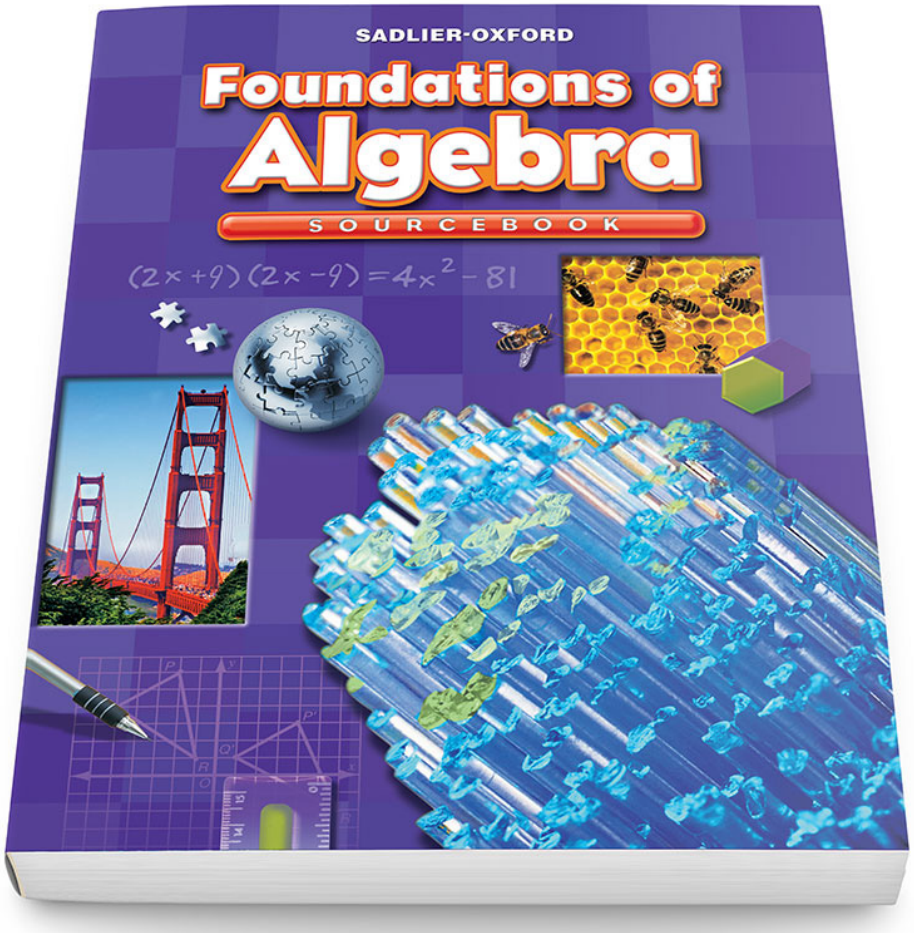
Foundations of Algebra

Correlation to the Archdiocese of Cincinnati
2020 Graded Course of Study for Mathematics

Grade 8



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STANDARD 1 – THE NUMBER SYSTEM (NS)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.NS.8.1 Know that there are numbers that are not rational, and approximate them by rational numbers.	
M.NS.8.1.1 Know that real numbers are either rational or irrational. Understand informally that every number has a decimal expansion which is repeating, terminating, or is non-repeating and non-terminating.	**Chapter 1 Rational Numbers** 1-1 The Rational Numbers—TE pp. 2–3B; SB pp. 2–3 / PB pp. 1–2 1-2 The Rational Numbers on a Number Line—TE pp. 4–5B; SB pp. 4–5 / PB pp. 3–4 **Chapter 2 Real Numbers** 2-5 Irrational Numbers—TE pp. 44–45B; SB pp. 44–45 / PB pp. 47–48
M.NS.8.1.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e,g., π^2 falls between 9 and 10). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	**Chapter 2 Real Numbers** 2-4 Estimate Square Roots—TE pp. 42–43B; SB pp. 42–43 / PB pp. 45–46 2-5 Irrational Numbers—TE pp. 44–45B; SB pp. 44–45 / PB pp. 47–48 2-7 The Real Number System—TE pp. 48–49B; pp. SB 48–49 / PB pp. 51–52t

