

Northpoint Horizons

Math Elevations™ (Comprehensive Intervention System) **Correlated to the Grade 7** **NYS Mathematics Core** **Curriculum**

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

Grade 7

Math Content Standard	Math Elevations Level G (Grade 7) Teacher's Guide Examples/Lessons
Problem Solving Strand	
<i>Students will build new mathematical knowledge through problem solving.</i>	
7.PS.1 Use a variety of strategies to understand new mathematical content and to develop more efficient methods	Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138-140
7.PS.2 Construct appropriate extensions to problem situations	Unit 1 – Lesson 5: <i>Prime Factorization</i> pp. 31-33
7.PS.3 Understand and demonstrate how written symbols represent mathematical ideas	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22-24 Lesson 3: <i>Square Roots</i> pp. 25-27
<i>Students will solve problems that arise in mathematics and in other contexts.</i>	
7.PS.4 Observe patterns and formulate generalizations	Unit 5 – Lesson 1: <i>Ratios</i> pp. 128-131
7.PS.5 Make conjectures from generalizations	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22-24
7.PS.6 Represent problem situations verbally, numerically, algebraically, and graphically	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22-24
<i>Students will apply and adapt a variety of appropriate strategies to solve problems.</i>	
7.PS.7 Understand that there is no one right way to solve mathematical problems but that different methods have advantages and disadvantages	Unit 8 – Lesson 7: <i>Bar Graphs and Line Graphs</i> pp. 233-236 Lesson 8: <i>Circle Graphs</i> pp. 237-239
7.PS.8 Understand how to break a complex problem into simpler parts or use a similar problem type to solve a problem	Unit 2 – Lesson 1: <i>Adding and Subtracting Fractions</i> pp. 46-48

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7.PS.10 Use proportionality to model problems	Unit 5 – Lesson 3: <i>Writing and Solving Proportions</i> pp. 135-137
7.PS.11 Work in collaboration with others to solve problems	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22-24
<i>Students will monitor and reflect on the process of mathematical problem solving.</i>	
7.PS.12 Interpret solutions within the given constraints of a problem	Unit 5 – Lesson 6: <i>Percent of a Number</i> pp. 144-146
7.PS.13 Set expectations and limits for possible solutions	Unit 4 – Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
7.PS.14 Determine information required to solve the problem	Unit 3 – Lesson 4: <i>Absolute Value</i> pp. 83-85
7.PS.15 Choose methods for obtaining required information	Unit 4 – Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
7.PS.16 Justify solution methods through logical argument	Unit 7 – Lesson 2: <i>Area of Parallelograms and Triangles</i> pp. 187-190
7.PS.17 Evaluate the efficiency of different representations of a problem	Unit 4 – Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
Reasoning and Proof Strand	
<i>Students will recognize reasoning and proof as fundamental aspects of mathematics.</i>	
7.RP.1 Recognize that mathematical ideas can be supported by a variety of strategies	Unit 3 – Lesson 7: <i>Commutative and Associative Properties</i> pp. 92-94
<i>Students will make and investigate mathematical conjectures.</i>	
7.RP.2 Use mathematical strategies to reach a conclusion	Unit 2 – Lesson 1: <i>Adding and Subtracting Fractions</i> pp. 46-48
7.RP.3 Evaluate conjectures by distinguishing relevant from irrelevant information to reach a conclusion or make appropriate estimates	Unit 6 – Lesson 8: <i>Solid Figures</i> pp. 179-181
<i>Students will develop and evaluate mathematical arguments and proofs.</i>	
7.RP.4 Provide supportive arguments for conjectures	Unit 6 – Lesson 8: <i>Solid Figures</i> pp. 179-181
7.RP.5 Develop, verify, and explain an argument, using appropriate mathematical ideas and language	Unit 3 – Lesson 8: <i>Distributive Property</i> pp. 95-97
<i>Students will select and use various types of reasoning and methods of proof.</i>	
7.RP.6 Support an argument by using a systematic approach to test more than one case	Unit 3 – Lesson 8: <i>Distributive Property</i> pp. 95-97

