Grade 5

Math Elevations™ (Comprehensive Intervention System)
Correlated to the Grade 6
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 6

Math Content Standard	**Math Elevations Level F (Grade 6) Teacher's Guide Examples/Lessons**
Problem Solving Strand	
Students will build new mathematical knowledge through problem solving.	
6.PS.1 Know the difference between relevant and irrelevant information when solving problems	Unit 6 – Lesson 5: *The Coordinate Plane* pp. 116-117
6.PS.2 Understand that some ways of representing a problem are more efficient than others	Unit 8 – Lesson 5: *Displaying Data* pp. 152-153
6.PS.3 Interpret information correctly, identify the problem, and generate possible strategies and solutions	Unit 8 – Lesson 8: *Probability Experiments* pp. 158-159
Students will solve problems that arise in mathematics and in other contexts.	
6.PS.4 Act out or model with manipulatives activities involving mathematical content from literature	Unit 1 – Lesson 1: *Decimals* pp. 18-19 Lesson 2: *Understanding Exponents* pp. 20-21
6.PS.5 Formulate problems and solutions from everyday situations	Unit 2 – Lesson 8: *Word Problems* pp. 50-51
6.PS.6 Translate from a picture/diagram to a numeric expression	Unit 5 – Lesson 2: *Patterns* pp. 92-93
6.PS.7 Represent problem situations verbally, numerically, algebraically, and/or graphically	Unit 8 – Lesson 3: *Scales and Bar Graphs* pp. 148-149 Lesson 6: *Line Graphs* pp. 154-155
6.PS.8 Select an appropriate representation of a problem	Unit 8 – Lesson 5: *Displaying Data* pp. 152-153
6.PS.9 Understand the basic language of logic in mathematical situations (and,	Unit 5 –

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or, and not)	Lesson 2: *Patterns* pp. 92-93
Students will apply and adapt a variety of appropriate strategies to solve problems.	
6.PS.10 Work in collaboration with others to solve problems	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31 Lesson 8: *Least Common Multiple (LCM)* pp. 32-33
6.PS.11 Translate from a picture/diagram to a number or symbolic expression	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31
6.PS.12 Use trial and error and the process of elimination to solve problems	Unit 8 – Lesson 7: *Probability* pp. 156-157
6.PS.13 Model problems with pictures/diagrams or physical objects	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31 Lesson 8: *Least Common Multiple (LCM)* pp. 32-33
6.PS.14 Analyze problems by observing patterns	Unit 5 – Lesson 2: *Patterns* pp. 92-93
6.PS.15 Make organized lists or charts to solve numerical problems	Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147
Students will monitor and reflect on the process of mathematical problem solving.	
6.PS.16 Discuss with peers to understand a problem situation	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31
6.PS.17 Determine what information is needed to solve problem	Unit 2 – Lesson 8: *Word Problems* pp. 50-51
6.PS.18 Determine the efficiency of different representations of a problem	Unit 2 – Lesson 8: *Word Problems* pp. 50-51
6.PS.19 Differentiate between valid and invalid approaches	Unit 8 – Lesson 8: *Probability Experiments* pp. 158-159
6.PS.20 Understand valid counterexamples	Unit 7 – Lesson 3: *Angles* pp. 130-131
6.PS.21 Explain the methods and reasoning behind the problem solving strategies used	Unit 5 – Lesson 6: *Word Problems* pp. 100-101
6.PS.22 Discuss whether a solution is reasonable in the context of the original problem	Unit 5 – Lesson 6: *Word Problems* pp. 100-101
6.PS.23 Verify results of a problem	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159