STANDARD 2 – EXPRESSIONS AND EQUATIONS (EE)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.EE.8.1 Work with radicals and integer exponents.	
M.EE.8.1.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.	**Chapter 1 Rational Numbers** 1-12 Integral Exponents—TE pp. 24–25B; SB pp. 24–25 / PB pp. 23–24 1-13 Powers and Exponents—TE pp. 26–27B; SB pp. 26–27 / PB pp. 25–26
M.EE.8.1.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number.	**Chapter 2 Real Numbers** 2-3 Perfect Squares and Square Roots—TE pp. 40–41B; SB pp. 40–41 / PB pp. 43–44 2-4 Estimate Square Roots—TE pp. 42–43B; SB pp. 42–43 / PB pp. 45–46

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STANDARD 2 – EXPRESSIONS AND EQUATIONS (EE)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.EE.8.1 Work with radicals and integer exponents.	
	Chapter 12 Three-Dimensional Geometry 12-5A Perfect Cubes and Cube Roots—Online 12-5B Use Cube Root Symbols—Online
M.EE.8.1.3 Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	**Chapter 2 Real Numbers** 2-3 Perfect Squares and Square Roots—TE pp. 40–41B; SB pp. 40–41 / PB pp. 43–44 2-4 Estimate Square Roots—TE pp. 42–43B; SB pp. 42–43 / PB pp. 45–46 2-6 Square Roots as Irrational Numbers—TE pp. 46–47B; SB 46–47 / PB pp. 49–50 **Chapter 12 Three-Dimensional Geometry** 12-5A Perfect Cubes and Cube Roots—Online 12-5B Use Cube Root Symbols—Online
M.EE.8.1.4 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities and to express how many times as much one is than the other. For example, estimate the population of the United States as 3×10^8; and the population of the world as 7×10^9; and determine that the world population is more than 20 times larger.	**Chapter 2 Real Numbers** 2-1 Scientific Notation—TE pp. 36–37B; SB pp. 36–37 / PB pp. 39–40 2-2 Multiply and Divide in Scientific Notation—TE pp. 38–39B; SB pp. 38–39 / PB pp. 41–42
M.EE.8.1.5 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.	**Chapter 2 Real Numbers** 2-2 Multiply and Divide in Scientific Notation—TE pp. 38–39B; SB pp. 38–39 / PB pp. 41–42
M.EE.8.1.6 Use scientific notation and choose units of appropriate size for measurements of vary large or very small quantities, e.g., use millimeters per year for seafloor spreading. Interpret scientific notation that has been generated by technology.	**Chapter 2 Real Numbers** 2-2 Multiply and Divide in Scientific Notation—TE pp. 38–39B; SB pp. 38–39 / PB pp. 41–42

STANDARD 2 – EXPRESSIONS AND EQUATIONS (EE)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.EE.8.2 Understand the connections between proportional relationships, lines, and linear equations.	
M.EE.8.2.1 Graph proportional relationships, interpreting the unit rate as the slope of the graph.	**Chapter 6 Linear Functions and Inequalities** 6-9 Direct Variation—TE pp. 172–173B; SB pp. 172–173 / PB pp. 191–192 **Chapter 7 Ratio and Proportion** 7-1 Ratios, Rates, and Unit Rates—TE pp. 188–189B; SB pp. 188–189 / PB pp. 211–212 7-3 Conversion Factors and Measurement Systems—TE pp. 192–193B; SB pp. 192–193 / PB pp. 215–216 7-5 Direct Proportions—TE pp. 196–197B; SB pp. 196–197 / PB pp. 219–220 7-5A Proportions and Unit Rates—Online 7-5B Graph Proportional Relationships—Online
M.EE.8.2.2 Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.	**Chapter 7 Ratio and Proportion** 7-5C Compare Proportional Relationships—Online
M.EE.8.2.3 Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at *b*.	**Chapter 6 Linear Functions and Inequalities** 6-6 Linear Functions: Standard Form and Slope-Intercept Form—TE pp. 166–167B; SB pp. 166–167 / PB pp. 185–186 6-9 Direct Variation—TE pp. 172–173B; SB pp. 172–173 / PB pp. 191–192 **Chapter 10 Geometric Measures and Coordinate Geometry** 10-7 Coordinate Plane and Polygons—TE pp. 278–279B; SB pp. 278–279 / PB pp. 313–314
M.EE.8.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	
M.EE.8.3.1 Solve linear equations in one variable.	**Chapter 3 Expressions and Equations** 3-3 Equations—TE pp. 68–69B; SB pp. 68–69 / PB pp. 75–76

