Grade 8 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 8	**Quarter** 1	**Academic Year:** 2014-2015

Grade Level Mathematics Focus:
In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

Essential Questions for this Unit:
1. What are the types of numbers in the real number system and where are they located on a number line?
2. What is the mathematical definition of an irrational number and how can you approximate them by using rational numbers?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 1: **(Aug – Sept)** **The Number System** **Real Numbers, Exponents, and Roots** **(25 days)**	8.NS.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	Understanding: • Syntax • Equivalency • Number Line • Exponent Properties • Powers of Ten • Estimation • Inequality	Course Intro/ Expectations (5 days) Syntax - Expressions, Equations, and Inequalities [GMR] Lesson 2.1 Use Integers and Rational #'s (1 day) Lesson 2.2 All Real Numbers (2 days) Real Number Line Development & Venn Diagram [CP] Lesson 2.7 Find Square Roots & Compare Real Numbers (2 day) Estimate Square Roots –See Gr. 7 Lesson 4.7 pg. 196 (2 days) Square & Square Roots [L] Lesson 8.1 Apply Exponent Properties Involving Products (1 day) Lesson 8.2 Apply Exponent Properties Involving Quotients (1 day) Quotient of Powers [L] Lesson 8.3 Define and Use Zero and Negative Exponents (1 day) Lesson 9.2 Multiply Polynomials-Only Monomials (1 day) Lesson 9.4 Divide Polynomials-Only Monomials (1 day) Scientific Notation- See Gr. 7 Lesson 4.5 pg. 184 (2 days) Compute with Scientific Notation- See Gr. 7 Lab pg. 189 (1 day) **Assessment and Review**
	8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*		
	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.		
	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 √2 is irrational.		

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Essential Questions for this Unit:
1. What are the types of numbers in the real number system and where are they located on a number line?
2. What is the mathematical definition of an irrational number and how can you approximate them by using rational numbers?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 1: **(Aug – Sept)** **(continued)** **The Number System** **Real Numbers, Exponents, and Roots** **(25 days)**	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. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger.*	Understanding: • Syntax • Equivalency • Number Line • Exponent Properties • Powers of Ten • Estimation • Inequality	Material –TBD
	8.EE.4	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. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger.*		

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Essential Questions for this Unit:

1. How can students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation?
2. How can students develop understanding of and use linear equations, systems of linear equations, linear functions, and the slope of a line to analyze situations and solve problems?
3. How can students demonstrate their understanding that slope is the graphic representation of a rate of change, and specifically equations for proportions ($y/x = m$ or $y = mx + b$) are special linear equations where the constant of proportionality is the slope, and the line is graphed through the origin?
4. How can students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 2: **(Sept – Nov)** **Expressions and Equations** **Linear Equations in One and Two Variables** **(36 days)**	8.EE.7 8.EE.7a 8.EE.7b 8.EE.5	Solve linear equations in one variable. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	Understanding: • Syntax • Equivalence • Bar Models • Algebra Tiles • Decomposition • Zero Pairs • Variables	Lesson 3.1 Solve One-Step Equations (1 day) Solve Equations – Multiple Methods [L] Lesson 3.2 Solve Two-Step Equations (2 days) Write Two-Step Equations-TBD Lesson 3.3 Solve Multi-Step Equations (1 day) Inquiry Lab: Algebra Tiles –TBD Lesson 3.4 Solve Equations with Variables on Both Sides (2 days) Investigating Algebra Activity: p.145 Solve Equations with Variables on Both Sides [L] Review Distributive Property – Page 5 of Online lesson above – Add problems to teach flexabilty (1 day) Solve Multi-Step Equations –TBD (1 day) **Assessment and Review**

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Grade Level Mathematics Focus:
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Essential Questions for this Unit:

1. How can students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation?
2. How can students develop understanding of and use linear equations, systems of linear equations, linear functions, and the slope of a line to analyze situations and solve problems?
3. How can students demonstrate their understanding that slope is the graphic representation of a rate of change, and specifically equations for proportions ($y/x = m$ or $y = mx + b$) are special linear equations where the constant of proportionality is the slope, and the line is graphed through the origin?
4. How can students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 2: **(Sept – Nov)** **(continued)** **Expressions & Equations** **Linear Equations in One and Two Variables** **(36 days)**	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.	Understanding: • Syntax • Coordinate Plane • Ordered Pairs • Slope • Rate of Change • Family of Functions • Three Forms of a Line	Use the following lessons throughout this portion of Unit 2: Family of Functions – Graphing Calculator Lesson [GMR] Graphing Family of Functions [L] Families of Functions Sort [L] Family of Functions Graphing Worksheet [GMR] Functions — Families of Functions [CP] Family of Linear Equations [MA] Three Forms of an Equation of a Line [L] Lesson 5.3 Graphing Linear Equations and Functions (2 days) Graphing Calculator Activity p. 272 Lesson 5.4 Graph Using Intercepts (2 days) Lesson 5.5 Find Slope & Rate of Change (2 days) Investigating Algebra Activity: Slope p. 281 Lesson 5.6 Slope-Intercept Form (2 days) Lesson 5.7 Recognize Direct Variation (1 day) **Assessment and Review**
	8.EE.8 8.EE.8a 8.EE.8b 8.EE.8c	Analyze and solve pairs of simultaneous linear equations. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.* Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*		

