Fulton County Schools 2022-2023

GSE Grade 8 Curriculum Map					
Semester 1					
Unit 1		Unit 2		Unit 3	
Transformations, Congruence and Similarity		**Exponents and Equations**		**Geometric Applications of Exponents**	
25 days		**35 days**		**21 days**	
Grade Level Standard	**Direct Prerequisite Standard**	**Grade Level Standard**	**Direct Prerequisite Standard**	**Grade Level Standard**	**Direct Prerequisite Standard**
MGSE8.G.1	MGSE7.G.2 MGSE7.G.5	**MGSE8.EE1**		**MGSE8.G.6**	**MGSE7.G.6**
MGSE8.G.2		**MGSE8.EE.2** **(evaluating)**	MGSE7.NS.3	**MGSE8.G.7**	
MGSE8.G.3		**MGSE8.EE.3**		**MGSE8.G.8**	
MGSE8.G.4		**MGSE8.EE.4**	**MGSE7.EE.3**	**MGSE8.G.9**	
MGSE8.G.5		**MGSE8.EE.7** **MGSE8.EE.7a** **MGSE8.EE.7b**	**MGSE7.EE.4** **MGSE7.EE.1**	**MGSE8.EE.2** **(equations)**	
		MGSE8.NS.1	**MGSE7.NS.2**		
		MGSE8.NS.2			

These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units.
All units include the Mathematical Practices and indicate skills to maintain.
Prioritized standards in RED
Prerequisite standards in BLUE
Prerequisite prioritized standards in BOLD BLUE
Prerequisite standards already addressed are denoted with *
Underlined standards link to STATE IMPLEMENTATION VIDEOS

Note: Mathematical standards are interwoven and should be addressed throughout the year in as many different units and tasks as possible in order to stress the natural connections that exist among mathematical topics.

Grades 6-8 Key: NS = The Number System RP = Ratios and Proportional Relationships EE = Expressions and Equations G = Geometry SP = Statistics and Probability.

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GSE Grade 8 Curriculum Map

Semester 2

Unit 4		Unit 5		Unit 6		Unit 7
Functions and **Linear Functions**		**Linear Models and Tables**		**Solving Systems of Equations**		**GMAS Review and Show What We Know**
22 days		**25 days**		**21 days**		
Grade Level Standard	**Direct Prerequisite Standard**	**Grade Level Standard**	**Direct Prerequisite Standard**	**Grade Level Standard**	**Direct Prerequisite Standard**	**GMAS Review - 5 days Show What We Know – up to 19 days**
MGSE8.F.1	**MGSE7.RP.2**	**MGSE8.F.4**	**MGSE7.RP.2***	**MGSE8.EE.8**	**MGSE7.EE.4***	
MGSE8.F.2	**MGSE7.RP.2***	**MGSE8.F.5**		**MGSE8.EE.8a**		
MGSE8.EE.5	**MGSE7.RP.2***	**MGSE8.SP.1**		**MGSE8.EE.8b**		
MGSE8.EE.6	**MGSE7.RP.2*** MGSE7.G.1	**MGSE8.SP.2**		**MGSE8.EE.8c**		
MGSE8.F.3		**MGSE8.SP.3**				
		MGSE8.SP.4				

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GSE Grade 8

GSE Grade 8 Expanded Curriculum Map

Standards for Mathematical Practice

1 Make sense of problems and persevere in solving them.	**5** Use appropriate tools strategically.
2 Reason abstractly and quantitatively.	**6** Attend to precision.
3 Construct viable arguments and critique the reasoning of others.	**7** Look for and make use of structure.
4 Model with mathematics.	**8** Look for and express regularity in repeated reasoning.

Unit 1

Transformations, Congruence, and Similarity

MGSE7.G.2 Explore various geometric shapes with given conditions. Focus on creating triangles from three measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

MGSE7.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.

Understand congruence and similarity using physical models, transparencies, or geometry software.

MGSE8.G.1 Verify experimentally the congruence 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.

MGSE8.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.

MGSE8.G.3 Describe the effect of dilations, translations, rotations and reflections on two- dimensional figures using coordinates.

MGSE8.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.

MGSE8.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.