STANDARD 2 – EXPRESSIONS AND EQUATIONS (EE)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.EE.8.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	
M.EE.8.3.2 Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers.)	**Chapter 3 Expressions and Equations** 3-3 Equations—TE pp. 68–69B; SB pp. 68–69 / PB pp. 75–76 3-10A Identify Equations with One, Many, or No Solutions—Online 3-10B Solve Equations with One, Many, or No Solutions—Online
M.EE.8.3.3 Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**Chapter 1 Rational Numbers** 1-15 Problem-Solving Strategy: Make a Drawing—TE pp. 30–31B; SB pp. 30–31 / PB pp. 29–30 **Chapter 3 Expressions and Equations** 3-3 Equations—TE pp. 68–69B; SB pp. 68–69 / PB pp. 75–76 3-4 One-Step Addition and Subtraction Equations—TE pp. 70–71B; SB pp. 70–71 / PB pp. 77–78 3-5 One-Step Multiplication and Division Equations—TE pp. 72–73B; SB pp. 72–73 / PB pp. 79–80 3-6 Model Two-Step Equations—TE pp. 74–75B; SB pp. 74–75 / PB pp. 81–82 3-7 Two-Step Equations—TE pp. 76–77B; SB pp. 76–77 / PB pp. 83–84 3-8 Multistep Equations with Grouping Symbols—TE pp. 78–79B; SB pp. 78–79 / PB pp. 85–86 3-9 Multistep Equations with Variables on Both Sides—TE pp. 80–81B; SB pp. 80–81 / PB pp. 87–88 3-10 Multistep Equations: Fractions and Decimals—TE pp. 82–83B; SB pp. 82–83 / PB pp. 89–90 3-14 Problem-Solving Strategy: Guess and Test—TE pp. 90–91B; SB pp. 90–91 / PB pp. 97–98 **Chapter 6 Linear Functions and Inequalities** 6-14 Problem-Solving Strategy: Reason Logically—TE pp. 182–183B; SB pp. 182–183 / PB pp. 201–202 **Chapter 7 Ratio and Proportion** 7-2 Proportions—TE pp. 190–191B; SB pp. 190–191 / PB pp. 213–214 7-12 Problem-Solving Strategy: Solve a Simpler Problem—TE pp. 210–211B; SB pp. 210–211 / PB pp. 233–234

