

Fulton County Schools 2021-2022

GSE Fifth Grade Advanced Curriculum Map							
Semester 1							
5 th Grade Unit 5		5 th Grade Unit 6		5 th Grade Unit 7		6 th Grade Unit 1	
<u>2D Figures</u>		<u>Volume and Measurement</u>		<u>Geometry and the Coordinate Plane</u>		<u>Number System Fluency</u>	
3 – 4 weeks		3 – 4 weeks		2 – 3 weeks		5 – 6 weeks	
Grade Level Standard	Direct Prerequisite Standard	Grade Level Standard	Direct Prerequisite Standard	Grade Level Standard	Direct Prerequisite Standard	Grade Level Standard	Direct Prerequisite Standard
MGSE5.G.3	MGSE4.G.2	<u>MGSE5.MD.1</u>	MGSE4.MD.1 MGSE4.MD.2	MGSE5.G.1		<u>MGSE6.NS.1</u>	MGSE5.NF.7
MGSE5.G.4		MGSE5.MD.2		MGSE5.G.2		<u>MGSE6.NS.2</u>	MGSE5.NF.6
		MGSE5.MD.3		<u>MGSE5.OA.3</u>		MGSE6.NS.3	MGSE5.NBT.5 MGSE5.NBT.6 MGSE5.NBT.7
		MGSE5.MD.4				MGSE6.NS.4	MGSE5.OA.2
		<u>MGSE5.MD.5</u>	MGSE4.MD.3				
<p>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.</p> <p style="text-align: center;">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</p>							

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 3-5 Key: G= Geometry, MD=Measurement and Data, NBT= Number and Operations in Base Ten, NF = Number and Operations, Fractions, OA = Operations and Algebraic Thinking.

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 Fifth Grade Advanced Curriculum Map						
Semester 2						
6 th Grade Unit 2		6 th Grade Unit 3		6 th Grade Unit 4		Unit 8
<u>Rate, Ratio and Proportional Reasoning Using Equivalent Fractions</u>		<u>Expressions</u>		<u>One-Step Equations and Inequalities</u>		Show What You Know
4 – 5 weeks		3 – 4 weeks		4 – 5 weeks		Up to 6 weeks
Grade Level Standard	Direct Prerequisite Standard	Grade Level Standard	Direct Prerequisite Standard	Grade Level Standard	Direct Prerequisite Standard	ALL
MGSE6.RP.1	<u>MGSE5.NF.5</u>	MGSE6.EE.1	<u>MGSE5.NBT.2</u>	MGSE6.EE.5		
MGSE6.RP.2	<u>MGSE5.NF.3</u> <u>MGSE5.NF.7*</u>	MGSE6.EE.2	<u>MGSE5.OA.2*</u>	MGSE6.EE.6		
<u>MGSE6.RP.3</u>		MGSE6.EE.2a		MGSE6.EE.7	<u>MGSE5.NF.1</u> <u>MGSE5.NF.4</u>	
<u>MGSE6.RP.3a</u>		MGSE6.EE.2b		MGSE6.EE.8		
<u>MGSE6.RP.3b</u>		MGSE6.EE.2c		MGSE6.EE.9		
<u>MGSE6.RP.3c</u>		MGSE6.EE.3	<u>MGSE5.OA.2*</u>	<u>MGSE6.RP.3</u>		
<u>MGSE6.RP.3d</u>		MGSE6.EE.4	<u>MGSE5.OA.2*</u>	<u>MGSE6.RP.3a</u>		
		MGSE6.NS.4		<u>MGSE6.RP.3b</u>		
				<u>MGSE6.RP.3c</u>		
				<u>MGSE6.RP.3d</u> (equations)		
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GSE Fifth Grade Advanced

