

Northpoint Horizons
Math Elevations
Correlated to the
Maryland State Math Curriculum Standards

Grade 6

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

Math Assessment Standards	<i>Math Elevations Level F (Grade 6) Teacher's Guide</i> Examples/Lessons
1.0 Knowledge of Algebra, Patterns, and Functions Students will algebraically represent, model, analyze, or solve mathematical or real-world problems involving patterns or functional relationships.	
A. Patterns and Functions	
1. Identify, describe, extend, and create numeric patterns and functions	Unit 5 – Algebra
a. Identify and describe sequences represented by a physical model or in a function table	<i>5.2–Patterns</i> , pp. 92–93
b. Interpret and write a rule for a one-operation (+, –, \times , \div) function table Assessment limit: Use whole numbers or decimals with no more than two decimal places (0–10,000)	<i>5.3–One-Step Algebraic Expressions</i> , pp. 94–95
c. Complete a function table with a given two-operation rule Assessment limit: Use the operations of (+, –, \times), numbers no more than 10 in the rule, and whole numbers (0 – 50)	<i>5.4–Two-Step Algebraic Expressions</i> , pp. 96–97
B. Expressions, Equations, and Inequalities	
1. Write and identify expressions	Unit 5 – Algebra
a. Write an algebraic expression to represent unknown quantities Assessment limit: Use one unknown and one operation (+, –) with whole numbers, fractions with denominators as factors of 24, or decimals with no	<i>5.3–One-Step Algebraic Expressions</i> , pp. 94–95 <i>5.4–Two-Step Algebraic Expressions</i> , pp. 96–97

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more than two decimal places (0–200)	
b. Evaluate an algebraic expression Assessment limit: Use one unknown and one operation (+, –) with whole numbers (0–200), fractions with denominators as factors of 24 (0–50), or decimals with no more than two decimal places (0–50)	5.3– <i>One-Step Algebraic Expressions</i> , pp. 94–95 5.4– <i>Two-Step Algebraic Expressions</i> , pp. 96–97
c. Evaluate numeric expressions using the order of operations Assessment limit: Use no more than 4 operations (+, –, ×, ÷ with no remainders) with or without 1 set of parentheses or a division bar and whole numbers (0–100)	5.1– <i>Order of Operations</i> , pp. 90–91
d. Represent algebraic expressions using physical models, manipulatives, and drawings	<i>Throughout Unit 5, the lessons are designed so that students use grid and isometric dot paper, color tiles, pattern blocks, and more to physically model algebraic expressions.</i>
2. Identify, write, solve, and apply equations and inequalities	Unit 5 – Algebra
a. Identify and write equations and inequalities to represent relationships Assessment limit: Use a variable, the appropriate relational symbols (>, <, =), and one operational symbol (+, –, ×, ÷) on either side and use fractions with denominators as factors of 24 (0–50) or decimals with no more than two decimal places (0–200)	5.5– <i>Solving Equations</i> , pp. 98–99 5.8– <i>Inequalities</i> , pp. 104–105
b. Determine the unknown in a linear equation Assessment limit: Use one operation (+, –, ×, ÷ with no remainders) and use positive whole number coefficients using decimals with no more than two decimal places (0–100)	5.5– <i>Solving Equations</i> , pp. 98–99 5.6– <i>Word Problems</i> , pp. 100–101
c. Solve for the unknown in a one-step inequality	5.8– <i>Inequalities</i> , pp. 104–105
d. Identify or graph solutions of a one-step inequality on a number line	5.8– <i>Inequalities</i> , pp. 104–105 <i>Listing solutions to inequalities is explored in Unit 5, Lesson 8. Formal graphing of inequalities on a number line is found in Level</i>

