



East Stroudsburg Area School District Mathematics – Math Edge Grade 6



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
<ol style="list-style-type: none">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.	<ol style="list-style-type: none">1. Persisting2. Managing Impulsivity3. Listening to Others with Empathy and Understanding4. Thinking Flexibly5. Metacognition6. Striving for Accuracy and Precision7. Questioning and Posing Problems8. Applying Past Knowledge to New Situations9. Thinking and Communicating with Clarity and Precision10. Gathering Data through all Senses11. Creating, Imagining, and Innovating12. Responding with Wonderment and Awe13. Taking Responsible Risks14. 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.



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In Grade 6, instructional time should focus on four critical areas:

- (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems;
- (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers;
- (3) writing, interpreting, and using expressions and equations; and
- (4) developing understanding of statistical thinking.

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

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

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

(4) Building on and reinforcing their understanding of number, students begin to develop their ability to think statistically. Students recognize that a data distribution may not have a definite center and that different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures center in the sense that it is the value that each data point would take on if the total of the data values were redistributed equally, and also in the sense that it is a balance point. Students recognize that a measure of variability (interquartile range or mean absolute deviation) can also be useful for summarizing data because two very different sets of data can have the same mean and median yet be distinguished by their



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variability. Students learn to describe and summarize numerical data sets, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data were collected.

Students in Grade 6 also build on their work with area in elementary school by reasoning about relationships among shapes to determine area, surface area, and volume. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposing them into pieces whose area they can determine. They reason about right rectangular prisms with fractional side lengths to extend formulas for the volume of a right rectangular prism to fractional side lengths. They prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.

The Math Edge Grade 6 course is designed to scaffold concepts and skills from elementary school in preparation for learning the grade six content. Students that were not successful on the Grade 5 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.



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Problem-Solving Strategies

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



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Math Practices with Student Actions

1. Make sense of problems and persevere in solving them.	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• Show the problem in a different way.• Substitute numbers to solve.
3. Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• Relate the problem to real life situations.• Map the relationships.• Use appropriate math vocabulary to explain.
5. Use appropriate tools strategically.	<ul style="list-style-type: none">• Decide which tool(s) help solve the problem.• Use tool(s) to solve problems.• Explain how tool(s) helped to solve the problem.
6. Attend to precision.	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• 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.	<ul style="list-style-type: none">• 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.



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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)

Fractions

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
- Solve real-world and mathematical problems involving division of fractions.

Numbers and Operations in Base Ten and the Number System

- Demonstrate understanding of place-value of whole numbers and decimals, and compare quantities or magnitudes of numbers.
- Use whole numbers and decimals to compute accurately.
- Compute with multi-digit numbers and find common factors and multiples.

Operations and Algebraic Thinking

- Analyze and complete calculations by applying the order of operations.
- Create, extend, and analyze patterns.
- Apply and extend previous understandings of arithmetic to numerical and algebraic expressions.
- Identify, write, and evaluate numerical and algebraic expressions.

Geometry

- Classify two-dimensional figures into categories based on their properties.
- Use, describe, and develop procedures to solve problems involving volume.
- Identify parts of a coordinate grid and describe or interpret points given an ordered pair.
- Solve real-world and mathematical problems involving area, surface area, and volume.



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Measurement and Data

- Convert like measurement units within a given measurement system.
- Solve problems using simple conversions (may include multi-step, real-world problems).
- Organize, display, and answer questions based on data.
- Display, analyze, and summarize numerical data sets in relation to their context.

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

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Unit: Geometry

Overview: In this unit students will revisit the 5th grade geometry concepts and eligible content in preparation for the 6th grade content that will be taught. Students will analyze plane shapes and their properties: sides and angles. Students will classify triangles and quadrilaterals. Students will explore three-dimensional figures and their attributes of length, width, height, faces, edges, and vertices. Students will classify shapes based on their attributes, and then further classify figures as solids, prisms, or pyramids. Students will find the volume of right rectangular prisms. Students will complete this unit with coordinate geometry as they continue to learn about the coordinate system, plotting points using ordered pairs, and calculating distances using points on the plane.

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

Unit Essential Questions:

- How can patterns be used to describe relationships in mathematical situations?
- How can recognizing repetition or regularity assist in solving problems more efficiently?
- How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations to solve problems?
- How can geometric properties and theorems be used to describe, model, and analyze situations?
- How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?
- What makes a tool and/or strategy appropriate for a given task?
- In what ways are the mathematical attributes of objects or processes measured, calculated, and/or interpreted?
- How precise do measurements and calculations need to be?
- Why does what we measure influence how we measure?
- 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?

