

Northpoint Horizons

Math Elevations™ (Comprehensive Intervention System) Correlated to Georgia Mathematics Performance Standards

This document provides a sampling of the extensive math directives offered throughout the *Math Elevations* program that meet **Georgia Mathematics Performance Standards**.

Georgia Mathematics Performance Standards Grade 8	<i>Math Elevations</i> Level H Teacher's Guide Examples/Lessons
NUMBER AND OPERATIONS	
M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.	
a. Find square roots of perfect squares.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
b. Recognize the (positive) square root of a number as a length of a side of a square with a given area.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
c. Recognize square roots as points and as lengths on a number line.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
e. Recognize and use the radical symbol to denote the positive square root of a positive number.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
f. Estimate square roots of positive numbers.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
g. Simplify, add, subtract, multiply, and divide expressions containing square roots.	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40–42
h. Distinguish between rational and irrational numbers.	Unit 1 – Lesson 7: <i>Exponents</i> pp. 37–39
i. Simplify expressions containing integer exponents.	Unit 1 – Lesson 7: <i>Exponents</i> pp. 37–39
j. Express and use numbers in scientific notation.	Unit 2 – Lesson 8: <i>Scientific Notation</i> pp. 68–70
k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.	Unit 1 – Lesson 7: <i>Exponents</i> pp. 37–39

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	Lesson 8: <i>Square Roots</i> pp. 40–42 Unit 2 – Lesson 8: <i>Scientific Notation</i> pp. 68–70
GEOMETRY	
M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.	
a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.	Unit 6 – Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
b. Apply properties of angle pairs formed by parallel lines cut by a transversal.	Unit 6 – Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.	Unit 6 – Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.	Unit 6 – Lesson 2: <i>Angles in Parallel Lines Cut by a Transversal</i> pp. 164–166
M8G2. Students will understand and use the Pythagorean theorem.	
a. Apply properties of right triangles, including the Pythagorean theorem.	Unit 3 – Lesson 8: <i>Pythagorean Theorem</i> pp. 98–101
b. Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle.	Unit 3 – Lesson 8: <i>Pythagorean Theorem</i> pp. 98–101
ALGEBRA	
M8A1. Students will use algebra to represent, analyze, and solve problems.	
a. Represent a given situation using algebraic expressions or equations in one variable.	Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89
b. Simplify and evaluate algebraic expressions.	Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89
c. Solve algebraic equations in one variable, including equations involving absolute values.	Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89
d. Solve equations involving several variables for one variable in	Unit 3 –

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terms of the others.	Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89
e. Interpret solutions in problem contexts.	Unit 3 – Lesson 3: <i>Substituting Values for Variables in Formulas</i> pp. 81–83 Lesson 4: <i>Solving Equations Using Addition or Subtraction</i> pp. 84–86 Lesson 5: <i>Solving Equations Using Multiplication or Division</i> pp. 87–89
M8A2. Students will understand and graph inequalities in one variable.	
a. Represent a given situation using an inequality in one variable.	Unit 3 – Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
b. Use the properties of inequality to solve inequalities.	Unit 3 – Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
c. Graph the solution of an inequality on a number line.	Unit 3 – Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
d. Interpret solutions in problem contexts.	Unit 3 – Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
M8A3. Students will understand relations and linear functions.	
a. Recognize a relation as a correspondence between varying quantities.	Unit 4 – Lesson 1: <i>Ratios and Rates</i> pp. 104–107 Lesson 2: <i>Writing and Solving Proportions</i> pp. 108–110 Lesson 3: <i>Scale Drawings and Models</i> pp. 111–113 Lesson 5: <i>Solving Percent Problems Using a Proportion</i> pp. 117–119 Lesson 6: <i>Using Proportions to Solve Other Percent Problems</i> pp. 120–123 Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
b. Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique.	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153 Lesson 8: <i>Slope</i> pp. 154–157

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c. Distinguish between relations that are functions and those that are not functions.	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143
d. Recognize functions in a variety of representations and a variety of contexts.	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143
e. Use tables to describe sequences recursively and with a formula in closed form.	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143
f. Understand and recognize arithmetic sequences as linear functions with whole number input values.	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143
g. Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function.	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141–143 Lesson 8: <i>Slope</i> pp. 154–157
h. Identify relations and functions as linear or nonlinear.	Unit 5 – Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
i. Translate among verbal, tabular, graphic, and algebraic representations of functions.	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
M8A4. Students will graph and analyze graphs of linear equations and inequalities.	
a. Interpret slope as a rate of change.	Unit 5 – Lesson 8: <i>Slope</i> pp. 154–157
b. Determine the meaning of the slope and y -intercept in a given situation.	Unit 5 – Lesson 8: <i>Slope</i> pp. 154–157
c. Graph equations of the form $y = mx + b$.	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150
d. Graph equations of the form $ax + by = c$.	
e. Graph the solution set of a linear inequality, identifying whether the solution set is an open or a closed half-plane.	Unit 3 – Lesson 6: <i>Solving Inequalities by Addition and Subtraction</i> pp. 90–93 Lesson 7: <i>Solving Inequalities Using Multiplication and Division</i> pp. 94–97
f. Determine the equation of a line given a graph, numerical information that defines the line or a context involving a linear relationship.	Unit 5 – Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
g. Solve problems involving linear relationships.	Unit 5 – Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
M8A5. Students will understand systems of linear equations and inequalities and use them to solve problems.	
a. Given a problem context, write an appropriate system of linear	Unit 5 –