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Reasoning and Proof Strand	
Students will recognize reasoning and proof as fundamental aspects of mathematics.	
6.RP.1 Recognize that mathematical ideas can be supported using a variety of strategies	Unit 3 – Lesson 5: *Converting Between Percents, Fractions, and Decimals* pp. 62-63 Lesson 6: *More Converting Fractions* pp. 64-6
6.RP.2 Understand that mathematical statements can be supported, using models, facts, and relationships to explain their thinking	Unit 7 – Lesson 3: *Angles* pp. 130-131
Students will make and investigate mathematical conjectures.	
6.RP.3 Investigate conjectures, using arguments and appropriate mathematical terms	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
6.RP.4 Make and evaluate conjectures, using a variety of strategies	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
Students will develop and evaluate mathematical arguments and proofs.	
6.RP.5 Justify general claims or conjectures, using manipulatives, models, expressions, and mathematical relationships	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31 Lesson 8: *Least Common Multiple (LCM)* pp. 32-33
6.RP.6 Develop and explain an argument verbally, numerically, algebraically, and/or graphically	Unit 5 – Lesson 3: *One-Step Algebraic Expressions* pp. 94-95 Lesson 4: *Two-Step Algebraic Expressions* pp. 96-97 Lesson 5: *Solving Equations* pp. 98-99 Lesson 6: *Word Problems* pp. 100-101 Lesson 7: *Graphing Algebraic Equations* pp. 102-103 Unit 8 – Lesson 3: *Scales and Bar Graphs* pp. 148-149
6.RP.7 Verify claims other students make, using examples and counterexamples when appropriate	Unit 1 – Lesson 6: *Divisibility* pp. 28-29
Students will select and use various types of reasoning and methods of proof.	
6.RP.8 Support an argument through examples/counterexamples and special cases	Unit 6 – Lesson 1: *Properties of Polygons* pp. 108-109
6.RP.9 Devise ways to verify results	Unit 8 – Lesson 7: *Probability* pp. 156-157

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	Lesson 8: *Probability Experiments* pp. 158-159
Communication Strand	
Students will organize and consolidate their mathematical thinking through communication.	
6.CM.1 Provide an organized thought process that is correct, complete, coherent, and clear	Unit 2 – Lesson 1: *Adding Integers* pp. 36-37
6.CM.2 Explain a rationale for strategy selection	Unit 7 – Lesson 8: *Volume* pp. 140-141
6.CM.3 Organize and accurately label work	Unit 7 – Lesson 3: *Angles* pp. 130-131
Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	
6.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 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147 Lesson 3: *Scales and Bar Graphs* pp. 148-149 Lesson 4: *Conducting Surveys* pp. 150-151 Lesson 5: *Displaying Data* pp. 152-153 Lesson 6: *Line Graphs* pp. 154-155
Students will analyze and evaluate the mathematical thinking and strategies of others.	
6.CM.6 Understand mathematical solutions shared by other students	Unit 7 – Lesson 8: *Volume* pp. 140-141
Students will use the language of mathematics to express mathematical ideas precisely.	
6.CM.9 Increase their use of mathematical vocabulary and language when communicating with others	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31
6.CM.10 Use appropriate vocabulary when describing objects, relationships, mathematical solutions, and rationale	Unit 6 – Lesson 1: *Properties of Polygons* pp. 108-109 Lesson 2: *Classifying Quadrilaterals* pp. 110-111 Lesson 3: *Solid Figures* pp. 112-113 Lesson 4: *Circles* pp. 114-115
6.CM.11 Decode and comprehend mathematical visuals and symbols to construct meaning	Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147 Lesson 3: *Scales and Bar Graphs* pp. 148-149
Connections Strand	
Students will recognize and use connections among mathematical ideas.	
6.CN.1 Understand and make connections and conjectures in their everyday experiences to mathematical ideas	Unit 2 – Lesson 8: *Word Problems* pp. 50-51