Assessment Anchor:

- **M05.C-G.2** Classify two-dimensional figures into categories based on their properties.
- **M05.C-G.2.1** Use basic properties to classify two-dimensional figures.
- **M05.D-M.3** Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
- **M05.D-M.3.1** Use, describe, and develop procedures to solve problems involving volume.
- **M05.C-G.1** Graph points on the coordinate plane to solve real-world and mathematical problems.
- **M05.C-G.1.1** Identify parts of a coordinate grid and describe or interpret points given an ordered pair.
- **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.

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PSSA Eligible Content:

- **M05.C-G.2.1.1** Classify two-dimensional figures in a hierarchy based on properties.
- **M05.D-M.3.1.1** Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems.
- **M05.D-M.3.1.2** Find volumes of solid figures composed of two non-overlapping right rectangular prisms.
- **M05.C-G.1.1.1** Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I.
- **M05.C-G.1.1.2** Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation.
- **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. Example: Find the area of a room in the shape of an irregular polygon by composing and/or decomposing.
- **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).

Pennsylvania Core Standard(s):

- **CC.2.3.5.A.2** Classify two-dimensional figures into categories based on an understanding of their properties.
- **CC.2.4.5.A.5** Apply concepts of volume to solve problems and relate volume to multiplication and to addition.
- **CC.2.3.5.A.1** Graph points in the first quadrant on the coordinate plane and interpret these points when solving real world and mathematical problems.
- **CC.2.3.6.A.1** Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.

National Common Core Standard(s):

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

- **CCSS.5.G.A.1** Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- **CCSS.5.G.A.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

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

- **CCSS.5.G.B.3** Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- **CCSS.5.G.B.4** Classify two-dimensional figures in a hierarchy based on properties.

Geometric measurement: understand concepts of volume.

- **CCSS.5.MD.C.3** Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
 - a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.
 - b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- **CCSS.5.MD.C.4** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- **CCSS.5.MD.C.5** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
 - a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
 - b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
 - c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

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.

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.

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- 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/>
- Group/Research Projects

Remediation:

- Multiplication facts
- Addition facts
- Whole number operations
- Elapsed time
- 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.

