

Grade 6 Transition to New TN Mathematics Standards

Grade 6 – Mathematical Processes

New Grade Level Expectations

- GLE 0606.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.
- GLE 0606.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.
- GLE 0606.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.
- GLE 0606.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.
- GLE 0606.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.
- GLE 0606.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.
- GLE 0606.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.
- GLE 0606.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.

Checks for Understanding (Formative/Summative Assessment)

- ✓ 0606.1.1 Recognize different conventions used in calculator and computer spreadsheets (e.g., * for multiplication, ^ for exponent), but use mathematical notation in written work.
- ✓ 0606.1.2 Recognize when an estimate is more appropriate than an exact answer in a variety of problem situations.
- ✓ 0606.1.3 Recognize errors generated by rounding.
- ✓ 0606.1.4 Describe how changes in one quantity or variable result in changes in another.
- ✓ 0606.1.5 Illustrate properties of operations by showing that two expressions are equivalent in a given context (e.g., using an area model for distributive property, and grouping/set models for commutative and associative properties).
- ✓ 0606.1.6 Model situations by devising and carrying out experiments and simulations.
- ✓ 0606.1.7 Formulate questions, design studies, and collect real world data.
- ✓ 0606.1.8 Determine an appropriate sample to test an hypothesis.
- ✓ 0606.1.9 Use age-appropriate books, stories, and videos to convey ideas of mathematics.
- ✓ 0606.1.10 Use various methods (such as dynamic geometry software) to explore properties of triangles and quadrilaterals.
- ✓ 0606.1.11 Model algebraic expressions with manipulatives, technology, and pencil and paper.

State Performance Indicators

- SPI 0606.1.1 Make conjectures and predictions based on data.
- SPI 0606.1.2 Judge the reasonableness of the results of rational number estimates and/or computations.
- SPI 0606.1.3 Use concrete, pictorial, and symbolic representation for integers.
- SPI 0606.1.4 Select the representation that models one of the arithmetic properties (commutative, associative, or distributive).
- SPI 0606.1.5 Model algebraic expressions using algebra tiles.

Grade 6 – Number and Operation

Former Learning Expectations

- 1.1 Understand numbers, ways of representing numbers, relationships among numbers, and number systems.
- 1.2 Understand operations and how they relate to one another.
- 1.3 Solve problems, compute fluently, and make reasonable estimates.

New Grade Level Expectations

- GLE 0606.2.1 Understand and explain the procedures for multiplication and division of fractions, mixed numbers, and decimals.
- GLE 0606.2.2 Solve multi-step mathematical, contextual and verbal problems using fractions, mixed numbers, and decimals.
- GLE 0606.2.3 Understand and use ratios, rates and percents.
- GLE 0606.2.4 Understand and convert between fraction, decimal, and percent forms of rational numbers.
- GLE 0606.2.5 Develop meaning for integers; represent and compare quantities with integers.

<u>Former Standards 5th Grade</u> <i>Review Material</i>	<u>New Standards 5th Grade</u> <i>Building blocks for new standards</i>	<u>Former Standards 6th Grade</u> <i>TCAP 2008-2009</i>	<u>New Standards 6th Grade</u> <i>TCAP 2009-2010</i>
<ul style="list-style-type: none"> ▪ Solve one- or two-step real-world problems involving addition, subtraction, and/or multiplication of whole numbers and decimals. ▪ Multiply a fraction by a multiple of its denominator (denominator less than or equal to 10). 		<ul style="list-style-type: none"> ▪ Solve one-step real-world problems involving whole numbers and decimals. A 	<p>SPI 0606.2.1 Solve problems involving the multiplication and division of fractions.</p> <ul style="list-style-type: none"> ✓ 0606.2.2 Use area models to represent multiplication of fractions. ✓ 0606.2.3 Create and solve contextual problems that lead naturally to division of fractions.
<ul style="list-style-type: none"> ▪ Add and subtract commonly used fractions. 	<p>SPI 0506.2.6 Add and subtract proper and improper fractions as well as mixed numbers.</p>		<p>SPI 0606.2.2 Solve problems involving the addition, subtraction, multiplication, and division of mixed numbers.</p>
<ul style="list-style-type: none"> ▪ Add, subtract, and multiply decimals. 	<p>SPI 0506.2.5 Solve addition and subtraction problems involving both fractions and decimals.</p> <ul style="list-style-type: none"> ✓ 0506.2.3 Use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals. 	<ul style="list-style-type: none"> ▪ Compute efficiently and accurately with whole numbers, fractions, and decimals. A 	<p>SPI 0606.2.3 Solve problems involving the addition, subtraction, multiplication, and division of decimals.</p>
	<ul style="list-style-type: none"> ✓ 0506.2.5 Make reasonable 		