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6.CN.2 Explore and explain the relationship between mathematical ideas	Unit 2 – Lesson 2: *Rounding Numbers* pp. 38-39
6.CN.3 Connect and apply mathematical information to solve problems	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	
6.CN.4 Understand multiple representations and how they are related	Unit 3 – Lesson 5: *Converting Between Percents, Fractions, and Decimals* pp. 62-63
6.CN.5 Model situations with objects and representations and be able to draw conclusions	Unit 8 – Lesson 3: *Scales and Bar Graphs* pp. 148-149 Lesson 8: *Probability Experiments* pp. 158-159
Students will recognize and apply mathematics in contexts outside of mathematics.	
6.CN.6 Recognize and provide examples of the presence of mathematics in their daily lives	Unit 2 – Lesson 8: *Word Problems* pp. 50-51
6.CN.7 Apply mathematics to problem situations that develop outside of mathematics	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
6.CN.9 Recognize and apply mathematics to other disciplines and areas of interest	Unit 8 – Lesson 4: *Conducting Surveys* pp. 150-151
Representation Strand	
Students will create and use representations to organize, record, and communicate mathematical ideas.	
6.R.1 Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations	Unit 5 – Lesson 3: *One-Step Algebraic Expressions* pp. 94-95 Lesson 4: *Two-Step Algebraic Expressions* pp. 96-97 Lesson 5: *Solving Equations* pp. 98-99 Lesson 6: *Word Problems* pp. 100-101 Lesson 7: *Graphing Algebraic Equations* pp. 102-103 Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147 Lesson 6: *Line Graphs* pp. 154-155
6.R.2 Explain, describe, and defend mathematical ideas using representations	Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147 Lesson 3: *Scales and Bar Graphs* pp. 148-149

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	Lesson 4: *Conducting Surveys* pp. 150-151 Lesson 5: *Displaying Data* pp. 152-153 Lesson 6: *Line Graphs* pp. 154-155
6.R.3 Read, interpret, and extend external models	Unit 1 – Lesson 7: *Greatest Common Factor (GCF)* pp. 30-31 Lesson 8: *Least Common Multiple (LCM)* pp. 32-33
6.R.4 Use standard and nonstandard representations with accuracy and detail	
Students will select, apply, and translate among mathematical representations to solve problems.	
6.R.5 Use representations to explore problem situations	Unit 2 – Lesson 4: *Multiplying and Dividing by Powers of 10* pp. 42-43
6.R.6 Investigate relationships between different representations and their impact on a given problem	Unit 3 – Lesson 5: *Converting Between Percents, Fractions, and Decimals* pp. 62-63
Students will use representations to model and interpret physical, social, and mathematical phenomena.	
6.R.7 Use mathematics to show and understand physical phenomena(e.g., determine the perimeter of a bulletin board)	Unit 7 – Lesson 2: *Perimeter* pp. 128-129
6.R.8 Use mathematics to show and understand social phenomena (e.g., construct tables to organize data showing book sales)	Unit 8 – Lesson 5: *Displaying Data* pp. 152-153
6.R.9 Use mathematics to show and understand mathematical phenomena (e.g., Find the missing value:(3 + 4) + 5 = 3 + (4 + ___)	Unit 5 – Lesson 3: *One-Step Algebraic Expressions* pp. 94-95 Lesson 4: *Two-Step Algebraic Expressions* pp. 96-97 Lesson 5: *Solving Equations* pp. 98-99
Number Sense and Operations Strand	
Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.	
Number Systems	
6.N.1 Read and write whole numbers to trillions	Unit 1 – Lesson 3: *Powers of 10* pp. 22-23
6.N.7 Express equivalent ratios as a proportion	Unit 3 – Lesson 7: *Ratios and Proportions* pp. 66-67
6.N.9 Solve proportions using equivalent fractions	Unit 3 – Lesson 8: *Solving Proportions* pp. 68-69
6.N.10 Verify the proportionality using the product of the means equals the product of the extremes	Unit 3 – Lesson 8: *Solving Proportions* pp. 68-69
6.N.11 Read, write, and identify percents of a whole (0% to 100%)	Unit 3 –