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7.RP.7 Devise ways to verify results or use counterexamples to refute incorrect statements	Unit 8 – Lesson 6: <i>Mean, Median, and Mode</i> pp. 229-232
7.RP.8 Apply inductive reasoning in making and supporting mathematical conjectures	Unit 5 – Lesson 3: <i>Writing and Solving Proportions</i> pp. 135-137
Communication Strand	
<i>Students will organize and consolidate their mathematical thinking through communication.</i>	
7.CM.1 Provide a correct, complete, coherent, and clear rationale for thought process used in problem solving	Unit 2 – Lesson 7: <i>Dividing Decimals</i> pp. 64-67
7.CM.2 Provide an organized argument which explains rationale for strategy selection	Unit 3 – Lesson 3: <i>Subtracting Integers</i> pp. 80-82
7.CM.3 Organize and accurately label work	Unit 7 – Lesson 5: <i>Area of a Circle</i> pp. 197-199
<i>Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.</i>	
7.CM.4 Share organized mathematical ideas through the manipulation of objects, numerical tables, drawings, pictures, charts, graphs, tables, diagrams, models and symbols in written and verbal form	Unit 1 – Lesson 5: <i>Prime Factorization</i> pp. 31-33
<i>Students will analyze and evaluate the mathematical thinking and strategies of others.</i>	
7.CM.6 Analyze mathematical solutions shared by others	Unit 1 – Lesson 4: <i>Scientific Notation</i> pp. 28-30
7.CM.7 Compare strategies used and solutions found by others in relation to their own work	Unit 1 – Lesson 4: <i>Scientific Notation</i> pp. 28-31
7.CM.8 Formulate mathematical questions that elicit, extend, or challenge strategies, solutions, and/or conjectures of others	Unit 8 – Lesson 4: <i>Disjoint, Overlapping, and Complementary Events</i> pp. 221-224 Lesson 5: <i>Dependent and Independent Events</i> pp. 225-228
<i>Students will use the language of mathematics to express mathematical ideas precisely.</i>	
7.CM.9 Increase their use of mathematical vocabulary and language when communicating with others	Unit 3 – Lesson 1: <i>Introduction to Integers</i> pp. 74-76 Lesson 7: <i>Commutative and Associative Properties</i> pp. 92-94 Lesson 8: <i>Distributive Property</i> pp. 95-97
7.CM.10 Use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale	Unit 3 – Lesson 7: <i>Commutative and Associative Properties</i> pp. 92-94 Lesson 8: <i>Distributive Property</i> pp. 95-97
7.CM.11 Draw conclusions about mathematical ideas through decoding,	Unit 3 –

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comprehension, and interpretation of mathematical visuals, symbols, and technical writing	Lesson 4: <i>Absolute Value</i> pp. 83-85
Connections Strand	
<i>Students will recognize and use connections among mathematical ideas.</i>	
7.CN.1 Understand and make connections among multiple representations of the same mathematical idea	Unit 5 – Lesson 5: <i>Fractions, Decimals, and Percents</i> pp. 141-143
7.CN.2 Recognize connections between subsets of mathematical ideas	Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138-140
7.CN.3 Connect and apply a variety of strategies to solve problems	Unit 8 – Lesson 7: <i>Bar Graphs and Line Graphs</i> pp. 233-236 Lesson 8: <i>Circle Graphs</i> pp. 237-240
<i>Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.</i>	
7.CN.4 Model situations mathematically, using representations to draw conclusions and formulate new situations	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109-111
7.CN.5 Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics	Unit 5 – Lesson 2: <i>Rates</i> pp. 132-134
<i>Students will recognize and apply mathematics in contexts outside of mathematics.</i>	
7.CN.6 Recognize and provide examples of the presence of mathematics in their daily lives	Unit 8 – Lesson 6: <i>Mean, Median, and Mode</i> pp. 229-232
7.CN.7 Apply mathematical ideas to problem situations that develop outside of mathematics	Unit 8 – Lesson 6: <i>Mean, Median, and Mode</i> pp. 229-232
7.CN.8 Investigate the presence of mathematics in careers and areas of interest	Unit 8 – Lesson 5: <i>Dependent and Independent Events</i> pp. 225-228
7.CN.9 Recognize and apply mathematics to other disciplines, areas of interest, and societal issues	Unit 8 – Lesson 5: <i>Dependent and Independent Events</i> pp. 225-228
Representation Strand	
<i>Students will create and use representations to organize, record, and communicate mathematical ideas.</i>	
7.R.1 Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109-111 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124 Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138-140
7.R.2 Explain, describe, and defend mathematical ideas using representations	Unit 5 –

