



8th Grade Correlation to Mathematics Frameworks

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
NUMBER SENSE			
8.1.1	Read, write, compare, and solve problems using decimals in scientific notation.	MPA-021	Converting Between Standard and Scientific Notation
		HA1-235	Writing, Multiplying, and Dividing Numbers Written in Scientific Notation
8.1.2	Know that every rational number is either a terminating or repeating decimal and that every irrational number is a non-repeating decimal.	MPA-124	Classifying Numbers in the Real Number System
		HA1-020	Classifying Numbers into Subsets of Real Numbers
8.1.3	Understand that computations with an irrational number and a rational number (other than zero) produce an irrational number.		
8.1.4	Understand and evaluate negative integer exponents.	HA1-861	Simplifying Expressions with Negative and Zero Exponents
8.1.5	Use the laws of exponents for integer exponents.	HA1-861	Simplifying Expressions with Negative and Zero Exponents
8.1.6	Use the inverse relationship between squaring and finding the square root of a perfect square integer.	MPA-064	Finding Square Roots of Perfect Squares
8.1.7	Calculate and find approximations of square roots.	MPA-065	Estimating Square Roots
		HA1-480	Finding the Square Roots of Rational Numbers
COMPUTATION			
8.2.1	Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) in multi-step problems.	MPA-018	Adding and Subtracting Decimals
		MPA-019	Multiplying Decimals
		MPA-020	Multiplying Decimals by Powers of Ten
		MPA-022	Dividing Decimals
		MPA-034	Adding and Subtracting Fractions
		MPA-035	Adding and Subtracting Mixed Numbers with Unlike Denominators
		MPA-036	Multiplying Fractions and Mixed Numbers and Simplifying
		MPA-037	Dividing Fractions and Mixed Numbers and Simplifying
		MPA-047	Adding Integers with Like Signs
		MPA-048	Adding Integers with Unlike Signs
		MPA-050	Subtracting Integers with Unlike Signs
		MPA-051	Multiplying Integers with Like and Unlike Signs
		MPA-052	Dividing Integers with Like and Unlike Signs
		MPA-053	Adding, Subtracting, Multiplying, and Dividing Integers
		MPA-117	Modeling Integer Arithmetic Using Cups and Counters
		MPA-119	Dividing Decimals (an Introduction)
		MPA-122	Modeling Multiplication and Division of Decimals
		MPA-123	Modeling Multiplication and Division of Fractions
		HA1-035	Adding Real Numbers Using a Number Line
		HA1-040	The Addition Rule for Real Numbers
		HA1-045	Subtracting Real Numbers

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
		HA1-050	Multiplying Real Numbers
		HA1-055	Dividing Real Numbers
		HA1-062	Adding, Subtracting, Multiplying, and Dividing Real Numbers
8.2.2	Solve problems by computing simple and compound interest.	MPA-086	Solving Problems Using Percent
		MPA-128	Solving Real-World Problems Involving Simple Interest
		MPA-088	Solving Real-World Problems Involving Percent
8.2.3	Use estimation techniques to decide whether answers to computations on a calculator are reasonable.	MPA-004	Using Rounding to Estimate
		MPA-005	Estimating Products and Quotients Using Patterns
		MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
		MPA-017	Rounding Decimals and Estimating Computations Using Decimals
		MPA-023	Rounding Quotients Involving Decimals
		MPA-033	Estimating Computations with Fractions and Mixed Numbers
8.2.4	Use mental arithmetic to compute with common fractions, decimals, powers, and percents.	MPA-017	Rounding Decimals and Estimating Computations Using Decimals
		MPA-020	Multiplying Decimals by Powers of Ten
		MPA-023	Rounding Quotients Involving Decimals
		MPA-033	Estimating Computations with Fractions and Mixed Numbers
		Throughout	
ALGEBRA AND FUNCTIONS			
8.3.1	Write and solve linear equations and inequalities in one variable, interpret the solution or solutions in their context, and verify the reasonableness of the results.	MPA-010	Solving One-Step Equations of Whole Numbers Using Addition and Subtraction
		MPA-011	Solving One-Step Equations of Whole Numbers Using Multiplication and Division
		MPA-012	Solving One-Step Equations of Whole Numbers Using All Operations
		MPA-038	Solving One-Step Equations with Fractions Using Addition and Subtraction
		MPA-039	Solving One-Step Equations with Fractions Using Multiplication and Division
		MPA-040	Solving One-Step Equations with Decimals Using All Four Operations
		MPA-042	Solving Problems Using an Equation
		MPA-054	Solving One-Step Equations with Integers Using all Four Operations
		MPA-100	Solving Two-Step Equations
		MPA-101	Solving Equations by Combining Like Terms
		MPA-109	Solving and Graphing Linear Inequalities on a Number Line
		HA1-115	Using the Addition and Subtraction Properties for Equations
		HA1-120	Using the Multiplication and Division Properties for Equations
		HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-145	Solving Equations with Variables on Both Sides
		HA1-180	Graphing Equations and Inequalities on the Number Line
		HA1-185	Solving Inequalities Using the Addition and Subtraction Properties
		HA1-190	Solving Inequalities Using the Multiplication and Division Properties
		HA1-195	Solving Inequalities Using More Than One Property
		HA1-382	Solving Linear Equations Using the Graphing Calculator
8.3.2	Solve systems of two linear equations using the substitution method and identify approximate solutions graphically.	HA1-455	Solving Systems of Linear Equations by Graphing
		HA1-460	Solving Systems of Linear Equations by the Substitution Method
		HA1-806	Solving Systems of Linear Equations Using the Graphing Calculator
8.3.3	Interpret positive integer powers as repeated multiplication and negative integer powers as repeated division or multiplication by the multiplicative inverse.	MPA-013	Using Powers and Exponents in Expressions
		HA1-860	Using the Laws of Exponents
		HA1-861	Simplifying Expressions with Negative and Zero Exponents

