equations or inequalities in real-world and mathematical problems.	- Evaluate expressions to find missing values in tables - List, translate, and use words to represent mathematical operations (+, -, ×, ÷) - Translate word phrases into math - Translate math into word phrases - Write powers as products - Write and evaluate an expression using whole number exponents - Write expressions in exponential form - Write numbers in expanded form using exponents - Write algebraic expressions from verbal descriptions - Read, write, and evaluate expressions with variables - Understand, identify and name the parts of an expression using sum, term, product, factor, quotient, quantity, and coefficient	- Additive - Algebraic Expression - Associative Property of Addition - Associative Property of Multiplication - Base - Binomial - Coefficient - Commutative Property of Addition - Commutative Property of Multiplication - Constant - Distributive Property - Equivalent - Equivalent - Expanded Form - Exponent - Exponential Form - Expressions - Evaluate - Exponent - Expression - Factor - Formula - Greater Than (>)	- Supplementary workbooks - PSSA Math Assessment - Teacher-generated activities - Calculators - Promethean Boards - CPS - Study Island - moodle.esasd.net/moodle/ course/view.php?id=129 - moodle.esasd.net/moodle/ course/view.php?id=234 - SAS: http://www.pdesas.org/ - http://map.mathshell.org.uk/materials/tasks.php - http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default - http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month - http://algebraicthinking.org/assessments - www.algebralab.org - http://www.smarterbalanced.org/sample-items-and-performance-tasks/ - http://www.parcconline.org/samples/item-task-prototypes#7	- Teacher generated tests and quizzes - Projects - Journals - Homework - Teacher Observations - CDT - Study Island - NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (continued from above)	Materials, Resources, & Instructional Activities	Assessments
M06.B-E.1.1.1 M06.B-E.1.1.2 M06.B-E.1.1.4 M06.B-E.1.1.4 M06.B-E.1.1.5 M06.B-E.2.1.1 M06.B-E.2.1.2 M07.B-E.1.1.1 M07.B-E.2.1.1 M07.B-E.2.2.1 M07.B-E.2.2.2 M07.B-E.2.3.1	● Apply and extend previous understandings of arithmetic to numerical and algebraic expressions. ● Identify, write, and evaluate numerical and algebraic expressions. ● Use combinations of symbols and numbers to create expressions, equations, and inequalities that model mathematical situations. ● Write, read, and evaluate expressions in which letters stand for numbers. ● Use the concept of equality to demonstrate understanding of the distributive property. ● Create, solve, and interpret one-variable equations or inequalities in real-world and mathematical problems.	● Evaluate expressions using specific values for variables ● Use formulas to solve real-world problems ● Evaluate expressions using the Order of Operations ● Use and apply all of the math properties to find equivalent expressions ● Combine like terms to find equivalent expressions ● Identify if and when two expressions are equivalent ● Write algebraic expressions to represent real-world problems ● Use the properties of equality to balance equations ● Determine whether a given value for a variable is a solution to an equation ● Create and interpret one-variable equations ● Solve one-variable equations using mental math ● Use inverse operations to isolate the variable and solve one-step addition, subtraction, multiplication and division equations	● Greater Than or Equal To (>) ● Identity Property of 0 ● Inverse Operations ● Integers ● Less Than (<) ● Less Than or Equal To (≤) ● Like Terms ● Mental Math ● Monomial ● Multiplicative Identity Property of 1 ● Numerical Expression ● Order of Operations ● Power ● Product ● Quantity ● Quotient ● Reciprocal ● Solution ● Sum ● Term ● Whole Numbers	● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M06.B-E.1.1.1 M06.B-E.1.1.2 M06.B-E.1.1.4 M06.B-E.1.1.4 M06.B-E.1.1.5 M06.B-E.2.1.1 M06.B-E.2.1.2 M07.B-E.1.1.1 M07.B-E.2.1.1 M07.B-E.2.2.1 M07.B-E.2.2.2 M07.B-E.2.3.1	● Apply and extend previous understandings of arithmetic to numerical and algebraic expressions. ● Identify, write, and evaluate numerical and algebraic expressions. ● Use combinations of symbols and numbers to create expressions, equations, and inequalities that model mathematical situations. ● Write, read, and evaluate expressions in which letters stand for numbers. ● Use the concept of equality to demonstrate understanding of the distributive property. ● Create, solve, and interpret one-variable equations or inequalities in real-world and mathematical problems.	● Explain, in writing, when two expressions are equivalent ● Solve one-step inequalities (>, ≥, <, ≤) ● Solve two-step inequalities (>, ≥, <, ≤) ● Use the distributive property while solving equations and inequalities ● Construct and solve two-step linear equations and inequalities from real-world problems ● Interpret and describe the solution in the context of the problem ● Identify when the inequality symbol changes to its opposite ● Explain when/why an open or closed dot is used on a number line ● Write a linear inequality from a given graph ● Solve real-world problems involving equations and inequalities		● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

