

West Contra Costa Unified School District
Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7		Quarter 1	Academic Year: 2013-2014	
<p>Grade Level Mathematics Focus: In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.</p>				
<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> How can students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers? How can students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division? How can students apply these properties, and view negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers? 				
Unit (Time)	Standard	Standard Description	Content	Resources
<p>(Aug-Oct)</p> <p>Unit 1:</p> <p>Number Systems</p> <p>(33 days)</p>	7.NS.1	<p>Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.</p> <p>a. Describe situations in which opposite quantities combine to make 0.</p> <p>b. Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses).</p> <p>c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.</p> <p>d. Apply properties of operations as strategies to add and subtract rational numbers</p>	<ul style="list-style-type: none"> Understand and apply properties of numbers Decomposition Using number lines to show addition and subtraction of integers Use tile spacers and number lines to model zero pairs/opposites Learn Operations with signed rational numbers Use number lines to show absolute value Understand multiplication as repeated addition 	<p>Lesson 2-1: Properties of Numbers (2 days) Lesson 2-2: The Distributive Property (2 days) Distributive Property [CP]</p> <p>Lesson 1-2: The order of Operations (2 days) Order of Operations [L]</p> <p>Lesson 1-5: Adding Integers (3 days) Integer Operations – Multiple Representations [CP] Adding/Subtraction Integers Worksheet [WS] Adding Integers Worksheet [WS] Adding Integers [L]</p> <p>Lesson 1-6: Subtracting Integers (3 days) Integer Operations – Multiple Representations [CP] Subtracting Integers [L] Number Line Subtraction [L] Adding/Subtraction Integers Worksheet [WS]</p> <p>Lesson 1-9: Multiplying and Dividing Integers (2 days) Integer Operations – Multiple Representations [CP] Integers – Multiplying [L] Number Line Division [L]</p> <p>Lesson 4-4: Simplifying Fractions (1 day) Simplifying Fractions [CP] Simplifying Fractions Activity [L] Simplifying and Multiplying Fractions Sort [L]</p>

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7		Quarter 1/2	Academic Year: 2013-2014	
<p>Grade Level Mathematics Focus: In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.</p>				
<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> 1. How can students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems, and use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease? 2. How can students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects? 3. How can students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope, and distinguish proportional relationships from other relationships? 				
Unit (Time)	Standard	Standard Description	Resources	
<p>(Oct-Dec)</p> <p>Unit 2:</p> <p>Ratios and Proportional Relationships</p> <p>(35 days)</p>	<p>7.RP.1</p> <p>7.RP.2</p>	<p>Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.</i></p> <p>Recognize and represent proportional relationships between quantities.</p> <p>a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <p>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</p>	<ul style="list-style-type: none"> Using different methods to solve problems involving proportional relationships (i.e. bar model, tables, graphs, equations) Complex fractions Equivalent fractions Equivalent forms of 1 Rates Constant of proportionality (unit rate) Proportions Testing proportionality Using different methods to solve problems involving distance 	<p>General resources for use throughout Unit 2: Bar Model Template – 5% [Worksheet] Bar Model Template – 10% [Worksheet] Bar Model Percent Equivalency [Worksheet] Fraction Bars/ Percent Bars [Worksheet]</p> <p>Lesson 6-1: Ratios and Unit Rates(3 days) Bar Models – Rate, Percent, Equations [L] Rates, Ratios, and Proportions [CP]</p> <p>Lesson 6-2: Proportions (5 days) Rates, Ratios, and Proportions [CP] Proportions [L]</p> <p>Lesson 7-7: Transforming Formulas (Solving problems involving distance, rate, and time) (3 days) Distance = Rate X Time: Focus on Student Talk [L] Using Bar Models... Bar Models and Word Problems [CP] Start at 6:29</p> <p>Lesson 1-10: The Coordinate plane (1 day) Lesson 8-1a: Relating Graphs to Events (2 days) Distance = Rate X Time: Focus on Student Talk [L] Interpreting Graphs – Real Life Functions [L]</p> <p>Lesson 2.8A: Data and Graphs (1 day)</p> <p>Benchmark 1</p>

West Contra Costa Unified School District
Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	Quarter 1/2	Academic Year: 2013-2014
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Grade Level Mathematics Focus:

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

Essential Questions for this Unit:

1. How can students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems, and use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease?
2. How can students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects?
3. How can students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope, and distinguish proportional relationships from other relationships?