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STANDARD 2 – EXPRESSIONS AND EQUATIONS (EE)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.EE.8.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	
	Chapter 6 Linear Functions and Inequalities 9-13 Problem-Solving Strategy: Adopt a Different Point of View—TE pp. 260–261B; SB pp. 260–261 / PB pp. 291–292 **Chapter 10 Geometric Measures and Coordinate Geometry** 10-12 Problem-Solving Strategy: Work Backward—TE pp. 288–289B; SB pp. 288–289 / PB pp. 323–324 **Chapter 12 Three-Dimensional Geometry** 12-11 Problem-Solving Strategy: Review of Strategies (Find a Pattern/Adopt a Different Point of View)—TE pp. 338–339B; SB pp. 338–339 / PB pp. 381–382
M.EE.8.3.4 Analyze and solve pairs of simultaneous linear equations.	**Chapter 6 Linear Functions and Inequalities** 6-1 Relations and Functions—TE pp. 156–157B; SB pp. 156–157 / PB pp. 175–176 6-2 Graphs of Functions—TE pp. 158–159B; SB pp. 158–159 / PB pp. 177–178 6-10 Solve Systems of Equations by Graphing—TE pp. 174–175B; SB pp. 174–175 / PB pp. 193–19
M.EE.8.3.5 Understand that solutions to a system or two variables algebraically.	**Chapter 6 Linear Functions and Inequalities** 6-10 Solve Systems of Equations by Graphing—TE pp. 174–175B; SB pp. 174–175 / PB pp. 193–19 6-11 Solve Systems of Equations by Substitution and Elimination—TE pp. 176–177B; SB pp. 176–177 / PB pp. 195–196 6-11A Use Systems to Solve Problems—Online 6-12 Linear Inequalities in Two Variables—TE pp. 178–179B; SB pp. 178–179 / PB pp. 197–198 6-13 Systems of Linear Inequalities—TE pp. 180–181B; SB pp. 180–181 / PB pp. 199–200 6-14 Problem-Solving Strategy: Reason Logically—TE pp. 182–183B; SB pp. 182–183 / PB pp. 201–202
M.EE.8.3.6 Estimate solutions by graphing the equations.	**Chapter 6 Linear Functions and Inequalities** 6-2 Graphs of Functions—TE pp. 158–159B; SB pp. 158–159 / PB pp. 177–178 6-10 Solve Systems of Equations by Graphing—TE pp. 174–175B; SB pp. 174–175 / PB pp. 193–19

STANDARD 2 – EXPRESSIONS AND EQUATIONS (EE)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.EE.8.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	
M.EE.8.3.7 Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.	**Chapter 6 Linear Functions and Inequalities** 6-8 Parallel Lines and Perpendicular Lines—TE pp. 170–171B; SB pp. 170–171 / PB pp. 189–190 6-11 Solve Systems of Equations by Substitution and Elimination—TE pp. 176–177B; SB pp. 176–177 / PB pp. 195–196 6-14 Problem-Solving Strategy: Reason Logically—TE pp. 182–183B; SB pp. 182–183 / PB pp. 201–202
M.EE.8.3.8 Solve real-world and mathematical problems leading to two linear equations in two variables. For examples, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	**Chapter 6 Linear Functions and Inequalities** 6-10 Solve Systems of Equations by Graphing—TE pp. 174–175B; SB pp. 174–175 / PB pp. 193–194 6-11 Solve Systems of Equations by Substitution and Elimination—TE pp. 176–177B; SB pp. 176–177 / PB pp. 195–196 6-11A Use Systems to Solve Problems—Online **Chapter 11 Patterns and Nonlinear Functions** 11-10 Problem-Solving Strategy: Account for All Possibilities—TE pp. 312–313B; SB pp. 312–313 / PB pp. 351–352

STANDARD 3 – FUNCTIONS (F)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.F.8.1 Define, evaluate, and compare functions.	
M.F.8.1.1 Understand that a function is a rule that assigns to each input exactly one output.	**Chapter 6 Linear Functions and Inequalities** 6-1 Relations and Functions—TE pp. 156–157B; SB pp. 156–157 / PB pp. 175–176 6-2 Graphs of Functions—TE pp. 158–159B; SB pp. 158–159 / PB pp. 177–178
M.F.8.1.2 Understand the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	**Chapter 6 Linear Functions and Inequalities** 6-1 Relations and Functions—TE pp. 156–157B; SB pp. 156–157 / PB pp. 175–176 6-2 Graphs of Functions—TE pp. 158–159B; SB pp. 158–159 / PB pp. 177–178