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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
<p>M05.C-G.2.1.1 M05.D-M.3.1.1 M05.D-M.3.1.2 M05.C-G.1.1.1 M05.C-G.1.1.2 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</p>	<ul style="list-style-type: none"> ● Classify two-dimensional figures in a hierarchy based on properties. ● Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. ● Find volumes of solid figures composed of two non-overlapping right rectangular prisms. ● Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I. ● Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation. 	<ul style="list-style-type: none"> ● Draw and identify angles as acute, obtuse, or right angles ● Identify and define plane figures ● Identify and classify polygons by the number of sides: <ul style="list-style-type: none"> ○ Triangle ○ Quadrilateral ○ Pentagon ○ Hexagon ○ Octagon ● Learn that the total angle measure of a triangle is 180 degrees ● Identify and classify polygons by their sides and angles ● Identify regular polygons ● Identify and classify triangles by the lengths of its sides <ul style="list-style-type: none"> ○ Equilateral ○ Isosceles ○ Scalene ● Recognize that equilateral triangles are also equiangular (all angles measure 60°) ● Classify two-dimensional figures 	<ul style="list-style-type: none"> ● Acute Angle ● Acute Triangle ● Adjacent ● Area ● Attribute(s) ● Base of a Polygon ● Closed Figure ● Compose ● Coordinate Grid ● Coordinate Plane ● Cube ● Cubic Unit ● Cylinder ● Decompose ● Diagonal ● Edge ● Equilateral Triangle ● Face ● Formula ● Generalization ● Height ● Hexagon ● Horizontal ● Isosceles Triangle ● Line Segment ● Net ● Obtuse Angle ● Obtuse Triangle ● Octagon ● Ordered Pair ● Origin ● Pair ● Parallel 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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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
<p>M05.C-G.2.1.1 M05.D-M.3.1.1 M05.D-M.3.1.2 M05.C-G.1.1.1 M05.C-G.1.1.2 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</p>	<ul style="list-style-type: none"> ● Classify two-dimensional figures in a hierarchy based on properties. ● Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. ● Find volumes of solid figures composed of two non-overlapping right rectangular prisms. ● Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I. ● Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation. 	<ul style="list-style-type: none"> ● Identify and classify triangles by the measure of its angles <ul style="list-style-type: none"> ○ Acute ○ Right ○ Obtuse ● Identify and classify triangles by the lengths of its sides and by the measure of its angles (e.g., right isosceles triangle, acute scalene, etc.) ● Locate and identify quadrilaterals from real life ● Recognize and explore how a quadrilateral can be divided into two triangles (This strategy can be used to find the total angle measure of larger polygons.) <ul style="list-style-type: none"> ○ Each triangle has a total measure of 180°, so a quadrilateral has a total of 360° 	<ul style="list-style-type: none"> ● Parallelogram ● Pattern ● Pentagon ● Perimeter ● Perpendicular ● Plane Figure ● Polygon ● Prism ● Pyramid ● Quadrant ● Quadrilateral ● Rectangle ● Regular Polygon ● Rhombus ● Right Angle ● Right Rectangular Prism ● Right Triangle ● Scalene Triangle ● Solid(s)/Solid Figure ● Square ● Square Units ● Surface Area ● Three- Dimensional Shape/Figure ● Trapezoid ● Triangle ● Two-Dimensional Shape/Figure ● Unit Cube ● Vertex ● Vertical 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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PSSA Eligible Content	Unit Concepts What the students need to know:	Unit Competencies What the students need to be able to do (skills): (Students will:)	Content Vocabulary (continued from above)	Materials, Resources, & Instructional Activities	Assessments
M05.C-G.2.1.1 M05.D-M.3.1.1 M05.D-M.3.1.2 M05.C-G.1.1.1 M05.C-G.1.1.2 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	<ul style="list-style-type: none"> ● Classify two-dimensional figures in a hierarchy based on properties. ● Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. ● Find volumes of solid figures composed of two non-overlapping right rectangular prisms. ● Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I. ● Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation. 	<ul style="list-style-type: none"> ● Identify and classify quadrilaterals using their attributes (e.g., side measures, angle measures, pair(s) of parallel sides, adjacent sides are perpendicular): <ul style="list-style-type: none"> ○ Parallelogram ○ Trapezoid ○ Rectangle ○ Square ○ Rhombus ● Make and test generalizations of patterns involving polygons ● Identify and describe three-dimensional shapes according to faces, edges, and vertices <ul style="list-style-type: none"> ○ Cube ○ Rectangular Prism ● View solids from different perspectives 	<ul style="list-style-type: none"> ● Vertices ● Volume ● x-Axis ● x-Coordinate ● y- Axis ● y-Coordinate 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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M05.C-G.2.1.1 M05.D-M.3.1.1 M05.D-M.3.1.2 M05.C-G.1.1.1 M05.C-G.1.1.2 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	<ul style="list-style-type: none"> ● Classify two-dimensional figures in a hierarchy based on properties. ● Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. ● Find volumes of solid figures composed of two non-overlapping right rectangular prisms. ● Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I. ● Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation. 	<ul style="list-style-type: none"> ● Use objects to act out or model problems ● Break apart problems into simpler ones to reach a solution ● Explain the meaning of cubic units using words or drawings ● Define volume in their own words ● Determine the volume of rectangular prisms using unit cubes ● Use formulas to find the volume of rectangular prisms <ul style="list-style-type: none"> ○ $V = l \times w \times h$ ○ $V = B \times h$ ● Find volumes of irregular solids by combining the volumes of rectangular prisms ● Use objects and reasoning to find the volume of solid figures ● Draw and/or identify the components of the coordinate grid ● Solve real-world and mathematical problems involving area, surface area, and volume. 		<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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PSSA Eligible Content	Unit Concepts What the students need to know:	Unit Competencies What the students need to be able to do (skills): (Students will:)	Content Vocabulary (see above)	Materials, Resources, & Instructional Activities	Assessments
M05.C-G.2.1.1 M05.D-M.3.1.1 M05.D-M.3.1.2 M05.C-G.1.1.1 M05.C-G.1.1.2 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	<ul style="list-style-type: none"> ● Classify two-dimensional figures in a hierarchy based on properties. ● Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems. ● Find volumes of solid figures composed of two non-overlapping right rectangular prisms. ● Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I. ● Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation. 	<ul style="list-style-type: none"> ● Identify points on a coordinate grid (Quadrant I only) <ul style="list-style-type: none"> ○ x-coordinate ○ y-coordinate ● Graph points on a coordinate grid when given an ordered pair (Quadrant I only) ● Explain how to graph a specified point on the coordinate plane ● Find the distance between two points by using ordered pairs (no diagonally plotted points) <ul style="list-style-type: none"> ○ Vertical pairs ○ Horizontal pairs ● Create and interpret the coordinate graphs <ul style="list-style-type: none"> ○ Make a table ○ Identify patterns in the x- and y-coordinates ○ Graph the points ● Solve problems using coordinate graphs to find solutions ● Work backwards to solve problems 		<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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Unit: Fractions

Overview: In this unit students will be remediated based on missing skill sets from grades 3 - 5, working toward the sixth grade skills needed to find success with fraction notation, fraction equivalencies, and fraction operations. Teachers will use data to identify specific individual student gaps and deficits, and generate a learning path to meet each student's needs within these topics. Students will also complete performance tasks relating to the skill sets within the unit.