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e. Apply given formulas to a problem solving situation	<i>G, Unit 4, Lesson 8 (Solving and Graphing Inequalities)</i> 5.6–Word Problems, pp. 100–101
C. Numeric and Graphic Representations of Relationships	
1. Locate points on a number line and in a coordinate plane	Unit 1–Numeration/Number Theory Unit 5 – Algebra Unit 6–Geometry
a. Represent rational numbers on a number line Assessment limit: Use integers (–20 to 20)	1.4–Introduction to Integers, pp. 24–25
b. Graph ordered pairs in a coordinate plane. Assessment limit: Use no more than 3 ordered pairs of integers (–20 to 20) or no more than 3 ordered pairs of fractions/mixed numbers with denominators of 2 (–10 to 10)	6.5–The Coordinate Plane, pp. 116–117
c. Graph linear data from a function table	5.7–Graphing Algebraic Equations, pp. 102–103
2. Analyze linear relationships	Unit 5 – Algebra
a. Identify and describe the change represented in a graph Assessment limit: Identify increase, decrease, or no change	5.7–Graphing Algebraic Equations, pp. 102–103
b. Translate the graph of a linear relationship onto a table of values that illustrates the type of change	5.7–Graphing Algebraic Equations, pp. 102–103
Standard 2.0 Knowledge of Geometry Students will apply the properties of one-, two-, or three-dimensional geometric figures to describe, reason, or solve problems about shape, size, position, or motion of objects.	
A. Plane Geometric Figures	
1. Analyze the properties of plane geometric figures	Unit 6–Geometry
a. Identify, describe, and label points, lines, rays, line segments, vertices, angles, and planes using correct symbolic notation	6.1–Properties of Polygons, pp. 108–109 6.2–Classifying Quadrilaterals, pp. 110–111
b. Identify and describe line segments Assessment limit: Use diagonal line segments	6.1–Properties of Polygons, pp. 108–109
c. Identify and describe the parts of a circle	6.4–Circles, pp. 114–115

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Assessment limit: Use radius, diameter, or circumference	
2. Analyze geometric relationships	Unit 6–Geometry Unit 7 – Measurement
a. Compare and classify triangles by angle measure Assessment limit: Use equiangular, obtuse, acute, or right	7.1–Triangles, pp. 126–127 7.4–Angles in a Triangle, pp. 132–133
b. Determine a third angle measure of a triangle given two angle measures Assessment limit: Use the concept of the sum of angles in any triangle is 180° without using a diagram	7.4–Angles in a Triangle, pp. 132–133
c. Identify and compare the relationship between parts of a circle Assessment limit: Use radius, diameter and circumference (=3.14)	6.4–Circles, pp. 114–115 <i>Formal identification, discussion, and computation of Circumference is found in Level G, Unit 7, Lesson 4 (Circumference of a Circle)</i>
C. Representation of Geometric Figures	
1. Represent plane geometric figures	Unit 6–Geometry
a. Draw geometric figures using a variety of tools Assessment limit: Draw triangles given the measures of 2 sides and one angle or 2 angles and 1 side using whole numbers (0–20) and angle measures (0°–179°)	6.2–Classifying Quadrilaterals, pp. 110–111
b. Identify, describe, or draw a polygon Assessment limit: Use the first quadrant given no more than six coordinates	6.1–Properties of Polygons, pp. 108–109 6.2–Classifying Quadrilaterals, pp. 110–111
c. Identify or describe angle relationships Assessment limit: Use perpendicular bisectors or angle bisectors	6.1–Properties of Polygons, pp. 108–109 6.2–Classifying Quadrilaterals, pp. 110–111
D. Congruence and Similarity	
1. Analyze congruent figures:	Unit 6–Geometry
a. Identify and describe congruent polygons and their corresponding parts	6.1–Properties of Polygons, pp. 108–109 6.2–Classifying Quadrilaterals, pp. 110–111

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	<i>Formal definitions and identification of corresponding parts as it pertains to congruent polygons is found in Level G, Unit 6, Lesson 4 (Congruent Polygons)</i>
E. Transformations	
1. Analyze a transformation on a coordinate plane	Unit 6–Geometry
a. Plot the result of one transformation (translation, reflection, rotation) on a coordinate plane	6.6–Translation, pp. 118–119 6.7–Reflection, pp. 120–121 6.8–Rotation, pp. 122–123
3.0 Knowledge of Measurement Students will identify attributes, units, or systems of measurements or apply a variety of techniques, formulas, tools or technology for determining measurements.	
B. Measurement Tools	
1. Measure in customary and metric units	Unit 7 – Measurement
a. Select and use appropriate tools and units Assessment limit: Measure length to the nearest 1/16 inch with a ruler	7.1–Triangles, pp. 126–127 7.2–Perimeter, pp. 128–129
2. Estimate and apply measurement formulas	7.2–Perimeter, pp. 128–129 7.5–Areas of Rectangles and Parallelograms, pp. 134–135 7.6–Area of Triangles, pp. 136–137 7.7–Area of Irregular Figures, pp. 138 – 139
C. Applications in Measurement	
1. Apply measurement concepts	Unit 7 – Measurement
a. Estimate and determine the area of a polygon Assessment limit: Use triangles and whole number dimensions (0–200)	7.5–Areas of Rectangles and Parallelograms, pp. 134–135 7.6–Area of Triangles, pp. 136–137
b. Estimate and determine the volume of a rectangular prism Assessment limit: Use rectangular prisms and whole number dimensions (0–1000)	7.8–Volume, pp. 140–141
c. Estimate and determine the area of a composite figure Assessment limit: Use composite figures with no more than four polygons (triangles or rectangles)	7.7–Area of Irregular Figures, pp. 138–139