STANDARD 3 – FUNCTIONS (F)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.F.8.1 Define, evaluate, and compare functions.	
M.F.8.1.3 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by a algebraic expression, determine which function has a greater rate of change.	**Chapter 6 Linear Functions and Inequalities** 6-2 Graphs of Functions—TE pp. 158–159B; SB pp. 158–159 / PB pp. 177–178 6-2A Compare Functions—Online
M.F.8.1.4 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line.	**Chapter 6 Linear Functions and Inequalities** 6-4 Slope of a Line—TE pp. 162–163B; SB pp. 162–163 / PB pp. 181–182 6-5 The x- and y-Intercepts of a Line—TE pp. 164–165B; SB pp. 164–165 / PB pp. 183–184 6-6 Linear Functions: Standard Form and Slope-Intercept Form—TE pp. 166–167B; SB pp. 166–167 / PB pp. 185–186
M.F.8.1.5 Give examples of functions that are not linear. For examples, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1, 1), (2, 4) and (3, 9) which are not on a straight line..	**Chapter 11 Patterns and Nonlinear Functions** 11-6 Nonlinear Functions: Quadratic—TE pp. 304–305B; SB pp. 304–305 / PB pp. 343–344 11-7 Other Nonlinear Functions—TE pp. 306–307B; SB pp. 306–307 / PB pp. 345–346 11-9 Technology: Graphs of Nonlinear Functions—TE pp. 310–311B; SB pp. 310–311 / PB pp. 349–350
M.F.8.2 Use functions to model relationships between quantities.	
M.F.8.2.1 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values including reading these from a table or from a graph.	**Chapter 6 Linear Functions and Inequalities** 6-4 Slope of a Line—TE pp. 162–163B; SB pp. 162–163 / PB pp. 181–182 6-5 The x- and y-Intercepts of a Line—TE pp. 164–165B; SB pp. 164–165 / PB pp. 183–184 6-6 Linear Functions: Standard Form and Slope-Intercept Form—TE pp. 166–167B; SB pp. 166–167 / PB pp. 185–186 6-7 Linear Functions: Point-Slope Form—TE pp. 168–169B; SB pp. 168–169 / PB pp. 187–188 6-7A Analyzing Trend Lines—Online 6-7B Use Linear Models to Solve Problems—Online

continued

STANDARD 3 – FUNCTIONS (F)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.F.8.2 Use functions to model relationships between quantities.	
	Chapter 11 Patterns and Nonlinear Functions 11-5 Find Function Values—TE pp. 302–303B; SB pp. 302–303 / PB pp. 341–342 **Chapter 12 Three-Dimensional Geometry** 12-11 Problem-Solving Strategy: Review of Strategies (Find a Pattern/Adopt a Different Point of View)—TE pp. 338–339B; SB pp. 338–339 / PB pp. 381–382
M.F.8.2.2 Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	**Chapter 6 Linear Functions and Inequalities** 6-2A Compare Functions—Online 6-7A Analyzing Trend Lines—Online 6-7B Use Linear Models to Solve Problems—Online
M.F.8.2.3 Describe qualitatively the functional relationship between two quantities by analyzing a graph, e.g., where the function is increasing or decreasing, linear or nonlinear.	**Chapter 6 Linear Functions and Inequalities** 6-6 Linear Functions: Standard Form and Slope-Intercept Form—TE pp. 166–167B; SB pp. 166–167 / PB pp. 185–186 6-7 Linear Functions: Point-Slope Form—TE pp. 168–169B; SB pp. 168–169 / PB pp. 187–188 **Chapter 11 Patterns and Nonlinear Functions** 11-4 Relationships and Graphs—TE pp. 300–301B; SB pp. 300–301 / PB pp. 339–340 11-5 Find Function Values—TE pp. 302–303B; SB pp. 302–303 / PB pp. 341–342 11-6 Nonlinear Functions: Quadratic—TE pp. 304–305B; SB pp. 304–305 / PB pp. 343–344 **Chapter 12 Three-Dimensional Geometry** 12-11 Problem-Solving Strategy: Review of Strategies (Find a Pattern/Adopt a Different Point of View)—TE pp. 338–339B; SB pp. 338–339 / PB pp. 381–382
M.F.8.2.4 Sketch a graph that exhibits the qualitatively features of a function that has been described verbally.	**Chapter 11 Patterns and Nonlinear Functions** 11-4A Sketch Graphs—Online