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

Unit Essential Questions:

- How is mathematics used to quantify, compare, represent, and model numbers?
- How can mathematics support effective communication?
- How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?
- How can patterns be used to describe relationships in mathematical situations?
- How can recognizing repetition or regularity assist in solving problems more efficiently?
- What makes a tool and/or strategy appropriate for a given task?
- How are relationships represented mathematically?
- What does it mean to estimate or analyze numerical quantities?
- How are fractions related to division?

Assessment Anchor:

- **M05.A-F.1** Use equivalent fractions as a strategy to add and subtract fractions.
- **M05.A-F.1.1** Solve addition and subtraction problems involving fractions (straight computation or word problems).
- **M05.A-F.2** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
- **M05.A-F.2.1** Solve multiplication and division problems involving fractions and whole numbers (straight computation or word problems).
- **M06.A-N.1.1** Solve real-world and mathematical problems involving division of fractions.

PSSA Eligible Content:

- **M05.A-F.1.1** Add and subtract fractions (including mixed numbers) with unlike denominators. (May include multiple methods and representations.)
- **M05.A-F.2.1.1** Solve word problems involving division of whole numbers leading to answers in the form of fractions (including mixed numbers).
- **M05.A-F.2.1.2** Multiply a fraction (including mixed numbers) by a fraction.
- **M05.A-F.2.1.3** Demonstrate an understanding of multiplication as scaling (resizing).
- **M05.A-F.2.1.4** Divide unit fractions by whole numbers and whole numbers by unit fractions.
- **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.

Pennsylvania Core Standard(s):

- **CC.2.1.5.C.1** Use the understanding of equivalency to add and subtract fractions.
- **CC.2.1.5.C.2** Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
- **CC.2.1.6.E.1** Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

National Common Core Standard(s):

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

- **CCSS.5.NF.A.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.
- **CCSS.5.NF.A.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

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

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- 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/>

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- Group/Research Projects

Remediation:

- Multiplication facts
- Addition facts
- Whole number operations
- Elapsed time
- 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.

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M05.A-F.1.1.1	<ul style="list-style-type: none"> ● Solve addition and subtraction problems involving fractions (straight computation or word problems). ● Add and subtract fractions (including mixed numbers) with unlike denominators. 	<ul style="list-style-type: none"> ● Review and practice addition facts - revisit throughout course ● Review and practice multiplication facts - revisit throughout course ● Compare and order fractions on a number line ● Add fractions with common denominators ● Find common denominators between two fractions ● Find the least common denominator between two fraction ● Rewrite fractions using a common (or least common) denominator ● Add fractions with uncommon denominators ● Subtract fractions with common denominators ● Subtract fractions with uncommon denominators ● Changed mixed numbers to improper fractions ● Change improper fractions to mixed numbers 	<ul style="list-style-type: none"> ● Benchmark Fractions ● Common Denominator ● Common Factor ● Common Multiple ● Complex Fraction ● Denominator ● Equivalent Fractions ● Improper Fraction ● Infinite ● Infinite Number ● Least Common Denominator ● Least Common Multiple ● Mixed Number ● Numerator ● Proper Fraction ● Reciprocal ● Simplest Form 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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M05.A-F.2.1.1 M05.A-F.2.1.2 M05.A-F.2.1.3 M05.A-F.2.1.4	<ul style="list-style-type: none"> ● Solve multiplication and division problems involving fractions and whole numbers (straight computation or word problems). ● Solve word problems involving division of whole numbers leading to answers in the form of fractions (including mixed numbers). ● Multiply a fraction (including mixed numbers) by a fraction. ● Find the area of a rectangle with fractional side lengths. ● Demonstrate an understanding of multiplication as scaling (resizing). ● Divide unit fractions by whole numbers and whole numbers by unit fractions. 	<ul style="list-style-type: none"> ● Add mixed numbers ● Subtract mixed numbers ● Solve word problems involving fractions and mixed numbers ● Estimate sums and differences of fractions and mixed numbers ● Multiply fractions and whole numbers ● Multiply two fractions ● Find the reciprocal of given numbers - integers, fractions, mixed numbers, etc. ● Divide a whole number by a fraction ● Divide a fraction by a fraction ● Multiply two mixed numbers ● Divide two mixed numbers ● Solve word problems involving fractions and/or whole numbers and multiplication and division ● Find the area of a rectangle with fractional side lengths 	<ul style="list-style-type: none"> ● Benchmark Fractions ● Common Denominator ● Common Factor ● Common Multiple ● Complex Fraction ● Denominator ● Equivalent Fractions ● Improper Fraction ● Infinite ● Infinite Number ● Least Common Denominator ● Least Common Multiple ● Mixed Number ● Numerator ● Proper Fraction ● Reciprocal ● Simplest Form 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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Unit: Measurement and Data

