8th Grade Curriculum Map DRAFT
2019-2020

Expressions & Equations (30%) *Functions (25%)* *Geometry (27%)* *Statistics & Probability and The Number System (18%)*

Test Item Specifications

43 days	First Quarter		
	Units	**Standards & Objectives**	**Resources & Essential Questions**
5 days	**Building Community & Mathematical Practices (August 12-16)** **Diagnostic 1: August**		
19 Days	**Unit 1:Rigid Transformations and Congruence**		
6 Days	**Section 1: Rigid Transformations** 1. Moving in the Plane 2. Naming the Moves 3. Grid Moves 4. Making the Moves 5. Coordinate Moves 6. Describing Transformations	8.G.1.1 • Students need multiple opportunities to explore the transformation of figures • Students can verify the properties of rotations, reflections, and translations • Students can verify that lines are taken to lines, and line segments to line segments of the same length after a transformation has occurred. • Students can verify that angles are taken to angles of the same measure after a transformation has occurred 8.G.1.3 • Students can compare and contrast translations, reflections, rotations, and dilations. • Students can recognize the relationship of the transformation (reflection, rotation, dilation). 8.G.1.5 • Students can use informal arguments to justify the sum of interior and exterior angles	**EQ:** ***How does sliding, turning, or flipping a figure affect its shape?*** ***How do you describe translations, reflections, and rotations and their effects on a figure?*** ***How can you perform and describe sequences of transformations on figures?*** **Vocabulary:** Transformation, Reflection, Translation, Rotation, Dilation
4 Days	**Section 2: Properties of Rigid Transformations** 7. No Bending or Stretching 8. Rotation Patterns 9. Moves in Parallel 10. Composing Figures		

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3 Days	**Section 3: Congruence** **11. What is the Same?** **12. Congruent Polygons** **13. Congruence**	**of a triangle.** • **Students can use the facts established to argument the angles created by parallel lines cut by a transversal.** • **Students can identify congruent angles on a transversal.** • **Students can use deductive reasoning to find the measure of the missing angle.** • **Students can use informal arguments to establish facts about the angle-angle criterion of similar triangles.** **8.G.1.2** • **Students can understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of transformations.** • **Students can describe a sequence of two given congruent figures and the congruence between them.** • **Students can recognize the symbol for congruency.** • **Students can write statements of congruency.** • **Students can determine if two figures are congruent after a series of transformations.**	**EQ:** ***How can you use angle relationships in triangles?*** ***How can you use angle relationships to determine whether two triangles are similar?*** ***How can you find missing angle measures when parallel lines are intersected by a transversal?*** **Vocabulary:** Interior/Exterior Angles, Transversal, Parallel Lines, Congruent
6 Days	**Section 4: Angles in a Triangle** **14. Alternate Interior Angles** **15. Adding the Angles in a Triangle** **16. Parallel Lines and the Angles in a Triangle** **Section 5: Let's Put it to Work** **17. Rotate and Tessellate**		
15 Days	**Unit 8-2: Dilations, Similarity, and Introducing Slope**		
5 Days	**Section 1: Dilations** **1. Projecting and Scaling** **2. Circular Grid** **3. Dilations with no Grid**	**8.G.1.3** • **Students can compare and contrast translations, reflections, rotations, and dilations.**	**EQ:** ***How do you perform enlargements and reductions?***