Unit (Time)	Standard	Standard Description	Content	Resources
<p>(Oct-Dec)</p> <p>Unit 2: (Continued)</p> <p>Ratios and Proportional Relationships</p>	<p>7.RP.2 (Continued)</p>	<p>c. Represent proportional relationships by equations. <i>For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i></p> <p>d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>	<ul style="list-style-type: none"> • Market math (i.e. discount, commission, gratuity) • Using bar models to represent sale price and discount • Using percent proportions, percent equations, and bar models to solve equations involving percent 	<p>Lesson 6-5: Fractions, Decimals, and Percents (2 days) Converting Fractions, Decimals, and Percents [L]</p> <p>Lesson 6-7: Percents and Equations (2 days) Percent Problems – Multiple Methods [CP] Bar Models – Rate, Percent, Equations [L]</p> <p>Lesson 6-7: Commission (1 day) Bar Models – Sales Price, Markup, and Discount [L] Bar Models – Sales Price, Markup, and Discount [CP]</p> <p>Lesson 6-9: Markup and Discount (5 days) Bar Models – Sales Price, Markup, and Discount [L] Bar Models – Sales Price, Markup, and Discount [CP]</p> <p>Lesson 7-8: Simple and Compound Interest (2 days) Lesson 6-8: Percent of Change (2 days) Percent of Increase & Percent of Decrease [L]</p>
<p>(35 days)</p>	<p>7.RP.3</p>	<p>Use proportional relationships to solve multistep ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i></p>		<p>Review, Assessment, Reteach (6 days)</p>

West Contra Costa Unified School District
Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7		Quarter 2/3	Academic Year: 2013-2014	
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<p>Essential Questions for this Unit: 1. How can students use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems?</p>				
Unit (Time)	Standard	Standard Description	Content	Resources
<p style="color: blue;">(Dec-Feb)</p> <p>Unit 3:</p> <p>Expressions and Equations</p> <p style="color: red; font-weight: bold;">(29 days)</p>	<p>7.EE.1</p> <p>7.EE.2</p> <p>7.EE.3</p>	<p>Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”</i></p> <p>Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.</p>	<ul style="list-style-type: none"> • Decomposition • Commutative Property • Associative Property • Identity Property • Inverse Property • Distributive Property • Variable expressions • Numerical expressions • Zero pairs • Using multiple methods to simplify expressions (i.e. decomposition, bar models, algebra tiles, number lines) • Combine like terms through addition and subtraction 	<p>Lesson 1-1: Variables and Expressions (2 days) Lesson 1-3: Evaluating Expressions (2 days)</p> <p>General resources for use throughout “Solving Equations” Syntax – Expressions, Equations, and Inequalities [L] Solving Equations with Two Column Proofs [L] Solving Equations with Two Column Proofs [CP]</p> <p>Lesson 2-5: Solving Equations by + or – (2 days) Lesson 2-6: Solving Equations by • or ÷ (2 days) One-Step Equations [L] One-Step Equations – Multiple Methods [L] Using Bar Models... Solving Equations [CP]</p> <p>Lesson 7-1: Solving Two-Step Equations (3 days) Solving Equations – Multiple Methods [L] Solving Two-Step Equations with Number Lines [L] Lesson 7-2: Solving Multi-Step Equations (2 days) Solving Equations – Multiple Methods [L]</p>