Grade 8 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 8	**Quarter** 1-2	**Academic Year:** 2014-2015

Grade Level Mathematics Focus:
In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

Essential Questions for this Unit:
1. How can students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation?
2. How can students develop understanding of and use linear equations, systems of linear equations, linear functions, and the slope of a line to analyze situations and solve problems?
3. How can students demonstrate their understanding that slope is the graphic representation of a rate of change, and specifically equations for proportions ($y/x = m$ or $y = mx + b$) are special linear equations where the constant of proportionality is the slope, and the line is graphed through the origin?
4. How can students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 2: (Sept – Nov) (continued) **Expressions & Equations** **Linear Equations in One and Two Variables** **(36 days)**	8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*	Understanding: • Syntax • Three Forms of a Line • Zero Pairs • Point of Intersection • The Three Possible Solutions • Flexibility When Solving Systems	6.1-6.4 Write Linear Equations (5 days) Lesson 6.1 Write Linear Equations in Slope-Intercept Form Investigating Algebra Activity: p. 321 Lesson 6.2 Use Linear Equation in Slope-Intercept Form Lesson 6.3 Write Linear Equations in Point-Slope Form Lesson 6.4 Write Linear Equations in Standard Form Lesson 7.1 Solve Systems of Equations by Graphing (1 days) Solving Systems of Equations [CP] Investigating Algebra Activity: p. 375 7.2-7.5 Solve Systems of Equations (4 days) Lesson 7.2 Solve Linear Systems by Substitution Lesson 7.3 Solve Linear Systems by Adding or Subtracting Investigating Algebra Activity: p. 390 Lesson 7.4 Solve Linear Systems by Multiplying First Lesson 7.5 Solve special Types of Linear Systems **Assessment and Review** **Benchmark Assessment 1 will include Units 1 & 2 and will be given after Unit 2.**
	8.F.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*		
	8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.		

Grade 8 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 8	**Quarter** 2	**Academic Year:** 2014-2015

Grade Level Mathematics Focus:
In Grade 8, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

Essential Questions for this Unit:
1. How can students grasp the concept of a function as a rule that assigns to each input exactly one output?
2. How can students understand that functions describe situations where one quantity determines another?
3. How can students understand and learn to translate among representations and partial representations of functions (noting that tabular and graphical representations may be partial representations), and describe how aspects of the function are reflected in the different representations?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 3: **(Nov – Jan)** **Functions** **Linear, Non-Linear, and Quadratic** **(22 days)**	8.F.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	Understanding: • Multiple Representations • Tables • Graphs • Constraints • Input • Output • Change • Function Notation	Lesson 5.1 Represent Functions as Ordered Pairs and Rules (2 days) Interpreting Data in Graphs [L] Lesson 5.2 Represent Functions as Graphs (1 Day) Lesson 5.3 Graphing Linear Equations and Functions (2 days) Interpreting Graphs - Real Life Functions [L] Lesson 10.1 Graph $y = ax^2 + c$ Quadratics - Matching Game [L] Functions — Families of Functions [CP] Linear, Quadratic and Cubic Family of Functions (2 days) Family of Functions [CP] **Assessment and Review**
	8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*		
	8.F.3	Interpret the equation *y = mx + b* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function A = s^2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*		
	8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.		
	8.F.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.		

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Grade Level/Course Title: Grade 8	**Quarter** 2	**Academic Year:** 2014-2015

Grade Level Mathematics Focus:
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Essential Questions for this Unit:

1. How can students develop understanding of and use a linear equation to describe the association between two quantities in bivariate data (such as arm span vs. height for students in a classroom)? At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question and to interpret components of the relationship (such as slope and *y*-intercept) in terms of the situation.

