Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 1	**Academic Year:** 2014-2015

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 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?
2. 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?
3. 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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 1: (Aug – Oct) **Number Systems 1:** **Integers, Fractions, Four Operations & Properties** **(30 days)**	7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Understanding: •Syntax •Equivalency •Grouping Symbols •Tile Spacers •Number Lines – Vertical & Horizontal •Zero Pairs •Dividing by Zero is Undefined •$-\frac{1}{2}$ •$\frac{1}{2}$ •Complex Fractions	Course Intro/Expectations/Book Distribution (3 days) Syntax - Expressions, Equations, and Inequalities [GMR] Warm-Up Template (Word) [GMR] Lesson 1.1 Evaluating Algebraic Expressions (1 day) Simplifying Expressions & Solving Equations Using Two Column Proofs [CP] Simplifying Expressions & Solving Equations Using Two Column Proofs [L] Order of Operations [L] Lesson 1.3 Integers and Absolute Value (1 day) Real Number Line Development & Venn Diagram [CP] Lesson 1.4 Adding Integers (1 day) Integer Operations [CP] Adding Integers Worksheet [GMR] Lesson 1.5 Subtracting Integers (2 days) Lesson 1.6 Multiplying and Dividing Integers (2 days) Integers – Multiplying [L] Lesson 3.1 Properties of Rational Numbers (2 days) Distributive Property [CP] Simplifying Fractions [CP] Simplifying Fractions Activity [L]
	7.NS.1a	Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*		
	7.NS.1b	Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.		
	7.NS.1c	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.		
	7.NS.1d	Apply properties of operations as strategies to add and subtract rational numbers.		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 1	**Academic Year:** 2014-2015

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 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?
2. 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?
3. 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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 1: (Aug – Oct) (continued) **Number Systems 1:** **Integers, Fractions, Four Operations & Properties** **(30 days)**	7.NS.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.		Lesson 2.2 Comparing and Ordering Rational Numbers (1 day) Comparing And Ordering Fractions - Benchmark Fractions [CP] Comparing And Ordering Fractions - Benchmark Fractions [L] Fraction Bars [GMR] Lesson 2.4 Multiplying Rational Numbers-Fractions (1 day) Multiplying Fractions [CP] Lesson 2.3 Adding & Subtracting Rational Numbers-Fractions (1 day) Adding Fractions [CP] Lesson 2.6 Adding & Subtracting with unlike Denominator (2 days) LCM - Bubble Method Language [GMR] Least Common Multiple {CP] Adding Fractions [CP] Lesson 2.5 Dividing Rational Numbers-Fractions (1 day) Dividing Fractions [CP] Performance Task: TBD (Optional)
	7.NS.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.		
	7.NS.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real world contexts.		
	7.NS.2c	Apply properties of operations as strategies to multiply and divide rational numbers.		
	7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 1-2	**Academic Year:** 2014-2015

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 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?
2. 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?
3. 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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 2: **(Oct – Nov)** **Number Systems 2:** **Rationals, Irrationals, Decimals, Percents, and Exponents** **(30 days)**	7.NS.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	Understanding: •Bar Models •Equivalency •Partial sums, differences, products, & quotients	Lesson 2.1 Rational Numbers (2 days) Lesson 2.2 Comparing and Ordering Rational #'s-Decimals (1 day) Bar Model Percent Equivalency [GMR] Lesson 2.3 Adding & Subtracting Rational #'s -Decimals (2 days) Decimal Operations [CP] Lesson 2.4 Multiplying Rational #'s -Decimals (1 days) Lesson 2.5 Dividing Rational #'s -Decimals (1 days) Dividing Decimals [L] Lesson 6.1 Relating Fractions, Decimals, and Percents (2 days) Lesson 6.6 Commissions, Sales Tax, and Profit (2 days) Sale Price/Discount/Markup & % Word Problems [CP] Bar Models – Sales Price, Markup, and Discount Percent Problems [L] Lesson 6.5 Applying Percent of Increase and Decrease (2 days) Percent of Increase & Percent of Decrease [L] Lesson 6.7 Simple and Compound Interest (1 Day) Lesson 4.8 The Real Numbers (1 day) Performance Task: TBD (Optional) **Benchmark assessment 1 will include Units 1 & 2 and will be given after Unit 2.**
	7.NS.1a	Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*		
	7.NS.1b	Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.		
	7.NS.1c	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.		
	7.NS.1d	Apply properties of operations as strategies to add and subtract rational numbers.		
	7.NS.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.		