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
	estimates of fraction and decimal sums and differences.		
<ul style="list-style-type: none"> ▪ Add, subtract, multiply, and divide whole numbers (multipliers and divisors no more than two-digits). 	<p>SPI 0506.2.4 Solve problems involving the division of two- and three-digit numbers by one- and two-digit whole numbers.</p> <ul style="list-style-type: none"> ✓ 0506.2.7 Understand placement of the decimal point in calculations of multiplication and long division, including placement in the estimation of the answer. ✓ 0506.2.8 Understand that division by zero is undefined. 		
		<ul style="list-style-type: none"> ▪ Apply order of operations when computing with whole numbers. A ▪ Compute efficiently and accurately with whole numbers, fractions, and decimals. A 	<p>SPI 0606.2.4 Solve multi-step arithmetic problems using fractions, mixed numbers, and decimals.</p>
<ul style="list-style-type: none"> ▪ Connect symbolic representations of proper and improper fractions to models of proper and improper fractions. 		<ul style="list-style-type: none"> ▪ Represent numbers using a variety of models and equivalent forms (i.e., whole numbers, mixed numbers, fractions, decimals, and percents). A 	<p>SPI 0606.2.5 Transform numbers from one form to another (fractions, decimals, percents, and mixed numbers).</p> <ul style="list-style-type: none"> ✓ 0606.2.8 Recognize that a terminating decimal equals a fraction with a denominator that is a power of ten. ✓ 0606.2.9 Recognize that the decimal form of a rational number either terminates or repeats.
<ul style="list-style-type: none"> ▪ Read and write numbers from millions to thousandths. ▪ Identify the place value of a given digit from millions to thousandths. ▪ Represent whole numbers and two-place decimals in expanded form. 	<p>SPI 0506.2.1 Read and write numbers from millions to millionths in various contexts.</p> <ul style="list-style-type: none"> ✓ 0506.2.10 Use exponential notation to represent repeated multiplication of whole numbers. 	<ul style="list-style-type: none"> ▪ Identify the place value of a given digit. A ▪ Read, write, and represent whole numbers and decimals in expanded notation. D 	
	SPI 0506.2.2 Write the prime	<ul style="list-style-type: none"> ▪ Identify prime and composite 	

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
	<p>factorization of numbers through 50 using both exponential and standard notation.</p> <ul style="list-style-type: none"> ✓ 0506.2.1 Identify prime numbers up to 50. ✓ 0506.2.2 Use the prime factorization of two whole numbers to determine greatest common factor, least common multiple. ✓ 0506.2.4 Use divisibility rules to factor numbers. 	<p>numbers up to 50. A</p> <ul style="list-style-type: none"> ▪ Develop meaning for number theory concepts (i.e., divisibility, factors, and multiples). D 	
<ul style="list-style-type: none"> ▪ Represent numbers as both improper fractions and mixed numbers. ▪ Generate equivalent forms of commonly used fractions, decimals and percents (1/10, 1/4, 1/2, .75, 50%) 	<p>SPI 0506.2.7 Recognize equivalent representations for the same number.</p> <p>SPI 0506.2.8 Write terminating decimals in the form of fractions or mixed numbers.</p>	<ul style="list-style-type: none"> ▪ Develop understanding of equivalent number representations (i.e., fractions, decimals, and percents). D 	
		<ul style="list-style-type: none"> ▪ Solve problems involving ratio and proportion. A ▪ Identify a ratio using three forms: 3 to 5; 3/5; 3:5. D ▪ Determine if two ratios form a proportion, and find the missing number in a proportion. D ▪ Connect ratios to a variety of models, real-world situations, and symbolic representations. A ▪ Use scales to read maps. A 	<p>SPI 0606.2.6 Solve problems involving ratios, rates, and %.</p> <ul style="list-style-type: none"> ✓ 0606.2.4 Understand ratio as a fraction used to compare two quantities by division. ✓ 0606.2.5 Recognize a:b, a/b, and "a to b" as notations for ratios. ✓ 0606.2.6 Recognize common percentages as ratios based on fractions whose denominators are 2, 3, 4, 5, or 10. ✓ 0606.2.7 Connect ratio and rate to multiplication and division.
			<p>SPI 0606.1.3 Use concrete, pictorial, and symbolic representation for integers.</p>
		<ul style="list-style-type: none"> ▪ Connect whole numbers, mixed numbers, fractions, and decimals to locations on the number line. A 	<p>SPI 0606.2.7 Locate positive rational numbers on the number line.</p> <ul style="list-style-type: none"> ✓ 0606.2.1 Efficiently compare