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<p>Essential Questions for this Unit: 1. How can students use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems?</p>				
Unit (Time)	Standard	Standard Description	Resources	
<p>(Dec-Feb)</p> <p>Unit 3: (Continued)</p> <p>Expressions and Equations</p> <p>(29 days)</p>	7.EE.4	<p>Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.</p> <p>a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. <i>For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i></p> <p>b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. <i>For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.</i></p>	<ul style="list-style-type: none"> Using multiple methods to solve equations and inequalities (i.e. decomposition, bar models, algebra tiles, number lines) Real life applications of expressions and equations 	<p>Lesson 7-3: Multi-Step Equations with Fractions and Decimals (2 days) Solving Rational Equations [L] Equations with Algebra Tiles [L]</p> <p>Lesson 2-8: Inequalities and Their Graphs (2 days) Inequalities Sort [L]</p> <p>Lesson 2-9: Solving One-Step Inequalities by Adding or Subtracting (2 days) Inequalities Sort [L]</p> <p>Lesson 2-10: Solving One-Step Inequalities by Multiplication or Division (2 days) Inequalities Sort [L]</p> <p>Lesson 7-6: Solving Two-Step Inequalities (2 days) Solving Inequalities [L]</p> <p>Review, Assessment, Reteach (6 days)</p>

Grade 7 Mathematics Curriculum Guide

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<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> 1. How can students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects? 2. How can students, in preparation for work on congruence and similarity in Grade 8, reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and gain familiarity with the relationships between angles formed by intersecting lines? 3. How can students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections? 4. How can students solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms? 				
Unit (Time)	Standard	Standard Description	Content	Resources
(Feb-March)	7.G.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	<ul style="list-style-type: none"> • Decomposition • Similar figures and scale drawings • Proportional ratios • Discovering different types of angles and applying them to real world examples • Angle relationships (i.e. vertical, supplementary, complementary, adjacent) • Solve equations using angle relationships • Pairs of angles: supplementary, complementary, vertical, adjacent 	Lesson: Congruent and Similar Polygons (2 days) Congruent and Similar Polygons [L] Lesson 6-3: Similar Figures and Scale Drawings (3 days) Lesson 9-2A: Drawing and Measuring Angles (2 days) Lesson 9-2: Angle Relationships (2 days)
Unit 4: Geometry	7.G.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.		Lesson 10-1: Area: Parallelograms (2 days) Lesson 10-2: Area: Triangles and Trapezoids (2 days) Lesson 9-6: Circles (1 day) Circle Vocabulary Using Paper Plates [L] Lesson 10-3: Area: Circles (1 day)
(30 days)	7.G.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.		Lesson 10-5A: Cross Sections of Space Figures (1 day) Lesson 10-5: Surface Area: Prisms (2 days) Lesson 10-6: Surface Area: Pyramids (2 days) Lesson 10-7: Volume: Prisms (2 days) Lesson 10-9: Volume: Pyramids (2 days)
				Review, Assessment, Reteach (6 days) Benchmark 2

Grade 7 Mathematics Curriculum Guide

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<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> How can students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects? How can students, in preparation for work on congruence and similarity in Grade 8, reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and gain familiarity with the relationships between angles formed by intersecting lines? How can students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections? How can students solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms? 				
Unit (Time)	Standard	Standard Description	Content	Resources
Unit 4: (Continued) Geometry (30 days)	7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.	<ul style="list-style-type: none"> Definitions of 2D and 3D geometric shapes and figures Formulas: perimeter, area, circumference, volume, surface area Surface area: cubes and right prisms (use nets to find the surface area) Volume: cubes and right prisms (the area of the base multiplied by the height of the figure) 	
	7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.		
	7.G.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.		

Grade 7 Mathematics Curriculum Guide

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<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> How can students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations? How can students begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences? 				
Unit (Time)	Standard	Standard Description	Content	Resources
<p>(March-April)</p> <p>Unit 5:</p> <p>Statistics and Probability</p> <p>(16 days)</p>	<p>7.SP.1</p> <p>7.SP.2</p>	<p>Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</p> <p>Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. <i>For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</i></p>	<ul style="list-style-type: none"> Representative samples Recognizing trends in data and making predictions Valid inferences Random sample Measures of center (mean, median, mode) Measures of variability (i.e. range, quartile) Develop probability models Independent and dependent events Understanding the concept of compound events and apply to real-life events Use of lists, tables, and tree diagrams 	<p>General resource for use throughout Unit 5: Probability [L]</p> <p>Lesson 3-3: Mean, Median, Mode (1 day) Lesson 12-2: Box-and-Whisker Plots (2 days) Lesson 6-4: Probability (1 day) Lesson 12-4: Counting Outcomes and Theoretical Probability (2 days) Lesson 12-5: Independent & Dependent Events (2 days) Lesson 12-7: Experimental Probability (2 days) Lesson 12-8: Random Samples and Surveys (2 days) Lesson 12-9: Reasoning Strategy (2 days)</p> <p>Review, Assessment, Reteach (3 days)</p>