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	4. Dilations on a Square Grid **5. More Dilations**	• **Students can recognize the relationship of the transformation (reflection, rotation, dilation).** **8.G.1.2** • **Students can understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of transformations.** • **Students can describe a sequence of two given congruent figures and the congruence between them.** • **Students can recognize the symbol for congruency.** • **Students can write statements of congruency.** • **Students can determine if two figures are congruent after a series of transformations.** **8.G.1.4** • **Students can 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 (up to no more than two transformation).** • **Students can describe the sequence that exhibits the similarity between them.** • **Students can understand that similar figures are produced from dilations.** • **Students can describe the sequence that would produce similar figures.** **8.EE.2.6** • **Students can understand that right triangles are similar when there is a constant rate of proportion between them.**	***How do you describe and apply the properties of dilations?*** ***How can you recognize and draw similar figures?*** **Vocabulary:** Right Triangle, Similar, Non-Vertical Line, Constant Rate of Proportion, Slope, Coordinate Grid, Scale Factor
4 Days	**<u>Section 2: Similarity</u>** **6. Similarity** **7. Similar Polygons** **8. Similar Triangles** **9. Side Length Quotients in Similar Triangles**		
6 Days	**<u>Section 3: Slope</u>** **10. Meet Slope** **11. Writing Equations for Lines** **12. Using Equations for Line** **<u>Section 4: Let's Put it to Work</u>** **13. The Shadow Knows**		

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		• Students can compare the sides of a right triangle to understand the slope is the same between any two points in a similar triangle. • Students can use similar right triangles to explain why the slope is the same between two distinct points on a non-vertical line. • Students can apply the equations of and to properties of similar right triangles on a coordinate grid.	
43 days	**Second Quarter**		
	Units 3 - 5		
16 Days	**Unit 3: Linear Relationships**		**3-act tasks:** **The Walk Out**
4 Days	**Section 1: Proportional Relationships** 1. Understanding Proportional Relationships 2. Graphs of Proportional Relationships 3. Representing Proportional Relationships 4. Comparing Proportional Relationships	8.EE.2.5 • Students can identify unit rate as slope. • Students can graph proportional relationships • Students can make comparisons of proportional relationships through graphs, tables, and equations. 8.EE.2.6 • Students can understand that right triangles are similar when there is a constant rate of proportion between them. • Students can compare the sides of a right triangle to understand the slope is the same between any two points in a similar triangle. • Students can use similar right triangles to explain why the slope is the same between two distinct points on a non-vertical line.	**EQ:** ***How can you use algebraic properties to solve one-variable linear equations?*** ***How can you recognize and interpret linear equations that have no solution or infinitely many solutions?*** ***How can you apply linear equations to real-world situations?*** ***How can you explain why the slope of a line is***
4 Days	**Section 2: Representing Linear Relationships** 5. Introduction to Linear Relationships 6. More Linear Relationships 7. Representations of Linear Relationships 8. Translating y=mx+b		

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		• Students can apply the equations of and to properties of similar right triangles on a coordinate grid. 8.G.1.1 • Students can verify that lines are taken to lines, and line segments to line segments of the same length after a transformation has occurred. 8.EE.3.8a • Students can understand that solutions correspond to a graph and can relate the solution to the context of the problem. • Students can identify and describe one solution, no solution, or infinitely many solutions to a system of linear equations by substitution, elimination, and graphically. • Students can solve a system of linear equations and show that two equations can be represented differently (table, equation, graph). • Students can solve real world problems leading to two systems of linear equations.	***constant?*** ***How can you write the equation of a proportional relationship?*** ***How can you interpret and graph proportional relationships?*** ***How can you compare proportional relationships presented in different ways?*** ***How can you interpret the slope and y-intercept of a line?*** **Vocabulary:** Unit Rate, Slope,, Constant Rate of Proportion, Proportion, Proportional Relationship, Graphs, Tables, Equations, , Right Triangles,Similar Triangles, Coordinate Grid, Linear Equation, Substitution, Elimination, Graph, System of Linear Equations,
3 Days	**Section 3: Finding Slopes** **9. Slopes Don't Have to be Positive** **10. Calculating Slope** **11. Equations and All Kinds of Lines**		
2 Days	**Section 4: Linear Equations** **12. Solutions to Linear Equations** **13. More Solutions to Linear Equations**		
3 Days	**Section 5: Let's Put it to Work** **14. Using Linear Relations to Solve Problems**		
18 Days	**Unit 4: Linear Equations and Linear Systems**		**3-Act Tasks:** Ditch Diggers Playing Catch Up
1 Day	**Section 1:Puzzle Problems**	8.EE.3.7 • Students can use properties of real numbers	***EQ:*** ***How can you interpret the***