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
			and order fractions, decimals and percents; determine their approximate locations on a number line. SPI 0606.2.8 Locate integers on the number line. ✓ 0606.2.10 Explore contexts that can be described with negative numbers (money, elevation, temperature).
<ul style="list-style-type: none"> ▪ Represent, compare, and order whole numbers and decimals to thousandths. ▪ Compare and order fractions using the appropriate symbol (<, >, =). 	<p>SPI 0506.2.9 Compare whole numbers, decimals and fractions using the symbols <, >, and =. ✓ 0506.2.9 Explore numbers less than 0 by extending the number line through familiar applications (e.g., temperatures below zero, owing money, measuring elevation below sea level).</p>	<ul style="list-style-type: none"> ▪ Compare and order whole numbers, fractions, decimals, and percents using the appropriate symbol (<, >, =). A ▪ Demonstrate understanding of percents greater than 100 and less than one. D 	
<ul style="list-style-type: none"> ▪ Use estimation to determine a reasonable solution to a whole number computation. 		<ul style="list-style-type: none"> ▪ Use estimation to select a reasonable answer to a computation involving whole numbers, fractions and/or decimals. A 	SPI 0606.1.2 Judge the reasonableness of the results of rational number estimates and/or computations.
	SPI 0506.2.3 Select a reasonable solution to a real-world division problem in which the remainder must be considered.	<ul style="list-style-type: none"> ▪ Select a reasonable solution to a real-world division problem in which the remainder must be considered. A 	

Grade 6 – Algebra**Former Learning Expectations**

- 2.1 Understand patterns, relations, and functions.
- 2.2 Represent and analyze mathematical situations and structures using algebraic symbols.
- 2.3 Use mathematical models to represent and understand quantitative relationships.
- 2.4 Analyze change in various contexts.

New Grade Level Expectations

- GLE 0606.3.1 Write and solve two-step equations and inequalities.
- GLE 0606.3.2 Interpret and represent algebraic relationships with variables in expressions, simple equations and inequalities.
- GLE 0606.3.3 Extend order of operations to include grouping symbols and exponents.
- GLE 0606.3.4 Use expressions, equations and formulas to solve problems.
- GLE 0606.3.5 Use multiple representations including symbolic algebra to model and/or solve contextual problems that involve linear relationships.
- GLE 0606.3.6 Understand and use the Cartesian coordinate system.

<u>Former Standards 5th Grade</u> <i>Review Material</i>	<u>New Standards 5th Grade</u> <i>Building blocks for new standards</i>	<u>Former Standards 6th Grade</u> <i>TCAP 2008-2009</i>	<u>New Standards 6th Grade</u> <i>TCAP 2009-2010</i>
	<p>SPI 0506.3.4 Given a set of values, identify those that make an inequality a true statement.</p> <p>✓0506.3.4 Solve single-step linear inequalities and graph solutions on a number line.</p> <p>✓0506.3.5 Determine if a given value is a solution to a linear equation/inequality.</p>		<p>SPI 0606.3.1 Represent on a number line the solution of a linear inequality.</p> <p>✓0606.3.2 Write and solve one-step inequalities corresponding to given situations (non-negative numbers only).</p> <p>✓0506.3.6 Recognize there are many numbers between any two whole numbers on the number line.</p>
	<p>SPI 0506.3.2 Evaluate multi-step numerical expressions involving fractions using order of operations.</p> <p>SPI 0506.3.1 Evaluate algebraic expressions involving decimals and fractions using order of operations.</p> <p>✓0506.3.1 Evaluate an expression by substituting non-negative rational number</p>	<p>▪ Evaluate algebraic expressions for a given value of the variable. A</p>	<p>SPI 0606.3.2 Use order of operations and parentheses to simplify expressions and solve problems.</p> <p>✓0606.3.5 Use the commutative, associative and distributive properties to show that two expressions are equivalent.</p>