GSE Fifth Grade Advanced Expanded Curriculum Map

Standards for Mathematical Practice

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|--|--|
| <p>1 Make sense of problems and persevere in solving them.</p> <p>2 Reason abstractly and quantitatively.</p> <p>3 Construct viable arguments and critique the reasoning of others.</p> <p>4 Model with mathematics.</p> | <p>5 Use appropriate tools strategically.</p> <p>6 Attend to precision.</p> <p>7 Look for and make use of structure.</p> <p>8 Look for and express regularity in repeated reasoning.</p> |
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5 th Grade Unit 5	5 th Grade Unit 6	5 th Grade Unit 7	6 th Grade Unit 1
2D Figures	Volume and Measurement	Geometry and the Coordinate Plane	Order of Operations and Whole Numbers
<p>MGSE4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p> <p>Classify two-dimensional figures into categories based on their properties.</p> <p>MGSE.5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. <i>For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</i></p> <p>MGSE.5.G.4. Classify two-dimensional figures in a hierarchy based on properties (<i>polygons, triangles, and quadrilaterals</i>).</p>	<p>MGSE4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec.</p> <ol style="list-style-type: none"> Understand the relationship between gallons, cups, quarts, and pints. Express larger units in terms of smaller units within the same measurement system. Record measurement equivalents in a two column table. <p>MGSE4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p> <p>Convert like measurement units within a given measurement system.</p> <p>MGSE5.MD.1 Convert among different-sized standard measurement units (mass, weight, length, time, etc.) within a given measurement system (customary and metric) (e.g., convert 5cm to 0.05m), and use these conversions in solving multi-step, real world problems.</p> <p>Represent and interpret data.</p>	<p>Graph points on the coordinate plane to solve real-world and mathematical problems.</p> <p>MGSE.5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).</p> <p>MGSE.5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.</p> <p>Analyze patterns and relationships.</p> <p>MGSE.5.OA.3 Generate two numerical patterns using a given rule. Identify apparent relationships between corresponding terms by completing a function table or input/output table. Using the terms created, form and graph ordered pairs on a coordinate plane.</p>	<p>MGSE.5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.¹</p> <ol style="list-style-type: none"> Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models

¹ Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

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MGSE5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometric Measurement: understand concepts of volume and relate volume to multiplication and division.

MGSE5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.

- a. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

MGSE5.MD.4 . Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

MGSE4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

MGSE5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

- a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular

and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?*

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

MGSE6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, including reasoning strategies such as using visual fraction models and equations to represent the problem.

For example:

- *How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally?*
- *How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt?*
- *How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?*
- *Create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient;*
- *Three pizzas are cut so each person at the table receives $1/4$ pizza. How many people are at the table?*
- *Use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.)*

MGSE.5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Compute fluently with multi-digit numbers and find common factors and multiples.

MGSE6.NS.2 Fluently divide multi-digit numbers using the standard algorithm.

MGSE.5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm (or other strategies demonstrating understanding of multiplication) up to a 3 digit by 2 digit factor.

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- prisms with whole number edge lengths in the context of solving real world and mathematical problems.
- c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

MGSE.5.NBT.6. Fluently divide up to 4-digit dividends and 2-digit divisors by using at least one of the following methods: strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations or concrete models. (e.g., rectangular arrays, area models)

MGSE.5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

MGSE.6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

MGSE.5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.

MGSE.6.NS.4 Find the common multiples of two whole numbers less than or equal to 12 and the common factors of two whole numbers less than or equal to 100.

- a. Find the greatest common factor of 2 whole numbers and use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factors. (GCF) Example: $36 + 8 = 4(9 + 2)$
- b. Apply the least common multiple of two whole numbers less than or equal to 12 to solve real-world problems.