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	Lesson 4: <i>Scale Drawings and Models</i> pp. 138-140
7.R.3 Recognize, compare, and use an array of representational forms	Unit 5 – Lesson 5: <i>Fractions, Decimals, and Percents</i> pp. 141-143
7.R.4 Explain how different representations express the same relationship	Unit 5 – Lesson 5: <i>Fractions, Decimals, and Percents</i> pp. 140-143
7.R.5 Use standard and non-standard representations with accuracy and detail	Unit 1 – Lesson 3: <i>Square Roots</i> pp. 25-27 Lesson 4: <i>Scientific Notation</i> pp. 28-31
<i>Students will select, apply, and translate among mathematical representations to solve problems.</i>	
7.R.6 Use representations to explore problem situations	Unit 1 – Lesson 8: <i>Fractions and Mixed Numbers</i> pp. 40-43
7.R.7 Investigate relationships between different representations and their impact on a given problem	Unit 5 – Lesson 5: <i>Fractions, Decimals, and Percents</i> pp. 140-143
7.R.8 Use representation as a tool for exploring and understanding mathematical ideas	Unit 5 – Lesson 5: <i>Fractions, Decimals, and Percents</i> pp. 141-143
<i>Students will use representations to model and interpret physical, social, and mathematical phenomena.</i>	
7.R.9 Use mathematics to show and understand physical phenomena (e.g., make and interpret scale drawings of figures or scale models of objects)	Unit 1 – Lesson 8: <i>Fractions and Mixed Numbers</i> pp. 40-43
7.R.10 Use mathematics to show and understand social phenomena (e.g., determine profit from sale of yearbooks)	Unit 8 – Lesson 6: <i>Mean, Median, and Mode</i> pp. 229-232
7.R.11 Use mathematics to show and understand mathematical phenomena (e.g., use tables, graphs, and equations to show a pattern underlying a function)	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109-111 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124 Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138-140
Number Sense and Operations Strand	
<i>Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.</i>	
7.N.1 Distinguish between the various subsets of real numbers (counting/natural numbers, whole numbers, integers, rational numbers, and irrational numbers)	Unit 3 – Lesson 1: <i>Introduction to Integers</i> pp. 74-76
7.N.4 Develop the laws of exponents for multiplication and division	Unit 1 – Lesson 2: <i>Exponents</i> pp. 22-24
7.N.5 Write numbers in scientific notation	Unit 1 – Lesson 4: <i>Scientific Notation</i> pp. 28-30