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and whole number dimensions (0–500)	
d. Determine missing dimension of a quadrilateral given the perimeter length Assessment limit: Find length in a quadrilateral given the perimeter with whole number dimensions (0–200)	7.2–Perimeter, pp. 128–129
e. Determine the missing dimension of rectangles Assessment limit: Find length in a square or rectangle given the area and whole number dimensions (0–200)	7.5–Areas of Rectangles and Parallelograms, pp. 134–135
4.0 Knowledge of Statistics Students will collect, organize, display, analyze, or interpret data to make decisions or predictions.	
A. Data Displays	
1. Organize and display data	Unit 8–Probability, Statistics, and Data Analysis
a. Organize and display data to make frequency tables Assessment limit: Use no more than 5 categories or ranges of numbers and total frequencies of no more than 25	8.2–Line Plots and Stem-and-Leaf Plots, pp. 146–147 <i>See the Main Discovery Activity in TE.</i>
b. Organize and display data to make stem-and-leaf plots Assessment limit: Use no more than 20 data points and whole numbers (0–999)	8.2–Line Plots and Stem-and-Leaf Plots, pp. 146–147
c. Organize and display data using a back-to-back stem-and-leaf plot	8.2–Line Plots and Stem-and-Leaf Plots, pp. 146–147
B. Data Analysis	
1. Analyze data	Unit 8–Probability, Statistics, and Data Analysis
a. Interpret frequency tables Assessment limit: Use no more than 5 categories or ranges of numbers and frequencies of no more than 25	8.2–Line Plots and Stem-and-Leaf Plots, pp. 146–147
b. Read and analyze circle graphs Assessment limit: Use no more than 5 categories using data in whole numbers or percents (0–1000)	<i>This concept is found in Level G, Unit 8, Lesson 8 (Circle Graphs)</i>

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c. Interpret data from a stem-and-leaf plot	8.2–Line Plots and Stem-and-Leaf Plots, pp. 146–147
2. Describe a set of data	Unit 8–Probability, Statistics, and Data Analysis
Apply measures of central tendency (mean, median, mode)	8.1–Mean, Mode, and Median, pp. 144–145
5.0 Knowledge of Probability	
Students will use experimental methods or theoretical reasoning to determine probabilities to make predictions or solve problems about events whose outcomes involve random variation.	
B. Theoretical Probability	
1. Determine the probability of one simple event comprised of equally likely outcomes	Unit 8–Probability, Statistics, and Data Analysis
a. Express the probability of an event as a fraction.	8.7–Probability, pp. 156–157
b. Express the probability of an event as a decimal Assessment limit: Use a sample space of 10, 20, 25, or 50 outcomes	8.7–Probability, pp. 156–157 8.8–Probability Experiments, pp. 158 – 159
c. Express the probability of an event as a percent	8.7–Probability, pp. 156–157
C. Experimental Probability	
1. Analyze the results of a probability experiment	Unit 8–Probability, Statistics, and Data Analysis
a. Make predictions and express the experimental probability as a fraction, a decimal, or a percent Assessment limit: Use no more than 30 results in the sample space	8.7–Probability, pp. 156 – 157 8.8–Probability Experiments, pp. 158 – 159
2. Conduct a probability experiment	8.8–Probability Experiments, pp. 158 – 159
3. Compare outcomes of theoretical probability with the results of experimental probability	<i>This concept is found in Level H, Unit 8, Lesson 2 (Making Predictions)</i>
4. Describe the difference between theoretical and experimental probability	<i>This concept is found in Level H, Unit 8, Lesson 2 (Making Predictions)</i>
6.0 Knowledge of Number Relationships and Computation/Arithmetic	
Students will describe, represent, or apply numbers or their relationships or will estimate or compute using mental strategies, paper/pencil or technology.	
A. Knowledge of Number and Place Value	
1. Apply knowledge of rational numbers and place value	Unit 1–Numeration/Number Theory Unit 3–Fractions, Decimals, and Percents
a. Read, write, and represent whole numbers	1.1–Decimals, pp. 18 – 19