Overview: Students will estimate, measure, and select appropriate tools and units for measuring weight and mass. Students will study the difference between weight, the amount of gravitational pull on an object, and mass, the amount of matter in an object. Students will convert different-sized customary and metric units within a given system, and use these conversions to solve multi-step real world problems. Students will represent the relationships between units of measure using equations and ratios, and continue to enhance their problem-solving skills using these concepts. Students will study and/or create bar graphs, picture graphs, line plots, and line graphs for data, and answer questions based on the data displays. Students will provide mathematical explanations using words, pictures, numbers, and/or symbols. Students will solve real-world and math problems involving elapsed time and measures of center and variability.

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

Unit Essential Questions:

- What does it mean to estimate or analyze numerical quantities?
- When is it appropriate to estimate versus calculate?
- What makes a tool and/or strategy appropriate for a given task?
- Why does “what” we measure influence “how” we measure?
- In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted?
- How precise do measurements and calculations need to be?
- How can data be organized and represented to provide insight into the relationship between quantities?
- How does the type of data influence the choice of display?
- How can probability and data analysis be used to make predictions?
- How can you use measures of center to describe a data set?
- How can you use measures of variability to describe a data set?
- How are fractions and percents related to stating the probability of an event?

Assessment Anchor:

- **M05.D-M.1** Convert like measurement units within a given measurement system.
- **M05.D-M.1.1** Solve problems using simple conversions (may include multi-step, real-world problems).
- **M05.D-M.2** Represent and interpret data.
- **M05.D-M.2.1** Organize, display, and answer questions based on data.
- **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.

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PSSA Eligible Content:

- **M05.D-M.1.1.1** Convert between different-sized measurement units within a given measurement system.
- **M05.D-M.2.1.1** Solve problems involving computation of fractions by using information presented in line plots.
- **M05.D-M.2.1.2** Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels. A grid will be provided to display data on bar graphs or line graphs.
- **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.

Pennsylvania Core Standard(s):

- **CC.2.4.5.A.1** Solve problems using conversions within a given measurement system.
- **CC.2.4.5.A.2** Represent and interpret data using appropriate scale.
- **CC.2.4.5.A.4** Solve problems involving computation of fractions using information provided in a line plot.
- **CC.2.4.6.B.1** Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.

National Common Core Standard(s):

Convert like measurement units within a given measurement system.

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

Represent and interpret data.

- **CCSS.5.MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations of fractions for this grade to solve problems involving information presented in line plots.

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.

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- 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.

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/>
- Group/Research Projects

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Remediation:

- Multiplication facts
- Addition facts
- Whole number operations
- Elapsed time
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 - Cool Math <http://www.coolmath.com/>
 - Khan Academy <http://www.khanacademy.org/>
 - Classzone <http://www.classzone.com/cz/login.htm>
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IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