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7.N.6 Translate numbers from scientific notation into standard form	Unit 1 – Lesson 4: <i>Scientific Notation</i> pp. 28-30
7.N.7 Compare numbers written in scientific notation	Unit 1 – Lesson 4: <i>Scientific Notation</i> pp. 28-30
7.N.8 Find the common factors and greatest common factor of two or more numbers	Unit 1 – Lesson 6: <i>Greatest Common Factor</i> pp. 34-36
7.N.9 Determine multiples and least common multiple of two or more numbers	Unit 1 – Lesson 7: <i>Least Common Multiple</i> pp. 37-39
7.N.10 Determine the prime factorization of a given number and write in exponential form	Unit 1 – Lesson 5: <i>Prime Factorization</i> pp. 31-33
<i>Students will understand meanings of operations and procedures, and how they relate to one another.</i>	
7.N.11 Simplify expressions using order of operations	Unit 4 – Lesson 1: <i>Order of Operations</i> pp. 100-102
7.N.12 Add, subtract, multiply, and divide integers	Unit 3 – Lesson 2: <i>Adding Integers</i> pp. 77-79 Lesson 3: <i>Subtracting Integers</i> pp. 80-82 Lesson 5: <i>Multiplying Integers</i> pp. 86-88 Lesson 6: <i>Dividing Integers</i> pp. 89-91
7.N.13 Add and subtract two integers (with and without the use of a number line)	Unit 3 – Lesson 2: <i>Adding Integers</i> pp. 77-79 Lesson 3: <i>Subtracting Integers</i> pp. 80-82
7.N.15 Recognize and state the value of the square root of a perfect square (up to 225)	Unit 1 – Lesson 3: <i>Square Roots</i> pp. 25-27
7.N.16 Determine the square root of non-perfect squares using a calculator	Unit 1 – Lesson 3: <i>Square Roots</i> pp. 25-27
<i>Students will compute accurately and make reasonable estimates.</i>	
7.N.18 Identify the two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)	Unit 1 – Lesson 3: <i>Square Roots</i> pp. 25-27
7.N.19 Justify the reasonableness of answers using estimation	Unit 1 – Lesson 3: <i>Square Roots</i> pp. 25-27
Algebra Strand	
<i>Students will represent and analyze algebraically a wide variety of problem solving situations.</i>	

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7.A.1 Translate two-step verbal expressions into algebraic expressions	
Students will perform algebraic procedures accurately.	Unit 4 – Lesson 1: <i>Order of Operations</i> pp. 100-102 Lesson 3: <i>Writing and Evaluating Expressions</i> pp. 106-108 Lesson 4: <i>Graphing Functions</i> pp. 109-111 Lesson 5: <i>Simplifying Expressions</i> pp. 112-114 Lesson 6: <i>Solving One-Step Equations Using Addition and Subtraction</i> pp. 115-117 Lesson 7: <i>Solving One-Step Equations Using Multiplication and Division</i> pp. 118-120 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
7.A.4 Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation	Unit 3 – Lesson 8: <i>Distributive Property</i> pp. 95-97
7.A.5 Solve one-step inequalities (positive coefficients only) (See 7.G.10)	Unit 4 – Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
7.A.6 Evaluate formulas for given input values (surface area, rate, and density problems)	Unit 7 – Lesson 6: <i>Surface Area of a Prism</i> pp. 200-202 Lesson 7: <i>Surface Area of a Cylinder</i> pp. 203-205
Students will recognize, use, and represent algebraically patterns, relations, and functions.	
7.A.7 Draw the graphic representation of a pattern from an equation or from a table of data	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109-111 Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
7.A.8 Create algebraic patterns using charts/tables, graphs, equations, and expressions	Unit 5 – Lesson 1: <i>Ratios</i> pp. 128-131
7.A.10 Write an equation to represent a function from a table of values	Unit 4 – Lesson 3: <i>Writing and Evaluating Expressions</i> pp. 106-108
Geometry Strand	
Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.	
7.G.1 Calculate the radius or diameter, given the circumference or area of a circle	Unit 7 – Lesson 4: <i>Circumference of a Circle</i> pp. 194-196 Lesson 5: <i>Area of a Circle</i> pp. 197-199
7.G.2 Calculate the volume of prisms and cylinders, using a given formula and a calculator	Unit 7 – Lesson 8: <i>Volume of a Prism</i> pp. 206-208
7.G.3 Identify the two-dimensional shapes that make up the faces and bases of	Unit 6 –