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Assessment limit: Use exponential form with powers of 10 (0 – 100,000)	
b. Read, write, and represent integers Assessment limit: Use integers from (–100 to 100)	1.4–Introduction to Integers, pp. 24–25
c. Identify and determine equivalent forms of fractions as decimals, as percents, and as ratios Assessment limit: Use proper fractions with denominators as factors of 100, decimals, percents, or ratios (0–1000)	3.5– Converting Between, Percents, Fractions, and Decimals, pp. 62 – 63
d. Compare and order fractions, decimals alone or mixed together, with and without relational symbols (<, >, =) Assessment limit: Include no more than 4 fractions with denominators with factors of 100 or decimals with up to 2 decimal places (0–100)	3.2–Comparing and Ordering Fractions, pp. 56 – 57
e. Compare and order integers	1.4–Introduction to Integers, pp. 24–25
B. Number Theory	
1. Apply number relationships to:	Unit 1–Numeration/Number Theory
a. Determine prime factorizations for whole numbers and express them using exponential form	1.2–Understanding Exponents, pp. 20–21 1.5–Primes and Composites, pp. 26 – 27
C. Number Computation	
1. Analyze number relations and compute	Unit 2–Computation with Integers and Decimals Unit 3–Fractions, Decimals, and Percents Unit 4–Computation with Fractions Unit 5 – Algebra
a. Add and subtract fractions and mixed numbers and express answers in simplest form Assessment limit: Use proper fractions and denominators as factors of 60 (0–20)	4.1–Addition and Subtraction of Fractions, pp. 72–73 4.2–Adding Mixed Numbers, pp. 74–75 4.3–Subtracting Mixed Numbers, pp. 76–77
b. Multiply fractions and mixed numbers and express in simplest form Assessment limit: Use denominators as factors of 24	4.4–Multiplying Fractions, pp. 78–79 4.5–Multiplying Mixed Numbers, pp. 80–81

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not including 24 (0–20)	
c. Multiply decimals Assessment limit: Use a decimal with no more than 3 digits multiplied by a 2–digit decimal (0–1000)	2.6–Multiplying by Decimals, pp. 46 – 47
d. Divide decimals Assessment limit: Use a decimal with no more than 5 digits divided by a whole number with no more than 2 digits without annexing zeros (0–1000)	2.7–Division, pp. 48–49
e. Determine a percent of a whole number Assessment limit: Use 10%, 20%, 25% or 50% of a whole number (0–1000)	3.4–Understanding Percents, pp. 60 – 61
f. Simplify numeric expressions using the properties of addition and multiplication Assessment limit: Use the distributive property to simplify numeric expressions and whole numbers (0–1000)	<i>The properties used in Unit 5 (Algebra) are formally explored in Level G, Unit 3, Lessons 7 and 8 (Commutative, Associative and Distributive Properties)</i>
2. Estimation	Unit 2–Computation with Integers and Decimals
a. Determine the approximate products and quotients of decimals Assessment limit: Use a decimal with no more than a 3 digits multiplied by a 2–digit whole number, or the quotient of a decimal with no more than 4 digits in the dividend divided by a 2–digit whole number (0–1000)	2.2–Rounding Numbers, pp. 38–39 2.6–Multiplying by Decimals, pp. 46–47 2.7–Division, pp. 48–49 2.8–Word Problems, pp. 50 – 51
3.0 Analyze ratios, proportions, and percents	Unit 3–Fractions, Decimals, and Percents
a. Represent ratios in a variety of forms	3.7–Ratios and Proportions, pp. 66 – 67
b. Use ratios and unit rates to solve problems	3.8–Solving Proportions, pp. 68 – 69
7.0 Processes of Mathematics Students demonstrate the processes of mathematics by making connections and applying reasoning to solve problems and to communicate their findings.	
A. Problem Solving	
1. Apply a variety of concepts, processes, and skills to solve problems	Unit 2–Computation with Integers and Decimals Unit 3–Fractions, Decimals, and Percents