Unit 2

Exponents and Equations

Work with radicals and integer exponents.

MGSE8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.

MGSE7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.

MGSE8.EE.2 Use square root and cube root symbols to represent solutions to equations. Recognize that $x^2 = p$ (where p is a positive rational number and $|x| < 25$) has 2 solutions and $x^3 = p$ (where p is a negative or positive rational number and $|x| < 10$) has one solution. Evaluate square roots of perfect squares < 625 and cube roots of perfect cubes > -1000 and < 1000.

MGSE8.EE.3 Use numbers expressed in scientific notation 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 × 108 and the population of the world as 7 × 109, and determine that the world population is more than 20 times larger.

MGSE7.EE.3 Solve multistep real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals) by applying properties of operations as strategies to calculate with numbers, converting between forms as appropriate, and assessing 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.***

MGSE8.EE.4 Add, subtract, multiply and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Understand scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g. use millimeters per

Unit 3

Geometric Applications of Exponents

MGSE7.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.

Understand and Apply the Pythagorean Theorem

MGSE8.G.6 Explain a proof of the Pythagorean Theorem and its converse.

MGSE8.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.

MGSE8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

MGSE8.G.9 Apply the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Work with radicals and integer exponents.

MGSE8.EE.2 Use square root and cube root symbols to represent solutions to equations. Recognize that $x^2 = p$ (where p is a positive rational number and $|x| < 25$) has 2 solutions and $x^3 = p$ (where p is a negative or positive rational number and $|x| < 10$) has one solution. Evaluate square roots of perfect squares < 625 and cube roots of perfect cubes > -1000 and < 1000.

	year for seafloor spreading). Interpret scientific notation that has been generated by technology (e.g. calculators). **Analyze and solve linear equations and pairs of simultaneous linear equations.** **MGSE7.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.** **MGSE7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.** **MGSE8.EE.7** Solve linear equations in one variable. **MGSE8.EE.7a** 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). **MGSE8.EE.7b** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. **Know that there are numbers that are not rational, and approximate them by rational numbers.** **MGSE7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.** **MGSE8.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. **MGSE8.NS.2** Use rational approximation of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions (e.g., estimate π2to the nearest tenth*). For example, by truncating the decimal expansion of √2 (square root 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.*	

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GSE Grade 8

GSE Grade 8 Expanded Curriculum Map	
Standards for Mathematical Practice	
1 Make sense of problems and persevere in solving them. **2** Reason abstractly and quantitatively. **3** Construct viable arguments and critique the reasoning of others. **4** Model with mathematics.	**5** Use appropriate tools strategically. **6** Attend to precision. **7** Look for and make use of structure. **8** Look for and express regularity in repeated reasoning.

Unit 4	Unit 5	Unit 6	Unit 7
Functions and Linear Functions	**Linear Models and Tables**	**Solving Systems of Equations**	**Show What We Know**
Define, evaluate, and compare functions. **MGSE7.RP.2 Recognize and represent proportional relationships between quantities.** **MGSE8.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. **MGSE7.RP.2*** **MGSE8.F.2** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). **Understand the connections between proportional relationships, lines, and linear equations.** **MGSE7.RP.2*** **MGSE8.EE.5** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. **MGSE7.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. **MGSE7.RP.2*** **MGSE8.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. **Define, evaluate, and compare functions.**	**Use functions to model relationships between quantities.** **MGSE7.RP.2*** **MGSE8.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. **MGSE8.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. **Investigate patterns of association in bivariate data.** **MGSE8.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. **MGSE8.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. **MGSE8.SP.3** Use the equation of a linear model to solve problems in the context of	**Analyze and solve linear equations and pairs of simultaneous linear equations.** **MGSE8.EE.4*** **MGSE8.EE.8** Analyze and solve pairs of simultaneous linear equations (systems of linear equations). **MGSE8.EE.8a** 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. **MGSE8.EE.8b** Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. **MGSE8.EE.8c** Solve real-world and mathematical problems leading to two linear equations in two variables.	**ALL**

MGSE8.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 = s2 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.	bivariate measurement data, interpreting the slope and intercept. **MGSE8.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. a. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. b. 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?*		