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three-dimensional shapes (prisms, cylinders, cones, and pyramids)	Lesson 8: <i>Solid Figures</i> pp. 179-181
7.G.4 Determine the surface area of prisms and cylinders, using a calculator and a variety of methods	Unit 7 – Lesson 6: <i>Surface Area of a Prism</i> pp. 200-202 Lesson 7: <i>Surface Area of a Cylinder</i> pp. 203-205
<i>Students will identify and justify geometric relationships, formally and informally.</i>	
7.G.5 Identify the right angle, hypotenuse, and legs of a right triangle	Unit 6 – Lesson 1: <i>Angles</i> pp. 156-159
7.G.6 Explore the relationship between the lengths of the three sides of a right triangle to develop the Pythagorean Theorem	Unit 7 – Lesson 1: <i>Pythagorean Theorem</i> pp. 185-186
7.G.7 Find a missing angle when given angles of a quadrilateral	Unit 6 – Lesson 1: <i>Angles</i> pp. 156-159
7.G.8 Use the Pythagorean Theorem to determine the unknown length of a side of a right triangle	Unit 7 – Lesson 1: <i>Pythagorean Theorem</i> pp. 185-186
7.G.9 Determine whether a given triangle is a right triangle by applying the Pythagorean Theorem and using a calculator	Unit 6 – Lesson 2: <i>Triangles</i> pp. 160-162
<i>Students will apply coordinate geometry to analyze problem solving situations.</i>	
7.G.10 Graph the solution set of an inequality (positive coefficients only) on a number line (See 7.A.5)	Unit 4 – Lesson 8: <i>Solving and Graphing Inequalities</i> pp. 121-124
Measurement Strand	
<i>Students will determine what can be measured and how, using appropriate methods and formulas.</i>	
7.M.1 Calculate distance using a map scale	Unit 5 – Lesson 4: <i>Scale Drawings and Models</i> pp. 138-140
7.M.2 Convert capacities and volumes within a given system	Unit 7 – Lesson 8: <i>Volume of a Prism</i> pp. 206-209
<i>Students will develop strategies for estimating measurements.</i>	
7.M.11 Estimate surface area	Unit 7 – Lesson 6: <i>Surface Area of a Prism</i> pp. 200-202 Lesson 7: <i>Surface Area of a Cylinder</i> pp. 203-205
Statistics and Probability Strand	
<i>Students will collect, organize, display, and analyze data.</i>	
7.S.1 Identify and collect data using a variety of methods	Unit 8 – Lesson 7: <i>Bar Graphs and Line Graphs</i> pp. 233-236 Lesson 8: <i>Circle Graphs</i> pp. 237-240
7.S.2 Display data in a circle graph	Unit 8 –

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	Lesson 8: <i>Circle Graphs</i> pp. 237-239
7.S.3 Convert raw data into double bar graphs and double line graphs	Unit 8 – Lesson 7: <i>Bar Graphs and Line Graphs</i> pp. 233-236
7.S.4 Calculate the range for a given set of data	Unit 4 – Lesson 4: <i>Graphing Functions</i> pp. 109-111
7.S.5 Select the appropriate measure of central tendency	Unit 8 – Lesson 6: <i>Mean, Median, and Mode</i> pp. 229-232
7.S.6 Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs or circle graph)	Unit 8 – Lesson 7: <i>Bar Graphs and Line Graphs</i> pp. 233-236 Lesson 8: <i>Circle Graphs</i> pp. 237-240
<i>Students will make predictions that are based upon data analysis.</i>	
7.S.8 Interpret data to provide the basis for predictions and to establish experimental probabilities	Unit 8 – Lesson 4: <i>Disjoint, Overlapping, and Complementary Events</i> pp. 221-224 Lesson 5: <i>Dependent and Independent Events</i> pp. 225-228
7.S.10 Predict the outcome of an experiment	Unit 8 – Lesson 1: <i>Possible Outcomes</i> pp. 212-214
7.S.11 Design and conduct an experiment to test predictions	Unit 8 – Lesson 4: <i>Disjoint, Overlapping, and Complementary Events</i> pp. 221-224 Lesson 5: <i>Dependent and Independent Events</i> pp. 225-228