Grade 7 Mathematics Curriculum Guide

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<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> How can students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations? How can students begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences? 				
Unit (Time)	Standard	Standard Description	Content	Resources
<p>(March-April)</p> <p>Unit 5: (Continued)</p> <p>Statistics and Probability</p> <p>(16 days)</p>	7.SP.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. <i>For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</i>		
	7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. <i>For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.</i>		
	7.SP.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.		
	7.SP.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. <i>For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.</i>		

Grade 7 Mathematics Curriculum Guide

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<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> 1. How can students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations? 2. How can students begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences? 				
Unit (Time)	Standard	Standard Description	Content	Resources
(March-April) Unit 5: (Continued) Statistics and Probability (16 days)	7.SP.7	<p>Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.</p> <p>a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. <i>For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.</i></p> <p>b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. <i>For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?</i></p>		
	7.SP.8	<p>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <p>a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.</p> <p>b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <p>c. Design and use a simulation to generate frequencies for compound events. <i>For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?</i></p>		

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<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> 1. How do the sides of a right triangle relate to each other? 2. How does the identity property of multiplication relate to finding equivalent expressions when multiplying and dividing same-base powers? 3. How do proportional relationships relate to the steepness of a graphed line? 				
Unit (Time)	Standard	Standard Description	Content	Resources
<p>(May-June)</p> <p>Unit 6:</p> <p>Exponents, Pythagorean Theorem, Slope, Slope-Intercept Form</p> <p>(24 days)</p>	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.</i>	<ul style="list-style-type: none"> • Decomposition • Properties of exponents • Square roots • Perfect squares • Proof of the Pythagorean Theorem • Multiply and divide powers with the same base using multiple methods (i.e. decomposition, rules) • Slope • Slope-intercept form 	<p>General resources for use throughout “Exponents”. Property of Exponents [CP]</p> <p>Lesson 4-2: Exponents (1 day) Lesson 4-7: Exponents and Multiplication (2 days) Lesson 4-8: Exponents and Division (2 days) Quotient of Powers [WS] Zero and Negative Exponents [L] Lesson 4-9: Scientific Notation (2 days)</p> <p>Lesson 11-1: Square Roots & Irrational #'s (2 days) Square and Square Roots [L] Real # Line Development & Venn Diagram [CP] Lesson 11-2: The Pythagorean Theorem (4 days) Pythagorean Theorem Activities [L] Pythagorean Theorem and its Converse [L] Pythagorean Theorem Worksheet [WS]</p>
	8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.		
	8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. <i>For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.</i>		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7		Quarter 4	Academic Year: 2013-2014
<p>Grade Level Mathematics Focus: In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.</p>			
<p>Essential Questions for this Unit:</p> <ol style="list-style-type: none"> 1. How do the sides of a right triangle relate to each other? 2. How does the identity property of multiplication relate to finding equivalent expressions when multiplying and dividing same-base powers? 3. How do proportional relationships relate to the steepness of a graphed line? 			
Unit (Time)	Standard	Standard Description	Resources
<p>(May-June)</p> <p>Unit 6: (Continued)</p> <p>Exponents, Pythagorean Theorem, Slope, Slope- Intercept Form</p> <p>(24 days)</p>	8.G.6	Explain a proof of the Pythagorean Theorem and its converse.	<p>Lesson 8-3: Slope and y-intercept (5 days)</p> <p>Discovering Slope [L] Slope of Lines [L] Family of Functions Sort [L] Graphing Family of Functions [L] Family of Functions - Graphing Calculator Lesson [L] Family of Functions Graphing Worksheet [WS] Family of Linear Functions [CP]</p> <p>Review, Assessment, Reteach (6 days)</p> <p>Benchmark 3</p>
	8.G.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	
	8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	
	8.EE.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .	