

<b>Grade/Course:</b> Grade 7/Math - Angle Measures		4-26-14
<b>Standards for Mathematical Practice:</b>		
Make sense of problems and persevere in solving them. Construct viable arguments and critique the reasoning of others. Use appropriate tools strategically. Look for and make use of structure.		Reason abstractly and quantitatively. Model with mathematics. Attend to precision. Look for and express regularity in repeated reasoning.
<b>Big Idea:</b>		
Patterns exhibit relationships that can be extended, described, and generalized.		
<b>Pennsylvania Core Standards:</b>		
CC.2.3.7.A.1: Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume. <ul style="list-style-type: none"> <li>Identify, use and describe properties of angles and their measures.</li> <li>Determine circumference, area, surface area, and volume.</li> </ul>		
<b>Essential Questions:</b>	<b>Understandings: Students will understand THAT . . .</b>	
<ul style="list-style-type: none"> <li>Where do you see different angle relationships in constructed figures?</li> <li>Why do different dimensions of objects impact circumference, area, surface area, and volume?</li> </ul>	<ul style="list-style-type: none"> <li>Students will understand the relationships between supplementary, complementary, vertical, adjacent, corresponding, alternate interior, and alternate exterior angles.</li> <li>Changes in the dimensions of an object do not change the area, surface area, and volume proportionally.</li> <li>Changes in the dimensions of a circle will change the circumference of a circle proportionally.</li> <li>Using a formula is the same skill as evaluating an expression given values for the variables.</li> </ul>	
<b>Knowledge:</b>	<b>Skills:</b>	
<ul style="list-style-type: none"> <li>Vocab – Parallel Lines, Transversal, Complementary, Supplementary, Adjacent, Vertical, Corresponding, Alternate Interior, Alternate Exterior, Congruent, Circumference, Area, Surface Area, and Volume.</li> <li>Properties of Quadrilaterals.</li> <li>Classifications of Polygons.</li> </ul>	<ul style="list-style-type: none"> <li>Students will understand the relationships between supplementary, complementary, vertical, adjacent, corresponding, alternate interior, and alternate exterior angles.</li> <li>Changes in the dimensions of an object do not change the area, surface area, and volume proportionally.</li> <li>Changes in the dimensions of a circle will change the circumference of a circle proportionally.</li> <li>Using a formula is the same skill as evaluating an expression given values for the variables.</li> </ul>	

- Area is how much carpet is needed to cover a room.
- Volume is how much water is needed to fill a pool.
- Surface area is how much paper is needed to cover a holiday gift.
- Area is measured in square units and volume is measured in cubic units.

- Solve for missing angle in various figures.
- Identifying adjacent, complementary, supplementary, vertical, corresponding, alternate interior, and alternate exterior angles.
- Write and solve equations to find supplementary, complementary, and adjacent angles.
- Use a formula to calculate circumference, area, surface area, and volume.

<b>Grade/Course:</b> Grade 7/Math - Chance Probability Model		4-26-14
<b>Standards for Mathematical Practice:</b>		
Make sense of problems and persevere in solving them. Construct viable arguments and critique the reasoning of others. Use appropriate tools strategically. Look for and make use of structure.		Reason abstractly and quantitatively. Model with mathematics. Attend to precision. Look for and express regularity in repeated reasoning.
<b>Big Idea:</b>		
The likelihood of an event occurring can be described numerically and can be used to make predictions.		
<b>Pennsylvania Core Standards:</b>		
CC.2.4.7.B.3: Investigate chance processes and develop, use, and evaluate probability models.		
<ul style="list-style-type: none"> <li>• Predict or determine the likelihood of outcomes.</li> <li>• Use probability to predict outcomes.</li> </ul>		
<b>Essential Questions:</b>	<b>Understandings: Students will understand THAT . . .</b>	
<ul style="list-style-type: none"> <li>• How can I use predictions and probability to make wise decisions in my life?</li> </ul>	<ul style="list-style-type: none"> <li>• The probability scale goes from 0% to 100% or impossible/unlikely/likely/certain.</li> <li>• Probability can be represented with percent, fractions and decimals ranging from 0 to 1.</li> <li>• The difference between theoretical (what should happen) and experimental probability (what actually happens).</li> </ul>	
<b>Knowledge:</b>	<b>Skills:</b>	
<ul style="list-style-type: none"> <li>• Vocab – Sample Space, Probability, Relative Frequency</li> <li>• Convert between fractions, decimals, and percent.</li> <li>• Fundamental Counting Principle</li> </ul>	<ul style="list-style-type: none"> <li>• Computing compound probability event.</li> <li>• Using proportions to solve probability problems.</li> <li>• Calculate to predict the approximate relative frequency given the probability.</li> <li>• The probability of something occurring and not occurring.</li> <li>• Use technology to create organized lists, tables, and simulations.</li> <li>• Draw a tree diagram to show all possible outcomes.</li> </ul>	

<b>Grade/Course:</b> Grade 7/Math - Equations		4-26-14
<b>Standards for Mathematical Practice:</b>		
Make sense of problems and persevere in solving them. Construct viable arguments and critique the reasoning of others. Use appropriate tools strategically. Look for and make use of structure.		Reason abstractly and quantitatively. Model with mathematics. Attend to precision. Look for and express regularity in repeated reasoning.
<b>Big Idea:</b>		
<ul style="list-style-type: none"> <li>• There are some mathematical relationships that are always true and these relationships are used as the rules of arithmetic and algebra to write equivalent forms of expressions and to solve equations and inequalities.</li> <li>• Relations and functions are mathematical relationships that can be represented and analyzed using words, tables, graphs, and equations.</li> </ul>		
<b>Pennsylvania Core Standards:</b>		
CC.2.2.7.B.3: Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.		
<b>Essential Questions:</b>	<b>Understandings: Students will understand THAT . . .</b>	
<ul style="list-style-type: none"> <li>• How can you use a variable in an expression, equation, and inequality to represent an unknown quantity to problem solve?</li> <li>• How can you model an expression, equation, and inequality as a math statement and/or graph?</li> <li>• How do you know if an answer is reasonable?</li> </ul>	<ul style="list-style-type: none"> <li>• The difference between an expression, equation, and inequality and the number of possible solutions.</li> <li>• Expressions, equations, and inequalities can be modeled as a word phrase, numerical sentence, algebraic sentence, and/or graph.</li> <li>• The use of mental computation and estimation strategies to check for a reasonable answer.</li> </ul>	
<b>Knowledge:</b>	<b>Skills:</b>	
<ul style="list-style-type: none"> <li>• Vocab – variable, coefficient, numeric expression, algebraic expression, equation, inequality, solution, evaluate, solve</li> <li>• Notation – greater than, less than, equal, operation.</li> <li>• Words associated with computation</li> </ul>	<ul style="list-style-type: none"> <li>• Solving equations (1-step, 2-step, multi-step)</li> <li>• Solving inequalities (1-step and 2-step)</li> <li>• Solve by using a formula.</li> <li>• Graph solution set for inequalities.</li> <li>• Estimation strategies, rounding, and mental computation</li> <li>• Assess for reasonableness of answers.</li> </ul>	

<p>(add, subtract, multiple, divide).</p> <ul style="list-style-type: none"><li>• Order of operations</li></ul>	<ul style="list-style-type: none"><li>• Translate word phrases and sentences to expression, equations, and inequality.</li><li>• Order of operations</li></ul>
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<b>Grade/Course:</b> Grade 7/Math - Equivalent Expressions		4-26-14
<p><b>Standards for Mathematical Practice:</b></p> <p>Make sense of problems and persevere in solving them. Reason abstractly and quantitatively.                  Construct viable arguments and critique the reasoning of others. Model with mathematics.                  Use appropriate tools strategically. Attend to precision.                  Look for and make use of structure. Look for and express regularity in repeated reasoning.</p>		
<p><b>Big Idea:</b>                  Numbers, measures, expressions, equations, and inequalities can represent mathematical situations and structures in many equivalent forms.</p>		
<p><b>Pennsylvania Core Standards:</b>                  CC.2.2.7.B.1: Apply properties of operations to generate equivalent expressions.</p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• How can an expression written in a different form help me understand the problem and how the numbers are related?</li> <li>• How can properties of operations help you simplify expressions?</li> </ul>	<p><b>Understandings: Students will understand THAT . . .</b></p> <ul style="list-style-type: none"> <li>• Equivalent expressions can look different from one another, but have the same meaning.</li> <li>• Expressions can be rewritten and simplified to give meaning to a mathematical situation.</li> </ul>	
<p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Vocab – sum, term, product, factor, quotient, coefficient, quantity, variables, equivalent</li> <li>• Numerical versus algebraic expression</li> <li>• Translate from verbal to mathematical</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Order of operations</li> <li>• Evaluate and simplify an expression</li> <li>• Distributive property</li> <li>• Combining like terms – add and subtract coefficients of terms with the same variable raised to the same power</li> </ul>	

<b>Grade/Course:</b> Grade 7/ Math - Proportional		4-26-14
<p><b>Standards for Mathematical Practice:</b>                  Make sense of problems and persevere in solving them. Reason abstractly and quantitatively.                  Construct viable arguments and critique the reasoning of others. Model with mathematics.                  Use appropriate tools strategically. Attend to precision.                  Look for and make use of structure. Look for and express regularity in repeated reasoning.</p>		
<p><b>Big Idea:</b></p> <ul style="list-style-type: none"> <li>Two variable quantities are proportional if their values are in constant ratio. The relationship between proportional quantities can be represented as a linear function.</li> <li>Similar relationships between objects are a form of proportional relationships. Congruence describes a special similarity relationship between objects and is a form of equivalence.</li> </ul>		
<p><b>Pennsylvania Core Standards:</b>                  CC.2.1.7.D.1: Analyze proportional relationships and use them to model and solve real-world and mathematical problems.</p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>What does it mean to be proportional?</li> </ul>	<p><b>Understandings: Students will understand THAT . . .</b></p> <ul style="list-style-type: none"> <li>A proportion is a relationship between two equivalent ratios or rates.</li> <li>There are several techniques for finding an unknown quantity for proportional relationships.</li> <li>When you graph terms of equal ratios as ordered pairs, they form a straight line through the origin which shows a constant rate of change (slope).</li> <li>In a table, two quantities are proportional if the values form equivalent ratios.</li> <li>Scale drawings involve similar figures, and corresponding parts of similar figures are proportional.</li> <li>Proportions can be used to solve problems that include percent, rates, and probability.</li> </ul>	
<p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>Rate versus a ratio</li> <li>Rate versus a unit rate</li> <li>Corresponding parts of similar figures</li> <li>Coordinate plane, origin, ordered pair</li> <li>Percent</li> <li>Probability</li> <li>Variables &amp; equations</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Determining if ratios are equivalent</li> <li>Generating equivalent ratios</li> <li>Writing a proportion</li> <li>Solving a proportion</li> <li>Writing an equation from a proportional relationship</li> <li>Identifying the constant of proportionality (unit rate) from a table, graph, and equation</li> <li>Use proportional relationships to solve multi-step ratio and percent problems.</li> </ul>	

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| <ul style="list-style-type: none"><li>• You can show a proportional relationship with an equation, graph, or table.</li></ul> |  |
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<b>Grade/Course:</b> Grade 7/Math - Random Sampling		4-26-14
<b>Standards for Mathematical Practice:</b>		
Make sense of problems and persevere in solving them. Construct viable arguments and critique the reasoning of others. Use appropriate tools strategically. Look for and make use of structure.		Reason abstractly and quantitatively. Model with mathematics. Attend to precision. Look for and express regularity in repeated reasoning.
<b>Big Idea:</b>		
<ul style="list-style-type: none"> <li>Some questions can be answered by collecting, representing, and analyzing data. The question to be answered determines the data to be collected, how best to collect it, and how best to represent it.</li> <li>Numerical measure describes the center and spread of numerical data.</li> </ul>		
<b>Pennsylvania Core Standards:</b>		
CC.2.4.7.B.1: Draw inferences about populations based on random sampling concepts. CC.2.4.7.B.2: Draw informal comparative inferences about two populations.		
<b>Essential Questions:</b>	<b>Understandings: Students will understand THAT . . .</b>	
<ul style="list-style-type: none"> <li>Why sample populations?</li> <li>How do you determine which sampling method to use?</li> </ul>	<ul style="list-style-type: none"> <li>Random sampling provides information that can be used to make comparative decisions and predictions.</li> <li>Random sampling is not a guarantee.</li> </ul>	
<b>Knowledge:</b>	<b>Skills:</b>	
<ul style="list-style-type: none"> <li>Random sampling is used with larger groups that are not countable.</li> <li>Random/sampling/populations</li> <li>Measure of central tendency and variance</li> </ul>	<ul style="list-style-type: none"> <li>Identify a random vs. non-random sample.</li> <li>Create a random sample.</li> <li>Calculate measures of central tendency.</li> <li>Use percent and populations to make predictions.</li> </ul>	

<b>Grade/Course:</b> Grade 7/Math – Rational Numbers		4-26-14
<b>Standards for Mathematical Practice:</b>		
Make sense of problems and persevere in solving them. Construct viable arguments and critique the reasoning of others. Use appropriate tools strategically. Look for and make use of structure.		Reason abstractly and quantitatively. Model with mathematics. Attend to precision. Look for and express regularity in repeated reasoning.
<b>Big Idea:</b>		
<ul style="list-style-type: none"> <li>The set of real numbers has infinite subsets including the sets of whole numbers, integers, rational, and irrational numbers.</li> <li>Numerical quantities and calculations can be estimated by using numbers that are close to the actual values but are easier to compute.</li> </ul>		
<b>Pennsylvania Core Standards:</b>		
CC.2.1.7.E.1: Apply and extend previous understandings of operations with fractions to operations with rational numbers.		
<b>Essential Questions:</b>	<b>Understandings: Students will understand THAT . . .</b>	
<ul style="list-style-type: none"> <li>Why are rational numbers represented in different forms?</li> </ul>	<ul style="list-style-type: none"> <li>Rational numbers can be written in multiple ways and still have the same value (fractions, decimals, and numerical expressions) in order to compare and order data.</li> <li>Addition and subtraction of rational numbers can be modeled on a number line.</li> <li>A rational number in decimal form will either terminate or repeat.</li> </ul>	
<b>Knowledge:</b>	<b>Skills:</b>	
<ul style="list-style-type: none"> <li>Counting numbers, whole numbers, integers, and rational number</li> <li>Convert mixed numbers to improper and visa-versa</li> <li>Ordering rational numbers</li> <li>Fractions and decimals represent a part of a whole.</li> </ul>	<ul style="list-style-type: none"> <li>Convert integers as equivalent fractions.</li> <li>Convert decimals to fractions and visa-versa.</li> <li>Add, subtract, multiply, and divide rational numbers.</li> </ul>	

<b>Grade/Course:</b> Grade 7/Math- Visual Geometry		4-26-14
<b>Standards for Mathematical Practice:</b>		
Make sense of problems and persevere in solving them. Construct viable arguments and critique the reasoning of others. Use appropriate tools strategically. Look for and make use of structure.		Reason abstractly and quantitatively. Model with mathematics. Attend to precision. Look for and express regularity in repeated reasoning.
<b>Big Idea:</b>		
Patterns exhibit relationships that can be extended, described, and generalized.		
<b>Pennsylvania Core Standards:</b>		
CC.2.3.7.A.2: Visualize and represent geometric figures and describe the relationships between them. <ul style="list-style-type: none"> <li>• Demonstrate an understanding of geometric figures and their properties.</li> <li>• Describe and apply properties of geometric figures.</li> </ul>		
<b>Essential Questions:</b>	<b>Understandings: Students will understand THAT . . .</b>	
<ul style="list-style-type: none"> <li>• How does change in scale affect the measurement of length and area of the actual object?</li> <li>• How do sides and angles of a triangle relate to each other?</li> <li>• What shapes can you find when you slice a three-dimensional object?</li> </ul>	<ul style="list-style-type: none"> <li>• Scale drawings are proportional to the actual object.</li> <li>• The scale factor determines an enlargement or a reduction.</li> <li>• Not all side lengths will form a triangle.</li> <li>• The number of congruent sides in a triangle is equal to the number of congruent angles.</li> <li>• The slicing of three-dimensional figures results in a two-dimensional plane section.</li> </ul>	
<b>Knowledge:</b>	<b>Skills:</b>	
<ul style="list-style-type: none"> <li>• Vocab – Acute, Obtuse, Right, Scalene, Isosceles, Equilateral, Plane Section, Vertex Angle, Base Angle, Hypotenuse, and Legs.</li> <li>• Triangle Inequality Theorem</li> </ul>	<ul style="list-style-type: none"> <li>• Use proportions to determine the actual length and width from a scale drawing.</li> <li>• Identify the scale on a map or drawing.</li> <li>• Draw (freehand and with ruler and protractor) geometric shapes with given conditions.</li> </ul>	