

Northpoint Horizons

Math Elevations™ (Comprehensive Intervention System)
Correlated to the Grade 8
Colorado Model Content Standards for Mathematics

This document provides a sampling of the extensive math directives offered throughout the *Math Elevations* program that meet the **Colorado Model Content Standards for Mathematics**.

Grade 8

Content Standards	<i>Math Elevations</i> Teacher's Guide Level H (Grade 8) Lesson Examples
Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.	
1. demonstrate meanings for integers, rational numbers, percents, exponents, square roots, and pi (π) use physical materials and technology in problem-solving situations;	Unit 1 – Lesson 1: <i>Integers and Absolute Value</i> pp. 18-20 Lesson 7: <i>Exponents</i> pp. 37-39 Lesson 8: <i>Square Roots</i> pp. 40-42 Unit 2 – Lesson 6: <i>Rules of Exponents</i> pp. 62-64 Lesson 7: <i>Negative and Zero Exponents</i> pp. 65-67 Lesson 8: <i>Scientific Notation</i> pp. 68-70 Unit 4 – Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114-116 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 Lesson 7: <i>Percent of Change</i> pp. 124-126 Lesson 8: <i>Percent Applications</i> pp. 127-129
2. read, write, and order integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π ;	Unit 1 – Lesson 1: <i>Integers and Absolute Value</i> pp. 18-20 Lesson 7: <i>Exponents</i> pp. 37-39 Lesson 8: <i>Square Roots</i> pp. 40-42

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	Unit 4 – Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114-116 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 Lesson 7: <i>Percent of Change</i> pp. 124-126
3. apply number theory concepts (for example, primes, factors, multiples) to represent numbers in various ways;	Unit 2 – Lesson 1: <i>Factors and Prime Factorization</i> pp. 46-48 Lesson 2: <i>Greatest Common Factor (GCF)</i> pp. 49-51 Lesson 3: <i>Least Common Multiple (LCM)</i> pp. 52-54
4. use the relationships among fractions, decimals, and percents, include the concepts of ratio and proportion, in problem-solving situations;	Unit 4 – Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114-116 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
5. develop, test, and explain conjectures about properties of integers and rational numbers; and	Unit 1 – Lesson 1: <i>Integers and Absolute Value</i> pp. 18-20
6. use number sense to estimate and justify the reasonableness of solutions to problems involving integers, rational numbers, and common irrational numbers such as $\sqrt{2}$, $\sqrt{5}$, and π .	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40-42 Unit 2 – Lesson 4: <i>Adding and Subtracting Fractions</i> pp. 55-57 Lesson 5: <i>Multiplying and Dividing Fractions and Mixed Numbers</i> pp. 58-61 Unit 4 – Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114-116 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
Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.	
1. represent, describe, and analyze patterns and relationships using tables, graphs, verbal rules, and standard algebraic notation;	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141-143

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	Lesson 6: <i>Graphing Linear Functions</i> pp. 147-150
2. describe patterns using variables, expressions, equations, and inequalities in problem-solving situations;	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141-143 Lesson 5: <i>Two-Variable Equations</i> pp. 144-146
3. analyze functional relationships to explain how a change in one quantity results in a change in another (for example, how the area of a circle changes as the radius increases, or how a person's height changes over time);	Unit 5 – Lesson 4: <i>Relations and Functions</i> pp. 141-143
5. solve simple linear equations in problem-solving situations using a variety of methods (informal, formal, graphical) and a variety of tools (physical materials, calculators, computers).	Unit 5 – Lesson 1: <i>Solving Two-Step Equations</i> pp. 132-134 Lesson 2: <i>Solving Multi-Step Equations</i> pp. 135-137 Lesson 3: <i>Translating and Solving Word Problems</i> pp. 138-140 Lesson 5: <i>Two-Variable Equations</i> pp. 144-146 Lesson 6: <i>Graphing Linear Functions</i> pp. 147-150 Lesson 7: <i>Interpreting Linear Functions</i> pp. 151-153
Standard 3: Students use data collection and analysis, statistics, and probability in problem-solving situations and communicate the reasoning used in solving these problems.	
1. read and construct displays of data using appropriate techniques (for example, line graphs, circle graphs, scatter plots, box plots, stem-and-leaf plots) and appropriate technology;	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
2. display and use measures of central tendency, such as mean, median, and mode, and measures of variability, such as range and quartiles;	Unit 8 – Lesson 3: <i>Mean, Median, and Mode</i> pp. 224-226
3. evaluate arguments that are based on statistical claims;	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216-219 Lesson 2: <i>Making Predictions</i> pp. 220-223
4. formulate hypotheses, draw conclusions, and make convincing arguments based on data analysis;	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216-219 Lesson 2: <i>Making Predictions</i> pp. 220-223
5. determine probabilities through experiments or simulations;	Unit 8 – Lesson 2: <i>Making Predictions</i> pp. 220-223
6. make predictions and compare results using both experimental and theoretical probability drawn from real-world problems; and	Unit 8 – Lesson 2: <i>Making Predictions</i> pp. 220-223