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
	values for letter variables in the expression.		
<ul style="list-style-type: none"> ▪ Apply basic function rules. ▪ Connect open sentences to real-world situations. ▪ Select an equation that represents a given mathematical relationship. 		<ul style="list-style-type: none"> ▪ Apply function rules. A ▪ Select an equation that represents a given mathematical relationship. A 	<p>SPI 0606.3.3 Write equations that correspond to given situations or represent a given mathematical relationship.</p> <p>✓0606.3.6 Use equations to describe simple relationships shown in a table or graph.</p>
			<p>SPI 0606.1.4 Select the representation that models one of the arithmetic properties (commutative, associative, or distributive).</p> <p>SPI 0606.1.5 Model algebraic expressions using algebra tiles.</p> <p>SPI 0606.3.4 Rewrite expressions to represent quantities in different ways.</p> <p>✓0606.3.3 Recognize the use of juxtaposition (such as $3x$, ab) to stand for multiplication, and the convention in these cases of writing numbers before letters.</p>
		<ul style="list-style-type: none"> ▪ Develop an initial conceptual understanding of different uses of variables. D ▪ Represent mathematical statements and real-world situations using symbols. D ▪ Model algebraic expressions using manipulatives, technology, and paper and pencil. I 	<p>SPI 0606.3.5 Translate between verbal expressions/sentences and algebraic expressions or equations.</p> <p>✓0606.3.7 Move fluently between different representations (such as verbal, tabular, numerical, algebraic, and graphical) of equations and expressions.</p>
<ul style="list-style-type: none"> ▪ Solve open sentences involving addition, subtraction, multiplication, and division. 	SPI 0506.3.3 Find the unknown in single-step equations involving fractions and mixed numbers.	<ul style="list-style-type: none"> ▪ Find missing addends or factors represented as variables in simple equations. A 	SPI 0606.3.6 Solve two-step linear equations using number sense, properties, and inverse operations.

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
	<ul style="list-style-type: none"> ✓0506.3.2 Use variables appropriately to represent numbers whose values are not yet known. ✓0506.3.3 Solve single-step linear equations using inverse operations. 		<ul style="list-style-type: none"> ✓0606.3.1 Write and solve two-step linear equations corresponding to given situations (non-negative numbers only).
<ul style="list-style-type: none"> ▪ Extend numerical patterns. ▪ Extend geometric patterns. ▪ Generalize numerical patterns using a variable. 		<ul style="list-style-type: none"> ▪ Extend geometric and numerical patterns. A ▪ Generalize patterns in data represented in tables. A ▪ Represent, analyze, and extend geometric and numerical patterns. D 	<p>SPI 0606.3.7 Use algebraic expressions and properties to analyze numeric and geometric patterns.</p> <ul style="list-style-type: none"> ✓0606.3.8 Represent patterns using words, graphs, and simple symbolic notation.
<ul style="list-style-type: none"> ▪ Extend rate charts to solve real-world problems. 		<ul style="list-style-type: none"> ▪ Extend rate charts to solve real-world word problems. A ▪ Generalize patterns in data represented in graphs. D ▪ Make a graph to represent a simple real-world problem or situation. I 	<p>SPI 0606.3.8 Select the qualitative graph that models a contextual situation (e.g., water filling then draining from a bathtub).</p> <ul style="list-style-type: none"> ✓0606.3.4 Generate data and graph relationships concerning measurement of length, area, volume, weight, time, temperature, money, and information. ✓0606.3.9 Write a contextual story modeled by a given graph.
<ul style="list-style-type: none"> ▪ Locate and specify a point in Quadrant I of a coordinate system. 		<ul style="list-style-type: none"> ▪ Use ordered pairs to describe given points in Quadrant 1 of a coordinate system. A 	<p>SPI 0606.3.9 Graph ordered pairs of integers in all four quadrants of the Cartesian coordinate system.</p> <ul style="list-style-type: none"> ✓0606.3.11 Identify the quadrant of the coordinate system in which a point lies. ✓0606.3.10 Understand that in an ordered pair (x, y), the x represents horizontal location and y represents vertical location.