STANDARD 4 – GEOMETRY (G)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.G.8.1 Understand congruence and similarity using physical models, transparencies, or geometry software.	
M.G.8.1.1 Verify experimentally the properties of rotations, reflections and translations include examples both with and without coordinates.	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-9A Properties of Rigid Transformations—Online
M.G.8.1.2 Lines are taken to lines, and line segments are taken to line segments of the same length.	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-9A Properties of Rigid Transformations—Online
M.G.8.1.3 Angles are taken to angles of the same measure.	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-9A Properties of Rigid Transformations—Online
M.G.8.1.4 Parallel lines are taken to parallel lines.	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-9A Properties of Rigid Transformations—Online
M.G.8.1.5 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations.	**Chapter 9 Two-Dimensional Geometry** 9-5 Congruent Polygons—TE pp. 244–245B; SB pp. 244–245 / PB pp. 275–276 9-13 Problem-Solving Strategy: Adopt a Different Point of View—TE pp. 260–261B; SB pp. 260–261 / PB pp. 291–292 **Chapter 10 Geometric Measures and Coordinate Geometry** 10-8 Coordinate Plane: Reflections and Translations—TE pp. 280–281B; SB pp. 280–281 / PB pp. 315–316 10-9 Coordinate Plane: Rotations—TE pp. 282–283B; SB pp. 282–283 / PB pp. 317–318 10-10 Coordinate Plane: Dilations—TE pp. 284–285B; SB pp. 284–285 / PB pp. 319–320 10-11 Combine Transformations—TE pp. 286–287B; SB pp. 286–287 / PB pp. 321–322
M.G.8.1.6 Given two congruent figures, describe a sequence that exhibits the congruence between them. (Include examples both with and without coordinates.)	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-11A Transformations and Congruence—Online

STANDARD 4 – GEOMETRY (G)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.G.8.1 Understand congruence and similarity using physical models, transparencies, or geometry software.	
M.G.8.1.7 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-7 Coordinate Plane and Polygons—TE pp. 278–279B; SB pp. 278–279 / PB pp. 313–314 10-8 Coordinate Plane: Reflections and Translations—TE pp. 280–281B; SB pp. 280–281 / PB pp. 315–316 10-9 Coordinate Plane: Rotations—TE pp. 282–283B; SB pp. 282–283 / PB pp. 317–318 10-10 Coordinate Plane: Dilations—TE pp. 284–285B; SB pp. 284–285 / PB pp. 319–320
M.G.8.1.8 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations.	**Chapter 7 Ratio and Proportion** 7-9 Similarity—TE pp. 204–205B; SB pp. 204–205 / PB pp. 227–228 **Chapter 10 Geometric Measures and Coordinate Geometry** 10-11 Combine Transformations—TE pp. 286–287B; SB pp. 286–287 / PB pp. 321–322 10-11A Transformations and Congruence—Online 10-11B Transformations and Similarity—Online
M.G.8.1.9 Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. (Include examples both with and without coordinates.)	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-11 Combine Transformations—TE pp. 286–287B; SB pp. 286–287 / PB pp. 321–322 10-11A Transformations and Congruence—Online 10-11B Transformations and Similarity—Online
M.G.8.1.10 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For examples, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.	**Chapter 7 Ratio and Proportion** 7-9 Similarity—TE pp. 204–205B; SB pp. 204–205 / PB pp. 227–228 7-12 Problem-Solving Strategy: Solve a Simpler Problem—TE pp. 210–211B; SB pp. 210–211 / PB pp. 233–234 **Chapter 9 Two-Dimensional Geometry** 9-1 Angle Pairs—TE pp. 236–237B; SB pp. 236–237 / PB pp. 267–268 9-2 Angles of Parallel Lines—TE pp. 238–239B; SB pp. 238–239 / PB pp. 269–270 9-4 Angles of Polygons—TE pp. 242–243B; SB pp. 242–243 / PB pp. 273–274