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	Unit 4–Computation with Fractions Unit 5 – Algebra
a. Identify the question in the problem	2.8–Word Problems, pp. 50 – 51
b. Decide if enough information is present to solve the problem	2.8–Word Problems, pp. 50 – 51
c. Make a plan to solve a problem	2.8–Word Problems, pp. 50 – 51
d. Apply a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	2.8–Word Problems, pp. 50 – 51
e. Select a strategy, i.e., draw a picture, guess and check, finding a pattern, writing an equation	5.3–One-Step Algebraic Expressions, pp. 94–95 5.4–Two-Step Algebraic Expressions, pp. 96–97
f. Identify alternative ways to solve a problem	4.2–Adding Mixed Numbers, pp. 74–75 4.3–Subtracting Mixed Numbers, pp. 76–77
g. Show that a problem might have multiple solutions or no solution	3.7–Ratios and Proportions, pp. 66–67 (see challenge) 5.8–Inequalities, pp. 104 – 105
h. Extend the solution of a problem to a new problem situation	5.2–Patterns, pp. 92 – 93
B. Reasoning	
1. Justify ideas or solutions with mathematical concepts or proofs	Unit 5 – Algebra
a. Use inductive or deductive reasoning	5.6–Word Problems, pp. 100 – 101
b. Make or test generalizations	5.6–Word Problems, pp. 100 – 101
c. Support or refute mathematical statements or solutions	5.8–Inequalities, pp. 104 – 105
d. Use methods of proof, i.e., direct, indirect, paragraph, or contradiction	7.5–Areas of Rectangles and Parallelograms, pp. 134–135 7.6–Area of Triangles, pp. 136–137
C. Communication	
1. Present mathematical ideas using words, symbols, visual displays, or technology	Unit 5–Algebra Unit 6–Geometry Unit 8–Probability, Statistics, and Data Analysis
a. Use multiple representations to express concepts	5.3–One-Step Algebraic Expressions, pp. 94–95

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or solutions	5.4–Two-Step Algebraic Expressions, pp. 96–97
b. Express mathematical ideas orally	<i>The Main Discovery Activity for each lesson encourages a format of working together and sharing discoveries and ideas. Prompts are provided in order to maximize discussions by the group, team, or even an individual student</i> Example: 6.2–Classifying Quadrilaterals, pp. 110 – 111
c. Explain mathematically ideas in written form	<i>All Wrap Up Activities (Representation–C–R–A) ask students to visually represent concepts on paper to transform the skill from the concrete to the abstract and to explain their mathematical reasoning. The TE provides a list of Vocabulary Words for each lesson.</i> Example: 6.6–Translation, pp. 118–119
d. Express solutions using concrete materials	<i>In the Concrete stage (C–R–A) of every lesson, students model the math concepts in order to derive solutions by using manipulatives. The TE provides a list of materials needed for each lesson.</i> Example: 6.2–Classifying Quadrilaterals, pp. 110 – 111
e. Express solutions using pictorial, tabular, graphical, or algebraic methods	<i>The student book addresses all learning styles by allowing students to use tables, pictures, graphs or algebraic methods in order to arrive at and express their solutions.</i> Example: 5.7–Graphing Algebraic Equations, pp. 102–103
f. Explain solutions in written form	<i>Wrap Up Activities (Representation–C–R–A) ask students to not only visually represent but also to explain the concepts on paper. This allows students to transform the skill from the concrete to the abstract and to explain their mathematical reasoning. The TE provides a list of Vocabulary Words for each lesson.</i> Example: 8.6–Line Graphs, pp. 154 – 155
g. Ask questions about mathematical ideas or problems	<i>The Main Discovery Activity for each lesson encourages a format of working together and orally sharing discoveries and ideas. Prompts are provided in order to maximize discussions by the group.</i> Example: 5.2–Patterns, pp. 92 – 93
h. Give or use feedback to revise mathematical thinking	<i>In the Abstract stage, (C–R–A), students bridge the understanding of the skill to symbolic form and are given the opportunity to revise mathematical thinking. Daily Assessments are provided/available for feedback.</i>
D. Connections	
1. Relate or apply mathematics within the discipline, to	Unit 1–Numeration/Number Theory

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other disciplines, and to life	Unit 2–Computation with Integers and Decimals Unit 5 – Algebra Unit 6–Geometry
a. Identify mathematical concepts in relationship to other mathematical concepts	2.4–Multiplying and Dividing by Powers of 10, pp. 42 – 43
b. Identify mathematical concepts in relationship to other disciplines	5.6–Word Problems, pp. 100 – 101
c. Identify mathematical concepts in relationship to life	1.7–Greatest Common Factor, pp. 30–31 1.8–Least Common Multiple, pp. 32 – 33
d. Use the relationship among mathematical concepts to learn other mathematical concepts	6.3–Solid Figures, pp. 112–113 (learn and apply Euler's Formula)