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	1. Number Puzzles	to solve linear equations with rational numbers, apply the distributive property, and collect like terms. ● Students can solve multi-step linear equations with variables on both sides of the equal and recognize that the solution is true by substituting the solution back into the equation. ● Students can identify linear equations that have one solution, infinitely many solutions, or no solutions. 8.EE.3.8 ● Students can understand that solutions correspond to a graph and can relate the solution to the context of the problem. ● Students can identify and describe one solution, no solution, or infinitely many solutions to a system of linear equations by substitution, elimination, and graphically. ● Students can solve a system of linear equations and show that two equations can be represented differently (table, equation, graph). ● Students can solve real world problems leading to two systems of linear equations	***graphical representation of two linear equations?*** ***How can you solve a system of two linear equations by graphing?*** ***How can you use substitution to solve a system of two linear equations?*** ***How can you use elimination to solve a system of two linear equations?*** ***How can you recognize and interpret systems of two linear equations that have no solutions or infinitely many solutions?*** ***How can you use systems of two linear equations to solve real-world problems?*** **Vocabulary:** Real Numbers, Linear Equations, Distributive Property
8 Days	**Section 2: Linear Equations in One Variable** 2. Keeping the Equation Balanced 3. Balanced Moves 4. More Balanced Moves 5. Solving Any Linear Equations 6. Strategic Solving 7. All, some, or No Solutions 8. How Many Solutions 9. When Are They the Same?		
6 Days	**Section 3: Systems of Linear Equations** 10. On or Off the Line 11. On Both of the Lines 12. Systems of Equations 13. Solving Systems of Equations 14. Solving More Systems 15. Writing Systems of Equations		
3 Days	**Section 4: Let's Put it to Work** 16. Solving Problems with Systems of Equations		
24 Days	**Unit 5: Functions and Volume**		

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2 Days	**Section 1: Inputs and Outputs** 1. Inputs and Outputs 2. Introduction to Functions	8.F.1.1 • Students can understand the definition of a function. • Students can identify a function using a graph. 8.F.1.3 • Students can interpret the equation y = mx + b as a linear function. 8.F.2.5 • Students can describe whether a functional relationship between two quantities increases or decrease by analyzing a graph. • Students can describe whether a functional relationship between two quantities is linear or nonlinear. • Students can sketch a graph of a function that relates to a real-world situation. 8.F.1.2 • Students can compare two linear functions from multiple representations. 8.F.2.4 • Students can construct a function to model a linear relationship between two quantities. • Students can determine the rate of change and initial value of a function using a table or a graph. • Students can interpret the rate of change and initial value of a situation using a graph or table of values. 8.G.3.9 • Students will know the formula for the volume of cones. • Students will know the formula for the volume of a cylinder. • Students will know the formula for the volume of a sphere.	**3-Act Tasks:** Candle Burn Coca Cola Pool I Pour, You Choose Meatballs! Joulies! Buckets of Popcorn **EQ:** ***How can you visually display a relationship between two variables?*** ***How can you construct a function to model a linear relationship?*** ***How can you understand and analyze a function?*** ***How can you sketch and analyze a graph that exhibits the qualitative features of a function?*** ***How can I develop and use the formula for the volume for a cylinder?*** ***How can I develop and use the formula for the volume of a cone?*** ***How can you find the volume of a sphere?***
5 Days	**Section 2: Representing and Interpreting Functions** 3. Equations and Functions 4. Tables, Equations, and Graphs of Functions 5. More Functions 6. Even More Graphs of Functions 7. Connecting Representations of Functions		
3 Days	**Section 3: Linear Functions and Rate of Change** 8. Linear Functions 9. Linear Models 10. Piecewise Linear Functions		
6 Days	**Section 4: Cylinders and Cones** 11. Filling Containers 12. How Much Will Fit? 13. The Volume of a Cylinder 14. Finding Cylinder Dimensions 15. The Volume of a Cone 16. Finding Cone Dimensions		