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equations or inequalities.	Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
b. Solve systems of equations graphically and algebraically, using technology as appropriate.	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
c. Graph the solution set of a system of linear inequalities in two variables.	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
d. Interpret solutions in problem contexts.	Unit 5 – Lesson 6: <i>Graphing Linear Functions</i> pp. 147–150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151–153
DATA ANALYSIS AND PROBABILITY	
M8D1. Students will apply basic concepts of set theory.	
a. Demonstrate relationships among sets through use of Venn diagrams.	
b. Determine subsets, complements, intersection, and union of sets.	
c. Use set notation to denote elements of a set.	
M8D2. Students will determine the number of outcomes related to a given event.	
a. Use tree diagrams to find the number of outcomes.	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219
b. Apply the addition and multiplication principles of counting.	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216–219
M8D3. Students will use the basic laws of probability.	
a. Find the probability of simple independent events.	Unit 8 – Lesson 2: <i>Making Predictions</i> pp. 220–223
b. Find the probability of compound independent events.	Unit 8 – Lesson 2: <i>Making Predictions</i> pp. 220–223
M8D4. Students will organize, interpret, and make inferences from statistical data.	
a. Gather data that can be modeled with a linear function.	Unit 8 – Lesson 8: <i>Appropriate Graphs</i> pp. 241–243
b. Estimate and determine a line of best fit from a scatter plot.	Unit 8 – Lesson 4: <i>Scatter Plots</i> pp. 227–229 Lesson 8: <i>Appropriate Graphs</i> pp. 241–243
M8P1. Students will solve problems (using appropriate technology).	
a. Build new mathematical knowledge through problem solving.	Unit 5 –

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	Lesson 1: <i>Solving Two-Step Equations</i> pp. 132–134 Lesson 2: <i>Solving Multi-Step Equations</i> pp. 135–137
b. Solve problems that arise in mathematics and in other contexts.	Unit 8 – Lesson 3: <i>Mean, Median, and Mode</i> pp. 224–226
c. Apply and adapt a variety of appropriate strategies to solve problems.	Unit 3 – Lesson 2: <i>Order of Operations</i> pp. 78–80
d. Monitor and reflect on the process of mathematical problem solving.	Unit 5 – Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138–140
M8P2. Students will reason and evaluate mathematical arguments.	
a. Recognize reasoning and proof as fundamental aspects of mathematics.	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170
b. Make and investigate mathematical conjectures.	Unit 5 – Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138–140
c. Develop and evaluate mathematical arguments and proofs.	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170
d. Select and use various types of reasoning and methods of proof.	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167–170
M8P3. Students will communicate mathematically.	
a. Organize and consolidate their mathematical thinking through communication.	Unit 8 – Lesson 4: <i>Scatter Plots</i> pp. 227–229 Lesson 5: <i>Box-and-Whiskers Plots</i> pp. 230–233
b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	Unit 8 – Lesson 6: <i>Line Graphs</i> pp. 234–237 Lesson 7: <i>Circle Graphs</i> pp. 238–240
c. Analyze and evaluate the mathematical thinking and strategies of others.	Unit 8 – Lesson 2: <i>Making Predictions</i> pp. 220–223
d. Use the language of mathematics to express mathematical ideas precisely.	Unit 8 – Lesson 2: <i>Making Predictions</i> pp. 220–223
M8P4. Students will make connections among mathematical ideas and to other disciplines.	
a. Recognize and use connections among mathematical ideas.	Unit 7 – Lesson 3: <i>Area of a Circle</i> pp. 196–198
b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	Unit 5 – Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138–140
c. Recognize and apply mathematics in contexts outside of	Unit 8 –

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mathematics.	Lesson 3: <i>Mean, Median, and Mode</i> pp. 224–226
M8P5. Students will represent mathematics in multiple ways.	
a. Create and use representations to organize, record, and communicate mathematical ideas.	Unit 8 – Lesson 6: <i>Line Graphs</i> pp. 234–237 Lesson 7: <i>Circle Graphs</i> pp. 238–240
b. Select, apply, and translate among mathematical representations to solve problems.	Unit 8 – Lesson 8: <i>Appropriate Graphs</i> pp. 241–243
c. Use representations to model and interpret physical, social, and mathematical phenomena.	Unit 8 – Lesson 4: <i>Scatter Plots</i> pp. 227–229 Lesson 5: <i>Box-and-Whiskers Plots</i> pp. 230–233 Lesson 6: <i>Line Graphs</i> pp. 234–237 Lesson 7: <i>Circle Graphs</i> pp. 238–240 Lesson 8: <i>Appropriate Graphs</i> pp. 241–243