<i>Former Standards 5th Grade</i> <i>Review Material</i>	<i>New Standards 5th Grade</i> <i>Building blocks for new standards</i>	<i>Former Standards 6th Grade</i> <i>TCAP 2008-2009</i>	<i>New Standards 6th Grade</i> <i>TCAP 2009-2010</i>
		<ul style="list-style-type: none">▪ Describe how changes in one quantity or variable result in changes in another. D	

Grade 6 – Geometry and Measurement

Former Learning Expectations

- 3.1 Analyze characteristics and properties of two- and three-dimensional geometric figures.
- 3.2 Specify locations and describe spatial relationships using coordinate geometry and other representational systems.
- 3.3 Apply transformations and use symmetry to analyze mathematical situations.
- 3.4 Use visualization, spatial reasoning, and geometric modeling to solve problems.
- 4.1 Understand measurable attributes of objects and the units, systems, and processes of measurement.
- 4.2 Apply appropriate techniques, tools, and formulas to determine measurements.

New Grade Level Expectations

- GLE 0606.4.1 Understand and use basic properties of triangles, quadrilaterals, and other polygons.
- GLE 0606.4.2 Use the concepts of translation, rotation, reflection, and symmetry to understand congruence in the plane.
- GLE 0606.4.3 Develop and use formulas to determine the circumference and area of circles, and the area of trapezoids, and develop strategies to find the area of composite shapes.
- GLE 0606.4.4 Develop and use formulas for surface area and volume of 3-dimensional figures.

<u>Former Standards 5th Grade</u> Review Material	<u>New Standards 5th Grade</u> Building blocks for new standards	<u>Former Standards 6th Grade</u> TCAP 2008-2009	<u>New Standards 6th Grade</u> TCAP 2009-2010
<ul style="list-style-type: none"> ▪ Identify two- or three-dimensional shapes given defining attributes. A ▪ Identify lines, line segments, rays, and angles. A ▪ Classify geometric figures using properties. A 		<ul style="list-style-type: none"> ▪ Classify two-dimensional geometric figures using properties. A ▪ Classify angles as acute, obtuse, right, and straight. A ▪ Identify parallel, perpendicular, and intersecting lines. A ▪ Classify quadrilaterals using their defining properties. A ▪ Describe, classify, and understand relationships among types of two-dimensional figures. D ▪ Identify and use appropriate mathematical language to describe characteristics of lines (e.g., parallel, perpendicular, and intersecting). D 	<p>SPI 0606.4.1 Identify, define or describe geometric shapes given a visual representation or a written description of its properties.</p> <ul style="list-style-type: none"> ✓0606.4.3 Verify basic properties of triangles and quadrilaterals using protractor and ruler. ✓0606.4.4 Classify triangles by side lengths (scalene, isosceles, and equilateral) and angle measure (acute, right, obtuse, isosceles and equiangular).
			<p>SPI 0606.4.2 Find a missing angle measure in problems involving interior/exterior angles and/or their sums.</p> <ul style="list-style-type: none"> ✓0606.4.1 Investigate the sum of the angles in a triangle and a

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
			quadrilateral using various methods. ✓0606.4.2 Relate the sum of the angles in a triangle to the sum of the angles in polygons. ✓0606.4.6 Use the properties of interior and exterior angles of polygons to solve problems.
<ul style="list-style-type: none"> ▪ Use strategies to estimate perimeter and area of rectangles. A ▪ Solve real-world problems involving perimeter and area of rectangles. A ▪ Solve real-world problems involving addition and subtraction of measurements. A ▪ Apply formulas to find the area of parallelograms and triangles. A 	<p>SPI 0506.4.1 Solve contextual problems that require calculating the area of triangles and parallelograms.</p> <p>✓0506.4.1 Develop the formula for the area of a triangle by relating it to the area of a parallelogram or rectangle.</p>	<ul style="list-style-type: none"> ▪ Use strategies to estimate perimeter and area of rectangles. A ▪ Apply formulas to determine the area of rectangles and triangles. A ▪ Solve real-world problems involving perimeter and area of rectangles. A ▪ Estimate measurements involving length, perimeter, circumference, area, and volume. D ▪ Determine the area of triangles and parallelograms using a formula. D ▪ Use a variety of manipulatives to develop formulas to determine the area of trapezoids and circles. D 	✓0606.4.14 Relate the area of a trapezoid to the area of a parallelogram.
			<p>SPI 0606.4.3 Solve problems using the Triangle Inequality Theorem.</p> <p>✓0606.4.5 Model and use the Triangle Inequality Theorem.</p>
	<p>SPI 0506.4.2 Decompose irregular shapes to find perimeter and area.</p> <p>✓ 0506.4.2 Find the area of a convex polygon by decomposing it into triangles/rectangles.</p>	<ul style="list-style-type: none"> ▪ Complete investigations to develop formulas to determine the circumference of circles. D 	<p>SPI 0606.4.4 Calculate with circumferences and areas of circles.</p> <p>✓0606.4.12 Derive the meaning of Pi using concrete models and/or appropriate technology.</p> <p>✓0606.4.11 Relate the circumference of a circle with</p>