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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
M05.D-M.1.1.1 M05.D-M.2.1.1 M05.D-M.2.1.2 M06.D-S.1.1.1 M06.D-S.1.1.2 M06.D-S.1.1.3 M06.D-S.1.1.4	<ul style="list-style-type: none"> ● Convert between different-sized measurement units within a given measurement system. ● Solve problems involving computation of fractions by using information presented in line plots. ● Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels. A grid will be provided to display data on bar graphs or line graphs. ● Demonstrate understanding of statistical variability by summarizing and describing distributions. ● Display, analyze, and summarize numerical data sets in relation to their context. 	<ul style="list-style-type: none"> ● Express the relationships between measurement units of the same length as an equation (e.g., 1 ft = 12 in.; 3 ft = 1 yd; 2 c = 1 pt, etc.) ● Convert from one unit of customary length to another by multiplying and dividing <ul style="list-style-type: none"> ○ Inch/Inches ○ Foot/Feet ○ Yard(s) ○ Mile(s) ○ Compare measurements using symbols: >, <, or = ● Convert from one unit of customary capacity to another by multiplying and dividing by equivalent measurements <ul style="list-style-type: none"> ○ Gallons ○ Quarts ○ Pints ○ Cups ○ Fluid Ounces ● Express relationships between measurement units of the same capacity as a ratio (e.g., 1 qt to 2 pt, 1qt = 2 pt, etc.) ● Express the relationships between measurement units of the same length as an equation (e.g., 1 ft = 12 in.; 3 ft = 1 yd; 2 c = 1 pt, etc.) 	<ul style="list-style-type: none"> ● Average ● Box Plot (Box and Whisker) ● Centimeter (cm) ● Cluster ● Context of Data Collection ● Cup (c) ● Data/Data Set ● Data Display ● Decimeter ● Distribution ● Dot Plot ● Fluid Ounces (fl oz) ● Frequency Table ● Gram (g) ● Histogram ● Inch(es) (in.) ● Feet (ft) ● Foot (ft) ● Gallon (gal) ● Kilogram (kg) ● Kilometer (km) ● Line Plot ● Liter (L) ● Mean ● Measures of Center ● Median ● Meter (m) ● Milligram (mg) ● Milliliter (mL) ● Millimeter (mm) 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thaquiz.org/ ● http://map.mathshell.org/

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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
M05.D-M.1.1.1 M05.D-M.2.1.1 M05.D-M.2.1.2 M06.D-S.1.1.1 M06.D-S.1.1.2 M06.D-S.1.1.3 M06.D-S.1.1.4	<ul style="list-style-type: none"> ● Convert between different-sized measurement units within a given measurement system. ● Solve problems involving computation of fractions by using information presented in line plots. ● Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels. A grid will be provided to display data on bar graphs or line graphs. ● Demonstrate understanding of statistical variability by summarizing and describing distributions. ● Display, analyze, and summarize numerical data sets in relation to their context. 	<ul style="list-style-type: none"> ● Convert from one unit of customary length to another by multiplying and dividing <ul style="list-style-type: none"> ○ Inch/Inches ○ Foot/Feet ○ Yard(s) ○ Mile(s) ○ Compare measurements using symbols: >, <, or = ● Convert from one unit of customary capacity to another by multiplying and dividing by equivalent measurements <ul style="list-style-type: none"> ○ Gallons ○ Quarts ○ Pints ○ Cups ○ Fluid Ounces ● Express relationships between measurement units of the same capacity as a ratio (e.g., 1 qt to 2 pt, 1qt = 2 pt, etc.) ● Express the relationships between measurement units of the same length as an equation (e.g., 1 ft = 12 in.; 3 ft = 1 yd; 2 c = 1 pt, etc.) ● Use both customary and metric units to measure with precision 	<ul style="list-style-type: none"> ● Mile (mi) ● Mode ● Non-Statistical Question ● Number Line ● Observations ● Ounce (oz) ● Outlier ● Overall Pattern ● Overall Shape ● Pint (pt) ● Pound (lb) ● Probability ● Quart (qt) ● Range ● Sample ● Statistical Question ● Survey ● Ton (T) ● Units of Measurement ● Variability ● Yard (yd) 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

East Stroudsburg Area School District
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Unit: Numbers and Operations in Base Ten and the Number System

Overview: In this unit students will be remediated based on missing skill sets from grades 3 - 5, working toward the sixth grade skills needed to find success within the Number System standards. Teachers will use data to identify specific individual student gaps and deficits, and generate a learning path to meet each student's needs within these topics. Students will also complete performance tasks relating to the skill sets within the unit.

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

Unit Essential Questions:

- How is mathematics used to quantify, compare, represent, and model numbers?
- How can mathematics support effective communication?
- How are relationships represented mathematically?
- What makes a tool and/or strategy appropriate for a given task?
- How can patterns be used to describe relationships in mathematical situations?

Assessment Anchor:

- **M05.A-T.1** Understand the place-value system.
- **M05.A-T.1.1** Demonstrate understanding of place-value of whole numbers and decimals, and compare quantities or magnitudes of numbers.
- **M05.A-T.2** Perform operations with multi-digit whole numbers and with decimals to hundredths.
- **M05.A-T.2.1** Use whole numbers and decimals to compute accurately (straight computation or word problems).
- **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.