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	Lesson 4: *Understanding Percents* pp. 60-61
6.N.12 Solve percent problems involving percent, rate, and base	Unit 3 – Lesson 4: *Understanding Percents* pp. 60-61
6.N.15 Order rational numbers (including positive and negative)	Unit 1 – Lesson 4: *Introduction to Integers* pp. 24-25 Unit 3 – Lesson 2: *Comparing and Ordering Fractions* pp. 56-57
Students will understand meanings of operations and procedures, and how they relate to one another.	
6.N.16 Add and subtract fractions with unlike denominators	Unit 4 – Lesson 1: *Addition and Subtraction of Fractions* pp. 72-73
6.N.17 Multiply and divide fractions with unlike denominators	Unit 4 – Lesson 4: *Multiplying Fractions* pp. 78-79 Lesson 6: *Dividing Fractions by Whole Numbers* pp. 82-83 Lesson 7: *Dividing Fractions by Fractions* pp. 84-85
6.N.18 Add, subtract, multiply, and divide mixed numbers with unlike denominators	Unit 4 – Lesson 2: *Adding Mixed Numbers* pp. 74-75 Lesson 3: *Subtracting Mixed Numbers* pp. 76-77 Lesson 5: *Multiplying Mixed Numbers* pp. 80-81 Lesson 8: *Dividing Mixed Numbers* pp. 86-87
6.N.20 Represent fractions as terminating or repeating decimals	Unit 3 – Lesson 3: *Converting Fractions to Decimals* pp. 58-59 Lesson 5: *Converting Between Percents, Fractions, and Decimals* pp. 62-63 Lesson 6: *More Converting Fractions* pp. 64-65
6.N.21 Find multiple representations of rational numbers (fractions, decimals, and percents 0 to 100)	Unit 3 – Lesson 1: *Simplest Form* pp. 54-55 Lesson 2: *Comparing and Ordering Fractions* pp. 56-57 Lesson 3: *Converting Fractions to Decimals* pp. 58-59 Lesson 5: *Converting Between Percents, Fractions, and Decimals* pp. 62-63 Lesson 6: *More Converting Fractions* pp. 64-65
6.N.22 Evaluate numerical expressions using order of operations (may include exponents of two and three)	Unit 5 – Lesson 1: *Order of Operations* pp. 90-91
6.N.23 Represent repeated multiplication in exponential form	Unit 1 – Lesson 2: *Understanding Exponents* pp. 20-21

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	Lesson 3: *Powers of 10* pp. 22-23
6.N.24 Represent exponential form as repeated multiplication	Unit 1 – Lesson 2: *Understanding Exponents* pp. 20-21
6.N.25 Evaluate expressions having exponents where the power is an exponent of one, two, or three	Unit 1 – Lesson 2: *Understanding Exponents* pp. 20-21
Students will compute accurately and make reasonable estimates.	
6.N.26 Estimate a percent of quantity (0% to 100%)	Unit 3 – Lesson 4: *Understanding Percents* pp. 60-61
6.N.27 Justify the reasonableness of answers using estimation (including rounding)	Unit 2 – Lesson 2: *Rounding Numbers* pp. 38-39
Algebra Strand	
Students will represent and analyze algebraically a wide variety of problem solving situations.	
6.A.1 Translate two-step verbal expressions into algebraic expressions	Unit 5 – Lesson 4: *Two-Step Algebraic Expressions* pp. 96-97
Students will perform algebraic procedures accurately.	
6.A.2 Use substitution to evaluate algebraic expressions (may include Expressions exponents of one, two and three)	Unit 5 – Lesson 3: *One-Step Algebraic Expressions* pp. 94-95 Lesson 4: *Two-Step Algebraic Expressions* pp. 96-97 Lesson 5: *Solving Equations* pp. 98-99 Lesson 6: *Word Problems* pp. 100-101
6.A.4 Solve and explain two-step equations involving whole numbers using inverse operations	Unit 5 – Lesson 4: *Two-Step Algebraic Expressions* pp. 96-97
6.A.5 Solve simple proportions within context	Unit 3 – Lesson 7: *Ratios and Proportions* pp. 66-67 Lesson 8: *Solving Proportions* pp. 68-69
6.A.6 Evaluate formulas for given input values (circumference, area, volume, distance, temperature, interest, etc.)	Unit 6 – Lesson 4: *Circles* pp. 114-115 Unit 7 – Lesson 5: *Areas of Rectangles and Parallelograms* pp. 134-135 Lesson 6: *Area of Triangles* pp. 136-137 Lesson 7: *Area of Irregular Figures* pp. 138-139 Lesson 8: *Volume* pp. 140-141
Geometry Strand	
Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.	