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STANDARD 4 – GEOMETRY (G)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.G.8.1 Understand congruence and similarity using physical models, transparencies, or geometry software.	
	9-4A Angle-Angle Criterion for Similar Triangles—Online **Chapter 13 Data Analysis and Statistics** 13-12 Problem-Solving Strategy: Consider Extreme Cases—TE pp. 366–367B; SB pp. 366–367 / PB pp. 413–414
M.G.8.2 Understand and apply the Pythagorean Theorem.	
M.G.8.2.1 Analyze and justify an informal proof of the Pythagorean Theorem and its converse.	**Chapter 2 Real Numbers** 2-9 Pythagorean Theorem—TE pp. 52–53B; SB pp. 52–53 / PB pp. 55–56 2-9A Proof of the Pythagorean Theorem—Online
M.G.8.2.2 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	**Chapter 10 Geometric Measures and Coordinate Geometry** 10-7 Coordinate Plane and Polygons—TE pp. 278–279B; SB pp. 278–279 / PB pp. 313–314 10-7A Apply Pythagorean Theorem—Online
M.G.8.3 Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
M.G.8.3.1 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	**Chapter 12 Three-Dimensional Geometry** 12-5 Volume of Prisms and Cylinders—TE pp. 326–327B; SB pp. 326–327 / PB pp. 369–370 12-6 Volume of Pyramids and Cones—TE pp. 328–329B; SB pp. 328–329 / PB pp. 371–372 12-7 Volume of Spheres—TE pp. 330–331B; SB pp. 330–331 / PB pp. 373–374 **Chapter 13 Data Analysis and Statistics** 13-12 Problem-Solving Strategy: Consider Extreme Cases—TE pp. 366–367B; SB pp. 366–367 / PB pp. 413–414

STANDARD 5 – STATISTICS AND PROBABILITY (SP)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.SP.8.1 Investigate patterns of association in bivariate data.	
M.SP.8.1.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities.	**Chapter 6 Linear Functions and Inequalities** 6-3 Scatter Plots—TE pp. 160–161B; SB pp. 160–161 / PB pp. 179–180
M.SP.8.1.2 Describe patterns such as clustering; outliers; positive, negative, or no association; and linear association and nonlinear association, (GAISE Model, steps 3 and 4)	**Chapter 6 Linear Functions and Inequalities** 6-3A Analyze Outliers—Online 6-3B Clustering—Online 6-3C Analyze Scatter Plots—Online
M.SP.8.1.3 Understand that straight lines are widely used to model relationships between two quantitative variables.	**Chapter 6 Linear Functions and Inequalities** 6-3 Scatter Plots—TE pp. 160–161B; SB pp. 160–161 / PB pp. 179–180
M.SP.8.1.4 Use the equations of a linear model to solve problems in the context of bivariate measurement data interpreting the slop and intercept. For example, in a linear model for a biology experiment interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	**Chapter 6 Linear Functions and Inequalities** 6-7A Analyzing Trend Lines—Online 6-7B Use Linear Models to Solve Problems—Online
M.SP.8.1.5 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies n a two-way table.	**Chapter 11 Patterns and Nonlinear Functions** 11-10 Problem-Solving Strategy: Account for All Possibilities—TE pp. 312–313B; SB pp. 312–313 / PB pp. 351–352 **Chapter 13 Data Analysis and Statistics** 13-5A Patterns of Association in Categorical Data—Online 13-5B Examine Patterns of Association—Online
M.SP.8.1.6 Construct and interpret a two-way table summarizing data on two categorical variables collected form the same subjects.	**Chapter 13 Data Analysis and Statistics** 13-5A Patterns of Association in Categorical Data—Online

STANDARD 5 – STATISTICS AND PROBABILITY (SP)

Grade 8 Standard & Benchmark Description	*Foundations of Algebra*, Grade 8
M.SP.8.1 Investigate patterns of association in bivariate data.	
M.SP.8.1.7 Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in class on whether or not they have a curfew on school nights, and whether they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?	**Chapter 13 Data Analysis and Statistics** 13-5B Examine Patterns of Association—Online