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7. use counting strategies to determine all the possible outcomes from an experiment (for example, the number of ways students can line up to have their picture taken).	Unit 8 – Lesson 1: <i>Counting Methods</i> pp. 216-219
Standard 4: Students use geometric concepts, properties, and relationships in problem-solving situations and communicate the reasoning used in solving these problems.	
1. construct two- and three-dimensional models using a variety of materials and tools;	Unit 6 – Lesson 3: <i>Polygons</i> pp. 167-170 Unit 7 – Lesson 4: <i>Surface Area of a Prism</i> pp. 199-201 Lesson 5: <i>Surface Area of a Cylinder</i> pp. 202-204
2. describe, analyze, and reason informally about the properties (for example, parallelism, perpendicularity, congruence) of two- and three-dimensional figures;	Unit 6 – Lesson 5: <i>Congruent Triangles</i> pp. 174-176 Lesson 6: <i>Similarity and Dilations</i> pp. 177-179
3. apply the concepts of ratio, proportion, and similarity in problem-solving situations;	Unit 4 – 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 6 – Lesson 6: <i>Similarity and Dilations</i> pp. 177-179
4. solve problems using coordinate geometry;	Unit 6 – Lesson 7: <i>Reflections and Translations in the Coordinate Plane</i> pp. 180-183 Lesson 8: <i>Rotations in the Coordinate Plane</i> pp. 184-186
5. solve problems involving perimeter and area in two dimensions, and involving surface area and volume in three dimensions; and	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190-192 Lesson 3: <i>Area of a Circle</i> pp. 196-198 Lesson 4: <i>Surface Area of a Prism</i> pp. 199-201 Lesson 5: <i>Surface Area of a Cylinder</i> pp. 202-204 Lesson 6: <i>Surface Area of a Pyramid and a Cone</i> pp. 205-207 Lesson 7: <i>Volume of a Prism and a Cylinder</i> pp. 208-210 Lesson 8: <i>Volume of a Pyramid and a Cone</i> pp. 211-213
6. transform geometric figures using reflections, translations, and rotations to explore congruence.	Unit 6 – Lesson 7: <i>Reflections and Translations in the Coordinate Plane</i> pp. 180-183