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5 Days	**Section 5: Dimensions and Shape** **17. Scaling One Dimension** **18. Scaling Two Dimensions** **19. Estimating a Hemisphere** **20. The Volume of a Sphere** **21. Cylinders, Cones, and Spheres**	• **Students can use the formulas for the volumes of cones, cylinders, and spheres to solve real-world problems and mathematical problems.**	***How can you use volume formulas to solve problems involving cylinders, cones, and spheres?*** **Vocabulary:** Function, Linear Function (y=mx+b), Linear, Non-Linear, Rate of Change, Initial Value, Table, Table of Values, Graph, Cone, Cylinder, Sphere
3 Days	**Section 6: Let's Put It to Work** **22. Volume as a Function of...**		
Winter Break: December 23 - January 3, 2020-- after section 1 of Unit 5, pick back up in January Unit 5 Professional Day January 6, 2020			
46 days	**Third Quarter**		
	Units 5 - 7		
13 Days	**Unit 6: Associations in Data**		
2 Days	**Section 1: Does This Predict That?** **1. Organizing Data** **2. Plotting Data**	**8.SP.1.1** • **Students can construct scatter plots for bivariate measurement data.** • **Students can interpret scatter plots for bivariate measurement data.** • **Students can describe patterns of association between two quantities.** **8.SP.1.2** • **Students can informally construct a line of best fit for a scatterplot.** • **Students can informally assess a line of best fit by judging the closeness of the data**	**EQ:** ***How can you display and analyze data with two variables?*** ***How can you use trend lines to describe a linear relationship between two variables?*** ***How can you use scatter plots and trend lines to***

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6 Days	**Section 2: Associations in Numerical Data** 3. What a Point in a Scatter Plot Means 4. Fitting a Line to Data 5. Describing Trends in Scatter Plots 6. The Slope of a Fitted Line 7. Observing More Patterns in Scatter Plots 8. Analyzing Bivariate Data	points to the line. 8.SP.1.3 • Students can use the equation of a linear model to solve problems. • Students can interpret the slope and intercepts of linear model of a scatter plot. 8.SP.1.4 • Students can determine and describe the relative frequency associated between the two variables in a two-way table. • Students can construct and interpret two-way tables to summarize data on two categorical variables collected from the same subjects.	***describe and interpret data?*** ***How can you interpret data by constructing frequency tables?*** ***How can you construct two-way relative frequency tables?*** ***How can you interpret and analyze data using two-way relative frequency tables?*** **Vocabulary:** Scatter Plots, Bivariate Measurement Data, Line of Best Fit, Slope, y-intercept, Relative Frequency
2 Days	**Section 3: Associations in Categorical Data** 9. Looking for Associations 10. Using Data Displays to Find Associations		
3 Days	**Section 4: Let's Put It to Work** 11. Gone in 30 Seconds		
18 Days	**Unit 7: Exponents and Scientific Notation**		
1 Day	**Section 1: Exponent Review** 1. Exponent Review	8.EE.1.1 • Students can know the properties of integer exponents. • Students can apply the properties of integer exponents to generate equivalent numerical expressions. 8.EE.1.3 • Students can use scientific notation to represent large and small quantities. • Students can compare quantities that are written in scientific notation.	**EQ:** ***How can you develop and use the properties of integer exponents?*** ***How can you efficiently express very large and very small numbers?*** ***How can you compute***
7 Days	**Section 2: Exponent Rules** 2. Multiplying Powers of Ten 3. Powers of Powers of 10 4. Dividing Powers of 10 5. Negative Exponents with Powers of 10 6. What About Other Bases? 7. Practice with Rational Bases		