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
			the perimeter of a polygonal figure. ✓0606.4.13 Understand the relationships among the radius, diameter, circumference and area of a circle, and that the ratio of the circumference to the diameter is the same as the ratio of the area to the square of the radius, and that this ratio is called Pi.
<ul style="list-style-type: none"> ▪ Select appropriate standard units to measure length, perimeter, area, capacity, volume, weight, time, temperature, and angles. A 	<ul style="list-style-type: none"> ✓0506.4.7 Understand, select and use units of appropriate size and type to measure angles, lengths/distances, area, surface area and volume. 	<ul style="list-style-type: none"> ▪ Select units of appropriate size and type to measure angles, perimeter, area, capacity, volume, and weight. A 	
<ul style="list-style-type: none"> ▪ Use spatial reasoning to identify the three-dimensional figure created from a two-dimensional representation (net) of that figure (i.e., cube, rectangular prism, pyramid, cone, or cylinder). A 	<p>SPI 0506.4.3 Identify a three-dimensional object from two-dimensional representations of that object and vice versa.</p> <ul style="list-style-type: none"> ✓0506.4.3 Build, draw, and work with prisms in orthogonal views, projective views, and nets. ✓0506.4.6 Decompose prisms to calculate surface area/volume. 	<ul style="list-style-type: none"> ▪ Use spatial reasoning to identify the three-dimensional figure created from a two-dimensional representation (net) of that figure (i.e., cube, rectangular prism, pyramid, cone, or cylinder). A ▪ Identify and build a three-dimensional object from a two-dimensional representation (net) of that object and vice versa (e.g., cube, rectangular prism, pyramid, cone, or cylinder). D 	
		<ul style="list-style-type: none"> ▪ Draw two-and three-dimensional geometric figures with specified properties, (e.g., side lengths, angle measure). D 	
<ul style="list-style-type: none"> ▪ Use estimation to determine if a length or volume measurement is reasonable. A 	<p>0506.4.5 Quantify total volume as filling space with same-sized units of volume without gaps or overlap.</p> <p>SPI 0506.4.4 Solve problems involving surface area and</p>	<ul style="list-style-type: none"> ▪ Use visualization and spatial reasoning (e.g., geometric models) to solve real-world problems. D ▪ Explore surface area and volume of selected prisms and 	<p>SPI 0606.4.5 Determine the surface area and volume of prisms, pyramids and cylinders.</p> <p>SPI 0606.4.6 Given the volume of a cone/pyramid,</p>

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
	<p>volume of rectangular prisms and polyhedral solids.</p> <p>✓0506.4.4 Describe and identify the five regular (Platonic) solids and their properties with respect to faces, shapes of faces, edges, and vertices.</p>	<p>cylinders using models and manipulatives. D</p>	<p>find the volume of the related cylinder/prism or vice versa.</p> <p>✓0606.4.17 Use manipulatives to discover the volume of a pyramid is one-third the volume of the related prism (the heights and base areas are equal).</p> <p>✓0606.4.18 Use manipulatives to discover the volume of a cone is one-third the volume of the related cylinder (the heights and base areas are equal).</p> <p>✓0606.4.15 Find lengths given areas or volumes, and vice versa.</p> <p>✓0606.4.16 Solve contextual problems involving area and circumference of circles, surface areas and volumes of prisms, pyramids, cones, and cylinders.</p>
<ul style="list-style-type: none"> ▪ Use spatial reasoning to predict the result of sliding, flipping, or turning a two-dimensional shape. A ▪ Identify lines of symmetry in two-dimensional geometric figures. A 		<ul style="list-style-type: none"> ▪ Identify the results of transformations of two-dimensional figures (e.g. slides/translations, flips/reflections, and turns/rotations). A ▪ Predict, and describe the results of transformations of two-dimensional figures (e.g., slides/translations, flips/reflections, and turns/rotations). D ▪ Describe line and rotational symmetry in two-dimensional figures. D ▪ Describe a motion or a series of motions that will show that two shapes are congruent. D 	<p>✓0606.4.7 Work with transformations in a plane and explore their meanings through drawings and manipulatives.</p> <p>✓0606.4.8 Understand scaling, dilation and their relation to similarity.</p> <p>✓0606.4.10 Describe the effect of a transformation on a 2-dimensional figure and the resulting symmetry.</p>
		<ul style="list-style-type: none"> ▪ Describe similarity and congruence. D ▪ Solve problems involving 	<p>✓0606.4.9 Analyze the differences between congruence and similarity.</p>