Grade Level/Course Title: Grade 7	**Quarter** 1-2	**Academic Year:** 2014-2015

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 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?
2. 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?
3. 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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 2: (Oct – Nov) (continued) **Number Systems 2:** **Rationals, Irrationals, Decimals, Percents, and Exponents** **(30 days)**	7.NS.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real world contexts.		Lesson 4.1 Exponents (1 day) Lesson 4.5 Scientific Notation (2 days) Lesson 4.2 Integer Exponents (1 day) Zero and Negative Exponents [L] Lesson 4.6 Squares & Square Roots (2 days) Square and Square Roots [L] Lesson 4.7 Estimating Square Roots (1 day) Lesson 4.3 Properties of Exponents/Products (2 days) Properties of Exponents [CP] Lesson 4.4 Multiplying and Dividing Monomials (2 days) Quotient of Powers Property [L]
	7.NS.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real world contexts.		
	7.NS.2c	Apply properties of operations as strategies to multiply and divide rational numbers.		
	7.NS.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.		
	7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.5a = 1.05a means that "increase by 5% " is the same as "multiply by 1.05."*		
	7.RP.3	Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 2	**Academic Year:** 2014-2015

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 use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 3: **(Dec – Jan)** **Properties, Expressions, Equations, Inequalities, & Real World Problems** **(30 days)**	7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Understanding: •Area Models •Area Models Using Generic Rectangles •Decomposition •Intuition •Flexibility •Two Column Proofs •Estimation •Inverse Operations •Algebra Tiles •When graphing: Solid points, solid lines, & shaded regions are solutions. Open points, dashed lines, & unshaded regions are not solutions.	Lesson 1.2 Writing Algebraic Expressions (1 day) Lesson 3.2 Simplifying Algebraic Expressions (1 days) Combining Like Terms [L] Lesson 1.7 Solving Equations by Adding or Subtracting (1 day) Lesson 1.8 Solving Equations by Multiplying or Dividing (1 day) Solving Equations – Bar Models [CP] Simplifying Expressions & Solving Equations Using Two Column Proofs [L] Lesson 2.7 One-Step Equations with Rational #'s (1 day) Lesson 1.9 Solving Two-Step Equations (1 day) Lesson 2.8 Two-Step Equations with Rational #'s (1 days) (teach clearing decimals and fractions) Lesson 3.3 Solving Multi-Step Equations (1 day) Lesson 3.4 Solving Equations with Variables on Both Sides (1 day) Lesson 3.5 Inequalities (1 day) Lesson 3.6 Solving Inequalities by Adding or Subtracting (1 day) (refer to p. 733) Lesson 3.7 Solving Inequalities by Multiplying or Dividing (1 day) Inequalities Sort [L] Lesson 3.8 Solving Two-Step Inequalities (1 day) Performance Task: TBD (Optional)
	7.EE.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*		
	7.EE.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 2	**Academic Year:** 2014-2015

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 use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 3: **(Dec – Jan)** **Properties, Expressions, Equations, Inequalities, & Real World Problems** **(30 days)**	7.EE.4a	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. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*		Lesson 7.1 The coordinate Plane Review Coordinate Plane, Plotting Points, and Vocab (1 day) (refer to p. 734) Lesson 7.2 Functions (1 day) Lesson 7.3 Graphing Linear Functions (2 days) Graphing Family of Functions [L] Linear Family of Functions – Graphing Calculator Lesson [GMR] Family of Functions Graphing Worksheet [GMR] Lesson 7.6 Rate of Change and Slope (2 days) (Teach Standard Form) Lesson 7.7 Finding Slope of a Line (2 days) (slope activity p. 333) Slope of Lines [L]Lesson 6.5 Slope-Intercept Form (2 days) (side-by-side comparison Standard Form & Slope-Intercept From) Slope-Intercept Sort [L] Lesson 7.8 Interpreting Graphs (1day) Lesson 7.9 Direct Variation (1 day) Lesson 7.4 Graphing Quadratic Functions (1 day) Graphing Family of Functions [L] Quadratic Lesson 7.5 Cubic Functions (1 day) Graphing Family of Functions [L] Cubic Performance Task: TBD (Optional)
	7.EE.4b	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. *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.*		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 3	**Academic Year:** 2014-2015