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Standards for Mathematical Practice

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| 1 Make sense of problems and persevere in solving them. | 5 Use appropriate tools strategically. |
| 2 Reason abstractly and quantitatively. | 6 Attend to precision. |
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| 4 Model with mathematics. | 8 Look for and express regularity in repeated reasoning. |

6 th Grade Unit 2	6 th Grade Unit 3	6 th Grade Unit 4	Unit 8
Adding and Subtracting with Decimals	Multiplying and Dividing with Decimals	Adding, Subtracting, Multiplying and Dividing Fractions	Show What We Know
<p>MGSE.5.NF.5 Interpret multiplication as scaling (resizing), by:</p> <p>a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. <i>Example 4 x 10 is twice as large as 2 x 10.</i></p> <p>b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.</p> <p>Understand ratio concepts and use ratio reasoning to solve problems.</p> <p>MGSE6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."</i></p> <p>MGSE.5.NF.3 Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual</p>	<p>MGSE.5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.</p> <p>Apply and extend previous understandings of arithmetic to algebraic expressions.</p> <p>MGSE6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.</p> <p>MGSE5.OA.2*</p> <p>MGSE6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.</p> <p>MGSE6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers.</p> <p>MGSE6.EE.2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.</p> <p>MGSE6.EE.2c Evaluate expressions at specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).</p> <p>MGSE5.OA.2*</p> <p>MGSE6.EE.3 Apply the properties of operations to generate equivalent expressions.</p> <p>MGSE5.OA.2*</p> <p>MGSE6.EE.4 Identify when two expressions</p>	<p>Reason about and solve one-variable equations and inequalities.</p> <p>MGSE6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p>MGSE6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p> <p>MGSE.5.NF.1 Add and subtract fractions and mixed numbers with unlike denominators by finding a common denominator and equivalent fractions to produce like denominators.</p> <p>MGSE.5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</p> <p>a. Apply and use understanding of multiplication to multiply a fraction or whole number by a fraction. <i>Examples $\frac{a}{b} \times q$ as $\frac{a}{b} \times \frac{q}{1}$ and $\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$</i></p> <p>b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths.</p> <p>MGSE6.EE.7 Solve real-world and mathematical problems by writing and solving</p>	<p>ALL</p>

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fraction models or equations to represent the problem.

Example: $\frac{3}{5}$ can be interpreted as "3 divided by 5 and as 3 shared by 5"

MGSE5.NF.7*

MGSE6.RP.2 Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$ (b not equal to zero), and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $\frac{3}{4}$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."*

MGSE6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems utilizing strategies such as tables of equivalent ratios, tape diagrams (bar models), double number line diagrams, and/or equations.

MGSE6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

MGSE6.RP.3b Solve unit rate problems including those involving unit pricing and constant speed. *For example, If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*

MGSE6.RP.3c Find a percent of a quantity as a rate per 100 (e.g. 30% of a quantity means 30/100 times the quantity); given a percent, solve problems involving finding the whole given a part and the part given the whole.

MGSE6.RP.3d Given a conversion factor, use ratio reasoning to convert measurement units within one system of measurement and between two systems of measurements (customary and metric); manipulate and transform units appropriately when multiplying or dividing quantities. *For example, given $1 \text{ in.} = 2.54 \text{ cm}$, how many centimeters are in 6 inches?*

are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

MGSE6.NS.4 Find the common multiples of two whole numbers less than or equal to 12 and the common factors of two whole numbers less than or equal to 100.

- Find the greatest common factor of 2 whole numbers and use the distributive property to express a sum of two whole numbers 1 – 100 with a common factor as a multiple of a sum of two whole numbers with no common factors. (GCF) Example: $36 + 8 = 4(9 + 2)$
- Apply the least common multiple of two whole numbers less than or equal to 12 to solve real-world problems.

equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

MGSE6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Represent and analyze quantitative relationships between dependent and independent variables.

MGSE6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another.

- Write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable.
- Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d=65t$ to represent the relationship between distance and time.*

Understand ratio concepts and use ratio reasoning to solve problems.

MGSE6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

MGSE6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

MGSE6.RP.3b Solve unit rate problems including those involving unit pricing and constant speed.

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