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
		measurement using ratio and proportion. D	
	<p>SPI 0506.4.5 Find the length of vertical or horizontal line segments in the first quadrant of the coordinate system, including problems that require the use of fractions and decimals.</p> <p>✓0506.4.8 Identify characteristics of the set of points that define vertical/horizontal line segments.</p>	<ul style="list-style-type: none"> ▪ Determine the distance between two points on the x- or the y- axis in Quadrant I. A ▪ Plot a given set of points in Quadrant I of a coordinate system, use ordered pairs to describe or specify points, and find the distance between 2 points on the x- or y-axis. D 	
<ul style="list-style-type: none"> ▪ Connect simple units of measurement within the same system of measurement. 		<ul style="list-style-type: none"> ▪ Convert from one unit to another within the same system (metric and customary). A ▪ Solve problems involving measurement using ratio and proportion. D ▪ Demonstrate understanding of both metric and customary systems of measurement. D ▪ Identify relationships among units within the same system (metric and customary). D 	
<ul style="list-style-type: none"> ▪ Solve real-world problems involving elapsed time. 		<ul style="list-style-type: none"> ▪ Solve real-world problems involving elapsed time. A 	
<ul style="list-style-type: none"> ▪ Use a ruler to measure to the nearest centimeter and $\frac{1}{4}$ inch. ▪ Read temperatures on a thermometer using Fahrenheit and Celsius scales. 	<p>SPI 0506.4.6 Record measurements in context to reasonable degree of accuracy using decimals and/or fractions.</p> <p>✓0506.4.9 Correctly interpret significant digits in the accuracy of measurements and associated calculations.</p> <p>✓0506.4.10 Recognize that measurements are never exact.</p> <p>✓0506.4.11 Understand the usefulness of approximations.</p>	<ul style="list-style-type: none"> ▪ Identify and use units of appropriate size and type to measure angles, perimeter, area, surface area, and volume. D ▪ Recognize the need for measurement precision. D 	

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
	✓0506.4.12 Develop strategies for choosing correct tools of measurement. ✓0506.4.13 Recognize and use measures of weight and temperature.		

Grade 6 – Data Analysis, Probability, and Statistics

Former Learning Expectations

- 5.1 Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer questions.
- 5.2 Select and use appropriate statistical methods to analyze data.
- 5.3 Develop and evaluate inferences and predictions that are based on data.
- 5.4 Understand and apply basic concepts of probability.

New Grade Level Expectations

- GLE 0606.5.1 Understand the meaning of probability and how it is expressed.
- GLE 0606.5.2 Interpret representations of data from surveys and polls, and describe sample bias and how data representations can be misleading.

<u>Former Standards 5th Grade</u> <i>Review Material</i>	<u>New Standards 5th Grade</u> <i>Building blocks for new standards</i>	<u>Former Standards 6th Grade</u> <i>TCAP 2008-2009</i>	<u>New Standards 6th Grade</u> <i>TCAP 2009-2010</i>
<ul style="list-style-type: none"> ▪ Determine the most likely, least likely, or equally likely outcomes in simple experiments. A ▪ Represent the likelihood of an event using a fractional number from zero to one. A 		<ul style="list-style-type: none"> ▪ Use a tree diagram or organized list to determine all possible outcomes of a simple compound event. A ▪ Represent the likelihood of an event using a number from 0-1. A 	<p>SPI 0606.5.1 Determine the theoretical probability of simple and compound events in familiar contexts.</p> <ul style="list-style-type: none"> ✓ 0606.5.1 Understand that the probability of an event is a number between zero and one that expresses the likelihood of its occurrence. ✓ 0606.5.2 Identify the probability of an event as the ratio of the number of its actual occurrences to the total number of its possible occurrences. ✓ 0606.5.3 Express probabilities in different ways. 0606.5.4 Understand the difference between probability and odds. ✓ 0606.5.5 Analyze a situation that involves probability of an independent event. ✓ 0606.5.6 Estimate the probability of simple and compound events through experimentation or simulation. ✓ 0606.5.7 Apply procedures to calculate the probability of complimentary events.
<ul style="list-style-type: none"> ▪ Represent and interpret data in 	SPI 0506.5.1 Depict data	<ul style="list-style-type: none"> ▪ Interpret bar and line graphs to 	SPI 0606.5.2 Identify features