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6.G.1 Calculate the length of corresponding sides of similar triangles, using proportional reasoning	Unit 7 – Lesson 6: *Area of Triangles* pp. 136-137
6.G.2 Determine the area of triangles and quadrilaterals (squares, rectangles, rhombi, and trapezoids) and develop formulas	Unit 7 – Lesson 5: *Areas of Rectangles and Parallelograms* pp. 134-135 Lesson 6: *Area of Triangles* pp. 136-137 Lesson 7: *Area of Irregular Figures* pp. 138-139
6.G.3 Use a variety of strategies to find the area of regular and irregular polygons	Unit 7 – Lesson 5: *Areas of Rectangles and Parallelograms* pp. 134-135 Lesson 6: *Area of Triangles* pp. 136-137 Lesson 7: *Area of Irregular Figures* pp. 138-139
6.G.4 Determine the volume of rectangular prisms by counting cubes and develop the formula	Unit 7 – Lesson 8: *Volume* pp. 140-141
6.G.5 Identify radius, diameter, chords and central angles of a circle	Unit 6 – Lesson 4: *Circles* pp. 114-115
6.G.6 Understand the relationship between the diameter and radius of a circle	Unit 6 – Lesson 4: *Circles* pp. 114-115
6.G.7 Determine the area and circumference of a circle, using the appropriate formula	Unit 6 – Lesson 4: *Circles* pp. 114-115
6.G.9 Understand the relationship between the circumference and the diameter of a circle	Unit 6 – Lesson 4: *Circles* pp. 114-115
Students will apply coordinate geometry to analyze problem solving situations.	
6.G.10 Identify and plot points in all four quadrants	Unit 6 – Lesson 5: *The Coordinate Plane* pp. 116-117
6.G.11 Calculate the area of basic polygons drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with integer lengths)	Unit 7 – Lesson 6: *Area of Triangles* pp. 136-137
Measurement Strand	
Students will determine what can be measured and how, using appropriate methods and formulas.	
6.M.1 Measure capacity and calculate volume of a rectangular prism	Unit 7 – Lesson 8: *Volume* pp. 140-141
Students will develop strategies for estimating measurements.	
6.M.7 Estimate volume, area, and circumference (see figures identified in geometry strand)	Unit 7 – Lesson 5: *Areas of Rectangles and Parallelograms* pp. 134-135 Lesson 6: *Area of Triangles* pp. 136-137

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	Lesson 7: *Area of Irregular Figures* pp. 138-139 Lesson 8: *Volume* pp. 140-141
6.M.8 Justify the reasonableness of estimates	Unit 2 – Lesson 3: *Addition and Subtraction* pp. 40-41
Statistics and Probability Strand	
Students will collect, organize, display, and analyze data.	
6.S.1 Develop the concept of sampling when collecting data from a population and decide the best method to collect data for a particular question	Unit 8 – Lesson 4: *Conducting Surveys* pp. 150-151
6.S.2 Record data in a frequency table	Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147
6.S.4 Determine and justify the most appropriate graph to display a given set of data (pictograph, bar graph, line graph, histogram, or circle graph)	Unit 8 – Lesson 5: *Displaying Data* pp. 152-153
6.S.5 Determine the mean, mode and median for a given set of data	Unit 8 – Lesson 1: *Mean, Mode, and Median* pp. 144-145
6.S.6 Determine the range for a given set of data	Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147
6.S.7 Read and interpret graphs	Unit 8 – Lesson 2: *Line Plots and Stem-and-Leaf Plots* pp. 146-147 Lesson 3: *Scales and Bar Graphs* pp. 148-149 Lesson 4: *Conducting Surveys* pp. 150-151 Lesson 5: *Displaying Data* pp. 152-153 Lesson 6: *Line Graphs* pp. 154-155
Students will make predictions that are based upon data analysis.	
6.S.8 Justify predictions made from data	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
Students will understand and apply concepts of probability.	
6.S.9 List possible outcomes for compound events	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
6.S.10 Determine the probability of dependent events	Unit 8 – Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159
6.S.11 Determine the number of possible outcomes for a compound event by	Unit 8 –

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using the fundamental counting principle and use this to determine the probabilities of events when the outcomes have equal probability	Lesson 7: *Probability* pp. 156-157 Lesson 8: *Probability Experiments* pp. 158-159