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested # of Days)
Unit 4: **(Jan – Feb)** **Probability and Statistics** **Bivariate Data, Descriptive Statistics** **(19 days)**	8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	Understanding: • Tables • Measures of Center • Interquartile Range • Mean Absolute Deviation • Equivalence • Number Line • Bar Graphs • Box-n-Whisker • Clusters	Scatter Plots (1 day) Investigating Algebra Activity: p. 256 Lines of Best Fit (1 day) Correlation and Line of Best Fit [L] Two-Way Tables –TBD (2 days) Descriptive Statistics –TBD (2 days) Interpreting Graphs [L] Measures of Variation –TBD (2 days) Analyze Data Distributions –TBD (1 day) Assessment and Review **Benchmark Assessment 2 will include Units 3 & 4 and will be given after Unit 4.**
	8.SP.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.		
	8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*		
	8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*		

Grade Level/Course Title: Grade 8	**Quarter** 3	**Academic Year:** 2014-2015

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Essential Questions for this Unit:

1. How can students show that the sum of the angles in a triangle is the angle formed by a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines?
2. How can students understand the statement of the Pythagorean Theorem and its converse, and explain why the Pythagorean Theorem holds, for example, by decomposing a square in two different ways?
3. How can students apply the Pythagorean Theorem to find distances between points on the coordinate plane, find lengths, and analyze polygons?
4. How can students complete their understanding and work on volume by solving problems involving cones, cylinders, and spheres?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 5: **(Feb – April)** **Geometry** **Part I** **(40 days)**	8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*	Understanding: • Congruence • Pythagorean Theorem • Triangles • Distance on a Coordinate Plane • Polygons • Parallel Lines • Angles • Volume of Cylinders, Cones, and Spheres	See Grade 7 - Chapter 8 – Foundations of Geometry & Chapter 10 – Three-Dimensional Geometry Lines –TBD (1 day) Geometric Proof –TBD (1 day) Triangles –TBD (1 day) Classifying Triangles [CP] Angles of Triangles –TBD (1 day) Polygons and Angles –TBD (2 days) Lesson 8.5 Apply the Pythagorean Theorem & It's Converse (3 days) Pythagorean Theorem Activity [L] Pythagorean Theorem and Its Converse [L] Pythagorean Theorem Worksheet [GMR] Distance on the Coordinate Plane (2 days) Circle Vocabulary [CP] Area of a Circle [CP] Volume of Cylinders –TBD (2 days) Volume of Prisms, Cylinders, and Cones [CP] Cylinder — Nets, Surface Area, and Volume [MA] Volume of Cones –TBD (2 days) Volume of Spheres (–TBD 1 day) Surface Area of Cylinders –TBD (2 days) Surface Area of Prisms, Cylinders, and Cones [CP] Surface Area of Cones –TBD (2 days) Changes in Dimension –TBD (1 days) **Assessment and Review**
	8.G.6	Explain a proof of the Pythagorean Theorem and its converse.		
	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.G.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.		
	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.		

Grade 8 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 8	**Quarter** 4	**Academic Year:** 2014-2015

Grade Level Mathematics Focus:
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Essential Questions for this Unit:

1. How can students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 6: **(Apr – June)** **Geometry** **Part II** **(38 days)**	8.G.1 8.G.1a 8.G.1b 8.G.1c	Verify experimentally the properties of rotations, reflections, and translations: Lines are taken to lines, and line segments to line segments of the same length. Angles are taken to angles of the same measure. Parallel lines are taken to parallel lines.	Understanding: • Transformation • Congruence • Similarity • Slope and Similar Triangles • Area • Translations • Rotations • Reflections • Line of Reflection • Dilation	Translations –TBD (1 day) National Library of Virtual Manipulatives: Turtle Geometry Investigate Congruent Triangles –TBD (1 day) See Grade 7 - Chapter 8 – Foundations of Geometry Reflections (use mirrors) –TBD (1 day) Rotations –TBD (1 day) Rotational Symmetry –TBD (1 day) Dilations –TBD (1 day) **Assessment and Review**
	8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.		
	8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.		
	8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.		

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Grade Level/Course Title: Grade 8	**Quarter** 4	**Academic Year:** 2014-2015

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Essential Questions for this Unit:

1. How can students use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems?

Unit (Time)	CCSS	Standard Description	Content	Resources (Suggested Number of Days)
Unit 6: **(May – June)** **(continued)** **Geometry** **Part II** **(38 days)**	8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*.	Understanding: • Transformation • Congruence • Similarity • Slope and Similar Triangles • Area • Translations • Rotations • Reflections • Line of Reflection • Dilation	Congruence and Transformations –TBD (1 day) Investigate Congruent Triangles (use Patty paper) –TBD (1 day) Congruence –TBD (2 days) Geometry Software –TBD (1 day) Similar Triangles –TBD (1 day) Similarity and Transformations –TBD (1 day) Properties of Similar Polygons –TBD (2 days) Similar Triangles and Indirect Measurement –TBD (1 day) Lab with Indirect Measurement Using Shadows –TBD (1 day) Slope and Similar Triangles –TBD (2 days) Area and Perimeter of Similar Figures –TBD (2 days) **Assessment and Review** **Benchmark Assessment 3 will include all Geometry content Unit 5 and Unit 6.** **Course Wrap Up/ End of Year**
	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.		