PSSA Eligible Content:

- **M05.A-T.1.1.1** Demonstrate an understanding that in a multi-digit number, a digit in one place represents $\frac{1}{10}$ of what it represents in the place to its left.
- **M05.A-T.1.1.3** Read and write decimals to thousandths using base-ten numerals, word form, and expanded form.
- **M05.A-T.1.1.4** Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols.
- **M05.A-T.1.1.5** Round decimals to any place (limit rounding to ones, tenths, hundredths, or thousandths place).
- **M05.A-T.2.1.3** Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).
- **M06.A-N.2.1.1** Solve problems involving operations ($+$, $-$, \times , and \div) with whole numbers, decimals (through thousandths), straight computation, or word problems.

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Pennsylvania Core Standard(s):

- **CC.2.1.5.B.1** Apply place-value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals.
- **CC.2.1.5.B.2** Extend an understanding of operations with whole numbers to perform operations including decimals.
- **CC.2.1.6.E.2** Identify and choose appropriate processes to compute fluently with multi-digit numbers.

National Common Core Standard(s):

Understand the place value system.

- **CCSS.5.NBT.A.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
- **CCSS.5.NBT.A.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- **CCSS.5.NBT.A.3** Read, write, and compare decimals to thousandths.
 - a. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
 - b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- **CCSS.5.NBT.A.4** Use place value understanding to round decimals to any place.
- *Perform operations with multi-digit whole numbers and with decimals to hundredths.*
- **CCSS.5.NBT.B.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

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.

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- 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.
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 - b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media
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 - b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity
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- 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.
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- 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.

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- 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:

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Remediation:

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 - Khan Academy <http://www.khanacademy.org/>
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IEP/GIEP: Refer to individual student's education plan under specially designed instruction.

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<p>M05.A-T.1.1.1 M05.A-T.1.1.2 M05.A-T.1.1.3 M05.A-T.1.1.4 M05.A-T.1.1.5</p>	<ul style="list-style-type: none"> ● Demonstrate an understanding that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left. ● Explain patterns in the number of zeros of the product when multiplying a number by powers of 10 and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. ● Read and write decimals to thousandths using base-ten numerals, word form, and expanded form. ● Compare two decimals to thousandths based on meanings of digits in each place using $>$, $=$, and $<$ symbols. ● Round decimals to any place (limit rounding to ones, tenths, hundredths, or thousandths place). 	<ul style="list-style-type: none"> ● Practice basic math facts <ul style="list-style-type: none"> ○ Addition ○ Multiplication ● Multiply by a power of 10 ● Divide by a power of 10 ● Use place value to read and write numbers ● Read and write numbers in standard form ● Read and write numbers in expanded form ● Convert numbers between standard and expanded form ● Compare two or more numbers using place value <ul style="list-style-type: none"> ○ Whole Numbers ○ Decimals ● Round decimals to a given place value 	<ul style="list-style-type: none"> ● Base Ten ● Compare ● Decimal ● Decimal Point ● Digits ● Dividend ● Divisor ● Equal To ($=$) ● Equivalent Decimals ● Expanded Form ● Greater Than ($>$) ● Hundredths ● Less Than ($<$) ● Order ● Order of Operations ● Partial Products ● Place Value ● Quotient ● Standard Form ● Tenths ● Terminating Decimal ● Thousandths ● Value ● Whole Number ● Word Form ● Commutative Properties ● Associative Properties ● Identity Property of Addition ● Identity Property of Multiplication ● Distributive Property 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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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
<p>M05.A-T.2.1.3 M06.A-N.2.1.1</p>	<ul style="list-style-type: none"> ● Use whole numbers and decimals to compute accurately (straight computation or word problems). ● Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals). ● Solve problems involving operations (+, -, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems. 	<ul style="list-style-type: none"> ● Solve multiplication problems using the standard algorithm using partial products ● Solve problems involving whole numbers <ul style="list-style-type: none"> ○ Add whole numbers ○ Subtract whole numbers ○ Multiply whole numbers ○ Divide whole numbers ● Solve problems involving decimals <ul style="list-style-type: none"> ○ Add decimals ○ Subtract decimals ○ Multiply decimals ○ Divide decimals ● Solve word problems involving whole number and/or decimal operations ● Use the properties of multiplication to simplify computation and to verify mental math and paper and pencil algorithms ● Use the Distributive Property to simplify expressions 	<ul style="list-style-type: none"> ● Base Ten ● Compare ● Decimal ● Decimal Point ● Digits ● Dividend ● Divisor ● Equal To (=) ● Equivalent Decimals ● Expanded Form ● Greater Than (>) ● Hundredths ● Less Than (<) ● Order ● Order of Operations ● Partial Products ● Place Value ● Quotient ● Standard Form ● Tenths ● Terminating Decimal ● Thousandths ● Value ● Whole Number ● Word Form ● Commutative Properties ● Associative Properties ● Identity Property of Addition ● Identity Property of Multiplication ● Distributive Property 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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Unit: Operations and Algebraic Thinking

Overview: Students will use and apply the properties of numbers to solve problems. Students will represent word phrases as mathematical expressions, and use those interpretations to solve problems. Students will use the order of operations to simplify numerical expressions and to solve problems. Students will also use tables of values to represent equations, and generate a table of values to represent an equation. Students will explore how patterns can help identify the relationship between quantities. Students will solve problems by using manipulative's or drawing pictures. Students will draw conclusions based on information provided in a problem.

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

Unit Essential Questions:

- How is mathematics used to quantify, compare, represent, and model numbers?
- How can mathematics support effective communication?
- How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?
- How can patterns be used to describe relationships in mathematical situations?
- How can recognizing repetition or regularity assist in solving problems more efficiently?
- How can data be organized and represented to provide insight into the relationship between quantities?

Assessment Anchor:

- **M05.B-0.1** Write and interpret numerical expressions.
- **M05.B-0.1.1** Analyze and complete calculations by applying the order of operations.
- **M05.B-0.2** Analyze patterns and relationships.
- **M05.B-0.2.1** Create, extend, and analyze patterns.
- **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.

PSSA Eligible Content:

- **M05.B-0.1.1.1** Use multiple grouping symbols (parentheses, brackets, or braces) in numerical expressions, and evaluate expressions containing these symbols.
- **M05.B-0.1.1.2** Write simple expressions that model calculations with numbers, and interpret numerical expressions without evaluating them.
- **M05.B-0.2.1.1** Generate two numerical patterns using two given rules.
- **M05.B-0.2.1.2** Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules.
- **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).

Pennsylvania Core Standard(s):

- **CC.2.2.5.A.1** Interpret and evaluate numerical expressions using order of operations.
- **CC.2.2.5.A.4** Analyze patterns and relationships using two rules.
- **CC.2.2.6.B.1** Apply and extend previous understandings of arithmetic to algebraic expressions.

National Common Core Standard(s):

Write and interpret numerical expressions.

- **CCSS.5.OA.A.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- **CCSS.5.OA.A.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Analyze patterns and relationships.

- **CCSS.5.OA.B.3** Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

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

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- 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

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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/>
- Group/Research Projects

Remediation:

- Multiplication facts
- Addition facts
- Whole number operations
- Elapsed time
- 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.

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M05.B-0.1.1.1 M05.B-0.1.1.2 M06.B-E.1.1.2 M06.B-E.1.1.3	<ul style="list-style-type: none"> ● Analyze and complete calculations by applying the order of operations. ● Use multiple grouping symbols (parentheses, brackets, or braces) in numerical expressions, and evaluate expressions containing these symbols. ● Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. ● Generate two numerical patterns using two given rules. ● Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules. ● Write and evaluate numerical expressions involving whole number exponents. ● Write algebraic expressions from verbal descriptions. ● Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity). 	<ul style="list-style-type: none"> ● Apply the order of operations to simplify math phrases or expressions ● List words that indicate the four different operations (e.g., add, plus, more, etc. indicate addition) ● Write numerical expressions with variables to represent relations expressed verbally ● Evaluate algebraic expressions for given values for variables <ul style="list-style-type: none"> ○ With one operation ○ With two or more operations ● Use the order of operations to simplify and solve mathematical expressions that include parenthetical symbols and exponents ● Use the order of operations to evaluate expressions with whole numbers, decimals, and fractions ● Study completed tables to determine a rule and write an expression 	<ul style="list-style-type: none"> ● Algebraic Expression ● Braces ● Brackets ● Computation ● Compute ● Corresponding Terms ● Evaluate ● Expression ● Math Phrase ● Math Sentence ● Order of Operations ● Parentheses ● Patterns ● Sequence ● Term ● Word Phrases ● Variable 	<ul style="list-style-type: none"> ● 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/ 	<ul style="list-style-type: none"> ● Teacher generated tests and quizzes ● Projects ● Journals ● Homework ● Teacher Observations ● CDT ● Study Island ● http://www.thatquiz.org/ ● http://map.mathshell.org/

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