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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 4: **(Jan – Mar)** **Ratios & Proportions** **(23 days)**	7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour.*	Understanding: •Unit Rates •Complex Fractions •Equivalency •Tables of Equivalent Ratios •Diagrams •Constant of Proportionality •Bar Models •Direct Translations Clearing Denominators •Clearing Decimals	Lesson 5.1 Ratios (1 day) Lesson 5.2 Rates and Unit Rates (1 day) Lesson 5.3 Proportions (3 days) (Teach clearing denominators) Rates, Ratios, and Proportions [CP] Proportions [L] Proportions and Graphing [L] Lesson 5.5 Similar Figures (2 days) Lesson 5.6 Indirect Measurement (1 day) Performance Task: TBD (Optional) **Benchmark assessment 2 includes Unit 3 and 4 and will be given after Unit 4.**
	7.RP.2	Recognize and represent proportional relationships between quantities.		
	7.RP.2a	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.		
	7.RP.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.		
	7.RP.2c	Represent proportional relationships by equations. *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.*		
	7.RP.2d	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.		
	7.RP.3	Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 4	**Academic Year:** 2014-2015

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 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? I
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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 5: **(Mar – Apr)** **Geometry:** **(25 days)**	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.	Understanding: •Ruler •Protractor •Syntax •Students Identify, Write, and Use Correct Formulas to Solve Problems •Include Units When Working With Formulas	Lesson 8.1 Points, Lines, Planes and Angles (1 day) Lesson 8.2 Geometric Relationships (1 day) Lesson 8.3 Angles Relationships (1 day) Geometry Investigations [L] Lesson 5.7 Scale Drawings & Scale Models (2 days) Lesson 9.3 Circles (1 day) Lesson 9.4 Circumference & Area (1 day) Circle Vocabulary Using Paper Plates [GMR] Circle Vocabulary [CP] Area of a Circle [CP] Discovering Pi [L] Lesson 9.1 Perimeter & Area of Parallelograms (1 day) Lesson 9.2 Perimeter & Area of Triangles & Trapezoids (1 day) Lesson 10.4 Surface Areas of Prisms & Cylinders (2 days) Surface Area of Prisms, Cylinders, and Spheres [CP] Lesson 10.2 Volumes of Prisms & Cylinders (1 days) (focus on prisms) Lesson 10.3 Volume of Pyramids and Cones (1 days) Volumes of Prisms, Cylinders, and Cones [CP] Performance Task: TBD (Optional)
	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.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.		
	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.		
	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.		
	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 prisms.		

Grade Level/Course Title: Grade 7	**Quarter** 4	**Academic Year:** 2014-2015

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 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)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 6: **(Apr – June)** **Statistics & Probability** **(27 days)** *Standards continued on next page	7.SP.1	Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.	Understanding: •Dot Plots •Mean Absolute Deviation	Lesson 11.1 Line Plots and Stem-and-Leaf plots (day) Lesson 11.2 Mean, Median, Mode & Range (1 day) Lesson 11.3 Box-and-Whisker Plots (1 day) Lesson 11.4 Scatter Plots (1 day) Standard Deviation and Variance [CP] Comparing Data Displays [L] Lesson 11.5 Probability (1 day) Probability [L] Lesson 11.6 Experimental Probability (1 day) Lesson 11.7 Theoretical Probability (3 days) Lesson 11.8 Independent & Dependent Events (2 days) Probability [L] Performance Task: TBD (Optional) **Benchmark assessment 3 will include Units 5 & 6 and will be given after Unit 6.**
	7.SP.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *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.*		
	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. *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.*		

Grade 7 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 7	**Quarter** 4	**Academic Year:** 2014-2015

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 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)	CCSS	Standard Description
Unit 6: **(Apr – May)** **Statistics & Probability** **(27 days)**	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. *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.*
	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. *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.*
	7.SP.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a) Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *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.* b) Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *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?*
	7.SP.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 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. 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. c) Design and use a simulation to generate frequencies for compound events. *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?*