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	Lesson 8: <i>Rotations in the Coordinate Plane</i> pp. 184-187
Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situations, and communicate the reasoning used in solving these problems.	
1. estimate, use, and describe measures of distance, perimeter, area, volume, capacity, weight, mass, and angle comparison;	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190-192 Lesson 2: <i>Circumference of a Circle</i> pp. 193-195 Lesson 3: <i>Area of a Circle</i> pp. 196-198 Lesson 4: <i>Surface Area of a Prism</i> pp. 199-201 Lesson 5: <i>Surface Area of a Cylinder</i> pp. 202-204 Lesson 6: <i>Surface Area of a Pyramid and a Cone</i> pp. 205-207 Lesson 7: <i>Volume of a Prism and a Cylinder</i> pp. 208-210 Lesson 8: <i>Volume of a Pyramid and a Cone</i> pp. 211-213
2. estimate, make, and use direct and indirect measurements to describe and make comparisons;	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190-192 Lesson 3: <i>Area of a Circle</i> pp. 196-198
3. read and interpret various scales including those based on number lines, graphs, and maps;	Unit 1 – Lesson 2: <i>Adding Integers Using a Number Line</i> pp. 21-23 Lesson 3: <i>Adding Integers Using Absolute Value</i> pp. 24-27 Unit 4 – Lesson 3: <i>Scale Drawings and Models</i> pp. 111-113
4. develop and use formulas and procedures to solve problems involving measurement;	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190-192 Lesson 2: <i>Circumference of a Circle</i> pp. 193-195 Lesson 3: <i>Area of a Circle</i> pp. 196-198
5. describe how a change in an object's linear dimensions affects its perimeter, area, and volume; and	Unit 7 – Lesson 7: <i>Volume of a Prism and a Cylinder</i> , pp. 208-210 Lesson 8: <i>Volume of a Pyramid and a Cone</i> , pp. 211-213
6. select and use appropriate units and tools to measure to the degree of accuracy required in a particular problem-solving situation.	Unit 7 – Lesson 1: <i>Area of a Trapezoid</i> pp. 190-192 Lesson 2: <i>Circumference of a Circle</i> pp. 193-195 Lesson 3: <i>Area of a Circle</i> pp. 196-198
Standard 6: Students link concepts and procedures as they develop and use computational techniques, including estimation, mental arithmetic, paper-and-pencil, calculators, and computers, in problem-solving situations and communicate the reasoning used in solving these problems.	
1. use models to explain how ratios, proportions, and percents can be used to	Unit 2 –

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solve real-world problems;	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
2. construct, use, and explain procedures to compute and estimate with whole numbers, fractions, decimals, and integers;	Unit 1 – Lesson 2: <i>Adding Integers Using a Number Line</i> pp. 21-23 Lesson 3: <i>Adding Integers Using Absolute Value</i> pp. 24-27 Lesson 4: <i>Subtracting Integers</i> pp. 28-30 Lesson 5: <i>Multiplying Integers</i> pp. 31-33 Lesson 6: <i>Dividing Integers</i> pp. 34-36 Unit 2 – Lesson 4: <i>Adding and Subtracting Fractions</i> pp. 55-57 Lesson 5: <i>Multiplying and Dividing Fractions and Mixed Numbers</i> pp. 58-61
3. develop, apply, and explain a variety of different estimation strategies in problem-solving situations, and explain why an estimate may be acceptable in place of an exact answer; and	Unit 1 – Lesson 8: <i>Square Roots</i> pp. 40-42 Unit 2 – Lesson 5: <i>Multiplying and Dividing Fractions and Mixed Numbers</i> pp. 58-61 Unit 4 – Lesson 4: <i>Fractions, Decimals, and Percents</i> pp. 114-116
4. select and use appropriate algorithms for computing with commonly used fractions and decimals, percents, and integers in problem-solving and determine whether the results are reasonable.	Unit 1 – Lesson 2: <i>Adding Integers Using a Number Line</i> pp. 21-23 Lesson 3: <i>Adding Integers Using Absolute Value</i> pp. 24-27 Lesson 4: <i>Subtracting Integers</i> pp. 28-30 Lesson 5: <i>Multiplying Integers</i> pp. 31-33 Lesson 6: <i>Dividing Integers</i> pp. 34-36 Unit 2 – Lesson 4: <i>Adding and Subtracting Fractions</i> pp. 55-57 Lesson 5: <i>Multiplying and Dividing Fractions and Mixed Numbers</i> pp. 58-61 Unit 4 – Lesson 5: <i>Solving Percent Problems Using a Proportion</i> pp. 117-119 Lesson 6: <i>Using Proportions to Solve other Percent Problems</i>

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