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	8. Combining Bases	• **Students can convert from scientific notation to standard form, vice versa.** **8.EE.1.4** • **Students can perform the four operations of mathematics with numbers expressed in scientific notation and standard form.** • **Students can solve problems where both standard form and scientific notation are given.** • **Students can identify appropriate size of measurements.**	***with numbers written in scientific notation?*** **Vocabulary:** Scientific Notation, Standard Form
7 Days	**Section 3: Scientific Notation** **9. Describing Large and Small Numbers Using the Powers of 10** **10. Representing Large Numbers on the Number Line** **11. Representing Small Numbers on the Number Line** **12. Applications of Arithmetic with Powers of 10** **13. Definition of Scientific Notation** **14. Multiplying, Dividing, and Estimating with Scientific Notation** **15. Adding and Subtracting with Scientific Notation**		
3 Days	**Section 4: Let's Put it to Work** **16. Is a Smartphone Enough to go to the Moon?**		
4 days	**Standards Mastery:** **Last Day of Quarter March 12,** **March 13 (Professional Day)** *****pick back up Section 3 in 4th quarter**		
48 days	**Fourth Quarter**		
Days	**Unit 7 & 8; FSA Review**	**Standards & Objectives**	**Resources & Essential Questions**

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17 Days	Unit 8: Pythagorean Theorem and Irrational Numbers		3-Act Tasks: Let's Go to the Movies Tacos at the Beach
1 Day	**Section 1: The Size of Shapes** 1. The Areas of Squares and Their Side Lengths	8.NS.1.2 • Students can approximate and compare irrational numbers. • Students can estimate and locate irrational numbers on a number line. 8.EE.1.2 • Students can represent solutions for equations using square roots and cube roots. Students can know that square root of 2 is irrational. • Students can find values of perfect squares and perfect cube roots. 8.G.2.7 • Students can apply the Pythagorean Theorem in real-world problems to find the missing side length of a triangle • Students can apply the Pythagorean Theorem in mathematical problems in two and three dimensions. • Students can recognize and apply common Pythagorean triples 8.G.2.6 • Students can understand that right triangles are similar when there is a constant rate of proportion between them. • Students can compare the sides of a right triangle to understand the slope is the same between any two points in a similar triangle. • Students can use similar right triangles to explain why the slope is the same between two distinct points on a non-vertical line.	EQ: ***How can you determine if a number is rational?*** ***How can you evaluate square and cube roots?*** ***How can you order real numbers?*** ***How can you prove and use the Pythagorean Theorem?*** ***How can you prove and use the converse of the Pythagorean Theorem?*** ***How can you the Pythagorean Theorem to solve real-world problems involving right triangles?*** ***How can you use the Pythagorean Theorem to determine distance between two points on***
4 Days	**Section 2: Side Lengths and Areas of Squares** 2. Side Lengths 3. Rational and Irrational Numbers 4. Square Roots on the Number Line 5. Reasoning About Square Roots		
6 Days	**Section 3: The Pythagorean Theorem** 6. Finding Side Lengths of Triangles 7. A Proof of the Pythagorean Theorem 8. Finding Unknown Side Lengths 9. The Converse 10. Applications of the Pythagorean Theorem 11. Finding Distances in the Coordinate Plane		
2 Days	**Section 4: Side Lengths and Volumes of Cubes** 12. Edge Lengths and Volumes 13. Cube Roots		
4 Days	**Section 5: Decimal Representation of Rational and Irrational Numbers** 14. Decimal Representations of Rational		

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	Numbers **15. Infinite Decimal Expansions**	• **Students can apply the equations of and to properties of similar right triangles on a coordinate grid.** **8.NS.1.1** • **Students can convert a repeating decimal into a rational number.** • **Students can know the difference between rational and irrational numbers.** • **Students can understand that every number can be written as a decimal.**	***the coordinate plane?*** **Vocabulary:** Irrational Numbers, Rational Number, Square Roots, Cube Roots, Pythagorean Theorem, Constant Rate of Proportion, Right Triangle, Slope
	FSA Testing Window May 1-30		
19 days	**Remediation, Enrichment, Preview** **1) Remediation of content standards from current year.** **2) Enrichment of content standards from current year.** **3) Preview of Unit 1 from next course.**		