Georgia Standards of Excellence
Curriculum Map

Mathematics

Accelerated GSE 7B/8

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Georgia Department of Education

Accelerated GSE 7B/8 Curriculum Map

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Click on the link in the table to view a video that shows instructional strategies for teaching each standard.

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 will include the Mathematical Practices and indicate skills to maintain..

**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
- F = Functions
- EE = Expressions and Equations
- G = Geometry
- SP = Statistics and Probability

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Accelerated GSE 7B/8 – Expanded Curriculum Map – 1st Semester

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<td>2 Reason abstractly and quantitatively.</td>
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<td>3 Construct viable arguments and critique the reasoning of others.</td>
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<td>4 Model with mathematics.</td>
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<td>5 Use appropriate tools strategically.</td>
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<td>6 Attend to precision.</td>
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<tr>
<td>7 Look for and make use of structure.</td>
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<td>8 Look for and express regularity in repeated reasoning.</td>
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**Draw, construct, and describe geometrical figures and describe the relationships between them.**
MGSE7.G.2 Explore various geometrical 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.

**Describe the two-dimensional figures (cross sections) that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms, right rectangular pyramids, cones, cylinders, and spheres.**

**Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.**
MGSE7.G.4 Given the formulas for the area and circumference of a circle, use them to solve problems: give an informal derivation of the relationship between the circumference and area of a circle.

**Use random sampling to draw inferences about a population.**
MGSE7.G.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the medians by expressing it as a multiple of the interquartile range.

**Draw informal comparative inferences about two populations.**
MGSE7.G.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

**Investigate chance processes and develop, use, and evaluate probability models.**
MGSE7.G.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.

**Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency.**

**Develop a probability model and use it to find probabilities of events.**

**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.

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

**Calculate and describe a sequence that exhibits the congruence between them.**

**Use square root and cube root symbols to represent solutions to equations.**
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.

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

**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...**

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<tr>
<td>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.</td>
<td>Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.</td>
<td>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.</td>
<td>Solve linear equations and pairs of simultaneous linear equations.</td>
<td>Give examples of linear equations in one variable.</td>
<td>Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</td>
<td>Know that numbers that are not rational, and approximate them by rational numbers.</td>
<td>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 π2√x).</td>
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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.
### Accelerated GSE 7B/8 – Expanded Curriculum Map – 2nd Semester

#### 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.

#### 2nd Semester

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**Unit 6: Geometric Applications of Exponents**
- 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.

**Unit 7: Functions**
- 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 \( 1 \times 1 < 25 \)) has 2 solutions and \( x^3 = p \) (where \( p \) is a negative or positive rational number and \( 1 \times 1 < 10 \)) has one solution. Evaluate square roots of perfect squares < 625 and cube roots of perfect cubes > -1000

**Unit 8: Linear Functions**
- Understand the connections between proportional relationships, lines, and linear equations.
  - 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.
  - MGSE8.EE.6 Use similar triangles to explain why the slope 
  
  **Unit 9: Linear Models and Tables**
  - Use functions to model relationships between quantities.
  - 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.

**Unit 10: Solving Systems of Equations**
- Analyze and solve linear equations and pairs of simultaneous linear equations.
- 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.
and $< 1000$.  

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|  |  | 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 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?*