Unit: Geometry

Estimated Course Time: Approximately 15-21 Days. (To Be Determined Based on Assessment Data)

Overview: Students will build on their prior knowledge of perimeter and area of rectangles to extend to finding the perimeter and area of non-rectangular shapes. Students will investigate the possible perimeters a rectangle can have if the area is fixed, and the possible areas of a rectangle if the perimeter is fixed. Students will find the area and perimeter of triangles and parallelograms, as well as other shapes that can be decomposed into rectangles and triangles. Students will also extend their knowledge of volume by finding the volume of rectangular prisms that have fractional side lengths. Students will develop the understanding that area represents the space enclosed by a two-dimensional figure, while volume represents the space enclosed by a three-dimensional object. Students will also draw polygons in the coordinate plane given the coordinates for the vertices, and use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Students will represent three-dimensional figures using nets make up of rectangles and triangles, and use the nets to find the surface area of these figures.

Unit Essential Questions:
● How can studying two-dimensional shapes build reasoning skills?
● How do you relate the base and height of a right triangle to the length and width of a rectangle?
● How can you find the area of a polygon by breaking it into simpler shapes?
● How can you solve problems by drawing polygons in the coordinate plane?
● How can you use nets to find surface areas?
● Is there a relationship between the surface area and volume of a rectangular prism?
● How are the characteristics of two-dimensional and three-dimensional shapes alike and different?
● Which two-dimensional figures can result from slicing three-dimensional figures?
● How can you use scale drawings to solve problems?
● How can you draw shapes that satisfy given conditions?
● How can you identify cross sections of three-dimensional figures?
● How can you use angle pairs to solve problems?

Assessment Anchor:
● **M06.C-G.1** Solve real-world and mathematical problems involving area, surface area, and volume.
● **M06.C-G.1.1** Find area, surface area, and volume by applying formulas and using various strategies.
● **M07.C-G.1** Describe an understanding of geometric figures and their properties.
● **M07.C-G.1.1** Describe and apply properties of geometric figures.
● **M07.C-G.2.1** Identify, use, and describe properties of angles and their measures.

PSSA Eligible Content:
- **M06.C-G.1.1.1** Determine the area of triangles and special quadrilaterals (i.e., square, rectangle, parallelogram, rhombus, and trapezoid).
- **M06.C-G.1.1.2** Determine the area of irregular or compound polygons.
- **M06.C-G.1.1.3** Determine the volume of right rectangular prisms with fractional edge lengths.
- **M06.C-G.1.1.4** Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon (limited to triangles and special quadrilaterals).
- **M06.C-G.1.1.5** Represent three-dimensional figures using nets made of rectangles and triangles.
- **M06.C-G.1.1.6** Determine the surface area of triangular and rectangular prisms (including cubes).
- **M07.C-G.1.1.1** Solve problems involving scale drawings of geometric figures, including finding length and area.
- **M07.C-G.1.1.2** Identify or describe the properties of all types of triangles based on angle and side measures.
- **M07.C-G.1.1.3** Use and apply the triangle inequality theorem.
- **M07.C-G.1.1.4** Describe the two-dimensional figures that result from slicing three-dimensional figures. Example: Describe plane sections of right rectangular prisms and right rectangular pyramids.
- **M07.C-G.2.1.1** Identify and use properties of supplementary, complementary, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
- **M07.C-G.2.1.2** Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding).

Pennsylvania Common Core Standard(s):
- **CC.2.3.6.A.1** Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.
- **CC.2.3.7.A.1** Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.
- **CC.2.3.7.A.2** Visualize and represent geometric figures and describe the relationships between them.

National Common Core Standard(s):
Solve real-world and mathematical problems involving area, surface area, and volume.
- **CC.6.G.A.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.
- **CC.6.G.A.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 = l w h and V = B h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- **CC.6.G.A.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.
- **CC.6.G.A.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.