Former Standards 5th Grade <i>Review Material</i>	New Standards 5th Grade <i>Building blocks for new standards</i>	Former Standards 6th Grade <i>TCAP 2008-2009</i>	New Standards 6th Grade <i>TCAP 2009-2010</i>
bar graphs and pictographs. A	<p>using various representations, including decimal and/or fractional data.</p> <ul style="list-style-type: none"> ✓ 0506.5.1 Construct and analyze double bar and line graphs. ✓ 0506.5.2 Represent data using ordered pairs in the first quadrant of the coordinate system. ✓ 0506.5.4 Recognize the differences in representing categorical and numerical data. 	<p>answer questions and solve real-world problems. A</p> <ul style="list-style-type: none"> ▪ Connect data sets and their graphical representations (i.e., bar graphs, circle graphs, and stem-and-leaf-plots). A ▪ Examine various representations of data to evaluate how accurately the data is depicted. D 	<p>of graphs that may be misleading.</p> <ul style="list-style-type: none"> ✓ 0606.5.8 Connect data sets and their graphical representations (such as bar graphs, circle graphs, and stem-and-leaf plots).
<ul style="list-style-type: none"> ▪ Determine the mean, median, and mode of a data set. A 	<p>SPI 0506.5.3 Calculate measures of central tendency to analyze data.</p> <ul style="list-style-type: none"> ✓ 0506.5.5 Evaluate how different measures of central tendency describe data. ✓ 0506.5.6 Identify outliers and determine their effect on mean, median, mode and range. 	<ul style="list-style-type: none"> ▪ Determine the mean of a data set. A ▪ Determine the mode of a data set. A ▪ Determine the median from a stem-and-leaf-plot. A ▪ Determine, use, and interpret measures of center and spread (e.g., mean, median, mode, and interquartile range). D 	<ul style="list-style-type: none"> ✓ 0606.5.11 Select the appropriate measure of center to describe a data set.
<ul style="list-style-type: none"> ▪ Make predictions based on data. A 	<p>SPI 0506.5.2 Make predictions based on various data representations, including double bar and line graphs.</p> <ul style="list-style-type: none"> ✓ 0506.5.3 Design investigations to address a question and consider how data collection methods affect the nature of the data set. 	<ul style="list-style-type: none"> ▪ Make conjectures and predictions based on data (e.g., in a chart, table, or graph). A ▪ Determine if a sample is biased. A ▪ Formulate questions, design studies, and collect real-world data. D ▪ Understand how data-collection methods affect the nature of the data set. D ▪ Explain the importance of sample size in investigations. D ▪ Conduct a survey using random sampling. D 	<p>SPI 0606.1.1 Make conjectures and predictions based on data.</p> <p>SPI 0606.5.3 Determine whether or not a sample is biased.</p> <ul style="list-style-type: none"> ✓ 0606.5.9 Determine the sample space for a given situation. ✓ 0606.5.10 Distinguish between a random and nonrandom sample. ✓ 0606.5.12 Predict the characteristics of a population based on the analysis of sample data.

<i>Former Standards 5th Grade</i> <i>Review Material</i>	<i>New Standards 5th Grade</i> <i>Building blocks for new standards</i>	<i>Former Standards 6th Grade</i> <i>TCAP 2008-2009</i>	<i>New Standards 6th Grade</i> <i>TCAP 2009-2010</i>
		<ul style="list-style-type: none"> ▪ Make and test conjectures about the results of experiments and simulations. D ▪ Make conjectures to formulate new questions for future studies. I ▪ Model situations by devising and carrying out experiments and simulations. I 	