Draw, construct, and describe geometrical figures and describe the relationships between them.
- **CC.7.G.A.1** Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing from a different scale.
- **CC.7.G.2** Draw (freehand, with a 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.
- **CC.7.G.A.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.
- **CC.7.G.B.5** Use factors about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

ISTE Standards:
1. Creativity and Innovation – Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
   b. Create original works as a means of personal or group expression
   c. Use models and simulations to explore complex systems and issues
2. Communication and Collaboration – Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
   a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
   b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
   d. Contribute to project teams to produce original works or solve problems
3. Research and Information Fluency – Students apply digital tools to gather, evaluate, and use information.
   a. Plan strategies to guide inquiry
   b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
   c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks
   d. Process data and report results
4. Critical Thinking, Problem Solving, and Decision Making – Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
   a. Identify and define authentic problems and significant questions for investigation
   b. Plan and manage activities to develop a solution or complete a project
   c. Collect and analyze data to identify solutions and/or make informed decisions
   d. Use multiple processes and diverse perspectives to explore alternative solutions
5. Digital Citizenship – Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
   a. Advocate and practice safe, legal, and responsible use of information and technology
   b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
   c. Demonstrate personal responsibility for lifelong learning

d. Exhibit leadership for digital citizenship
6. Technology Operations and Concepts – Students demonstrate a sound understanding of technology concepts, systems, and operations.
    a. Understand and use technology systems
    b. Select and use applications effectively and productively

Career Education and Work Standards

13.1.8.A. Relate careers to individual interests, abilities, and aptitudes.
13.1.8.B. Relate careers to personal interests, abilities, and aptitudes.
13.1.8.C. Explain how both traditional and nontraditional careers offer or hinder career opportunities.
13.1.8.D. Develop an individualized career portfolio including components.
13.1.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.1.8.F. Analyze the relationship of school subjects, extracurricular activities, and community experiences to career preparation.
13.2.8.A. Identify effective speaking and listening skills used in a job interview.
13.2.8.E. Explain, in the career acquisition process, the importance of the essential workplace skills/knowledge.
13.3.8.C. Explain and demonstrate conflict resolution skills.
13.3.8.E. Identify and apply time management strategies as they relate to both personal and work situations.
13.4.8.C. Identify and describe the basic components of a business plan.

Connecting to Common Core and Other Standards:
    PA Standards found at www.pdesas.org/standards/standardsdownloads
    National Common Core found at www.corestandards.org
    ISTE found at www.iste.org/standards/nets-for-students.aspx
    Career Education and Work found at www.pacareerstandards.com/
    *See Appendix for complete documents.

ELL Differentiation: Math & LA specifics found at www.pde.sas.org/module/sas/curriculumframework/elloverlay.aspx
                Generic found at http://www.easad.net/esl
              Todos resources found at www.todos-math.org

Enrichment:
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

Remediation:
- Finding place value
- Using repeated multiplication
- Multiplication and/or division facts
- Whole number operations
- Identifying the parts or components of the coordinate plane
- Plotting points in all four quadrants of the coordinate plane
- Internet/Research Activities
  - Compass Learning Odyssey https://www.thelearningodyssey.com/
  - Cool Math http://www.coolmath.com/
  - Khan Academy http://www.khanacademy.org/
  - Classzone http://www.classzone.com/cz/login.htm
  - Study Island http://www.studyisland.com/

IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary	Materials, Resources, & Instructional Activities	Assessments
M06.C-G.1.1.1 M06.C-G.1.1.2 M06.C-G.1.1.3 M06.C-G.1.1.4 M06.C-G.1.1.5 M06.C-G.1.1.6 M07.C-G.1.1.1 M07.C-G.1.1.2 M07.C-G.1.1.3 M07.C-G.1.1.4 M07.C-G.2.1.1 M07.C-G.2.1.2	● Solve real-world and mathematical problems involving area, surface area, and volume. ● Find area, surface area, and volume by applying formulas and using various strategies. ● Classify two dimensional figures. ● Identify or describe the properties of all types of triangles based on angle and side measures. ● Solve problems involving scale drawings of geometric figures, including finding length and area.	● Convert customary and metric units using a conversion factor ● Convert units of measure using proportions ● Classify angles as acute, right, obtuse, or straight ● Classify triangles based on angles and sides ● Classify polygons ● Identify congruent edges in geometric figures ● Decompose parallelograms into triangles ● Compose parallelograms using triangles ● Measure and solve problems involving the perimeter of regular and irregular polygons ● Calculate the area of rectangles using the formula ● Calculate the area of a parallelogram using the formula ● Calculate the area of special quadrilaterals and polygons by composing them into rectangles or decomposing them into triangles and other shapes ● Determine the formula for the area of a triangle through investigation	● Acute Angle ● Acute Triangle ● Adjacent Angle ● Altitude ● Angle ● Area ● Base of a Polygon ● Cartesian Plane ● Circle ● Circumference ● Classify ● Complementary Angle ● Compose ● Congruent ● Cube ● Decompose ● Diameter ● Edge ● Endpoint ● Equilateral Triangle ● Formula ● Height ● Isosceles Triangle ● Net ● Obtuse Angle ● Obtuse Triangle ● Perimeter ● Pi ● Polygon ● Prism ● Pyramid ● Quadrilateral	● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary *(continued from above)*	Materials, Resources, & Instructional Activities	Assessments
M06.C-G.1.1.1 M06.C-G.1.1.2 M06.C-G.1.1.3 M06.C-G.1.1.4 M06.C-G.1.1.5 M06.C-G.1.1.6 M07.C-G.1.1.1 M07.C-G.1.1.2 M07.C-G.1.1.3 M07.C-G.1.1.4 M07.C-G.2.1.1 M07.C-G.2.1.2	● Solve real-world and mathematical problems involving area, surface area, and volume. ● Find area, surface area, and volume by applying formulas and using various strategies. ● Classify two dimensional figures. ● Identify or describe the properties of all types of triangles based on angle and side measures. ● Solve problems involving scale drawings of geometric figures, including finding length and area.	● Calculate the area of right triangles using the formula ● Calculate the area of other triangles using the formula ● Solve real-world problems involving area ● Calculate the volume of a right rectangular prism with fractional side lengths ● Solve real-world problems ● Apply the formulas V=lwh and V=Bh to find the volume of right rectangular prisms ● Graph polygons in the coordinate plane given the vertices ● Calculate the length of a side of a polygon graphed in the coordinate plane where the vertices have the same x-value or same y-value ● Calculate the surface area of a 3-dimensional figure by using nets made up of rectangles and triangles ● Find the length of a side of a polygon when the endpoints of the side have either the same first coordinate or the same second coordinate	● Radius ● Rectangle ● Reflection ● Regular Polygon ● Rhombus ● Right Angle ● Right Rectangular Prism ● Right Triangle ● Scalene Triangle ● Solid Figure ● Square ● Surface Area ● Three-Dimensional ● Trapezoid ● Triangle ● Unit Cube ● Vertex/Vertices ● Volume	● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA

PSSA Eligible Content	Unit Concepts What students need to know:	Unit Competencies What students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M06.C-G.1.1.1 M06.C-G.1.1.2 M06.C-G.1.1.3 M06.C-G.1.1.4 M06.C-G.1.1.5 M06.C-G.1.1.6 M07.C-G.1.1.1 M07.C-G.1.1.2 M07.C-G.1.1.3 M07.C-G.1.1.4 M07.C-G.2.1.1 M07.C-G.2.1.2	● Solve real-world and mathematical problems involving area, surface area, and volume. ● Find area, surface area, and volume by applying formulas and using various strategies. ● Classify two dimensional figures. ● Identify or describe the properties of all types of triangles based on angle and side measures. ● Solve problems involving scale drawings of geometric figures, including finding length and area.	● Apply strategies to find polygon side lengths in real world and mathematical problems when given the perimeter or area of a figure ● Represent 3-dimensional figures using nets made up of rectangles and triangles ● Use nets to find surface area of 3-dimensional figures composed of rectangles and triangles ● Apply the surface area techniques of 3-dimensional figures composed of rectangles and triangles in real-world situations ● Determine the measure of the radius of a circle when given the diameter ● Determine the measure of the diameter of a circle when given the radius ● Calculate the circumference of a circle ● Calculate the area of a circle ● Find the measure of the radius and/or diameter of a circle when give the circumference and/or area of the circle		● Supplementary workbooks ● PSSA Math Assessment ● Teacher-generated activities ● Calculators ● Promethean Boards ● CPS ● Study Island ● moodle.esasd.net/moodle/course/view.php?id=129 ● moodle.esasd.net/moodle/course/view.php?id=234 ● SAS: http://www.pdesas.org/ ● http://map.mathshell.org.uk/materials/tasks.php ● http://schools.nyc.gov/Academics/CommonCoreLibrary/TasksUnitsStudentWork/default ● http://www.insidemathematics.org/index.php/tools-for-teachers/problems-of-the-month ● http://algebraicthinking.org/assessments ● www.algebralab.org ● http://www.smarterbalanced.org/sample-items-and-performance-tasks/ ● http://www.parcconline.org/samples/item-task-prototypes#7	● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● NWEA