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
8.3.4	Use the correct order of operations to find the values of algebraic expressions involving powers.	HA1-005	Evaluating Algebraic Expressions
		HA1-060	Evaluating Expressions Using the Order of Operations
		HA1-065	Evaluating Expressions Containing Exponents
		HA1-070	Evaluating Formulas for Given Values of the Variables
8.3.5	Identify and graph linear functions and identify lines with positive and negative slope.	MPA-102	Graphing Equations by Plotting Points
		HA1-380	Graphing Linear Equations
		HA1-385	Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
8.3.6	Find the slope of a linear function given the equation and write the equation of a line given the slope and any point on the line.	HA1-395	Drawing a Line Using Slope-Intercept and Determining if Two Lines are Parallel
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		HA1-405	Determining an Equation of a Line Given the Slope and Coordinates of One Point
8.3.7	Demonstrate an understanding of rate as a measure of one quantity with respect to another quantity.	MPA-079	Unit rates
8.3.8	Demonstrate an understanding of the relationships among tables, equations, verbal expressions, and graphs of linear functions.	HA1-375	Identifying Solutions of Equations in Two Variables
		HA1-380	Graphing Linear Equations
		HA1-385	Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
		HA1-395	Drawing a Line Using Slope-Intercept and Determining if Two Lines are Parallel
		HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		HA1-401	How Variations of "m" and "b" Affect the Graph of $y = mx + b$
		HA1-437	Identifying Relations as Functions
		HA1-441	Applications of Functions and Relations Involving Distance, Rate, and Time
8.3.9	Represent simple quadratic functions using verbal descriptions, tables, graphs, and formulas and translate among these representations.	HA1-525	Solving Quadratic Equations Involving Perfect Square Expressions
		HA1-535	Developing the Quadratic Formula and Using it to Solve Equations
		HA1-536	Solving Quadratic Equations Using the Graphing Calculator
		HA1-805	Applying Algebra Concepts
8.3.10	Graph functions of the form $y = nx^2$ and $y = nx^3$ and describe the similarities and differences in the graph	HA1-927	Graphing $f(x) = ax^2$ Using Dilations
		HA1-928	Graphing $f(x) = ax^2$ Using Dilations and Reflections
GEOMETRY			
8.4.1	Identify and describe basic properties of geometric shapes: altitudes, diagonals, angle and perpendicular bisectors, central angles, radii, diameters, and chords.	MPA-056	Classifying Angles
		MPA-057	Identifying and Applying Supplementary and Complementary Angles
		MPA-105	Determining the Measure of Angles Made by Parallel Lines and a Transversal
		MPA-058	Identifying Polygons
		MPA-059	Classifying Triangles and Quadrilaterals
		MPA-070	Finding the Circumference of a Circle
8.4.2	Perform simple constructions, such as bisectors of segments and angles, copies of segments and angles, and perpendicular segments. Describe and justify the constructions.		
8.4.3	Identify properties of three-dimensional geometric objects (e.g., diagonals of rectangular solids) and describe how two or more figures intersect in a plane or in space.	MPA-072	Identifying 3-D Figures
	-	MPA-106	Identifying a Solid Figure From a Net
	-	MPA-107	Constructing Three-Dimensional Figures and Examining Their Dimensions
8.4.4	Draw the translation (slide), rotation (turn), reflection (flip), and dilation (stretches and shrinks) of shapes.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
		MPA-120	Applying Dilations in the Coordinate Plane

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
8.4.5	Use the Pythagorean Theorem and its converse to solve problems in two and three dimensions.	MM1-500 MPA-066	Using Translations, Rotations and Reflections to Transform Shapes Solving Problems Using the Pythagorean Theorem
		HA1-515 HA1-516	Using the Pythagorean Theorem Applications of the Pythagorean Theorem
MEASUREMENT			
8.5.1	Convert common measurements for length, area, volume, weight, capacity, and time to equivalent measurements within the same system.	MPA-062	Converting Units in Customary System
		MPA-061	Converting Metric Units of Length, Capacity, and Mass
8.5.2	Solve simple problems involving rates and derived measurements for attributes such as velocity and density.	MPA-079	Unit rates
8.5.3	Solve problems involving scale factors, area, and volume using ratio and proportion.	MPA-110	Solving Problems Using Proportions, Scale Drawings, Models, and Maps
		MPA-111	Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids
		MPA-121	Identifying Similar and Congruent Polygons Using Proportions
8.5.4	Use formulas for finding the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes, including rectangles, parallelograms, trapezoids, triangles, circles, prisms, cylinders, spheres, cones, and pyramids.	MPA-055	Finding the Perimeter of a Figure
		MPA-067	Finding the Area of Rectangles and Parallelograms
		MPA-069	Finding the Area of Triangles and Trapezoids
		MPA-070	Finding the Circumference of a Circle
		MPA-071	Finding the Area of a Circle
		MPA-073	Finding the Surface Area of Rectangular Prisms
		MPA-074	Finding the Surface Area of Cylinders
		MPA-075	Finding the Volume of Rectangular Prisms
		MPA-076	Finding the Volume of Cylinders
		MPA-115	Finding the Volumes of Prisms, Cylinders, Pyramids, and Cones Using Models
		HA1-890	Using Models to Derive Formulas for Two-Dimensional Geometric Figures
		HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
8.5.5	Estimate and compute the area of irregular two-dimensional shapes and the volume of irregular three-dimensional objects by breaking them down into more basic geometric objects.	MPA-068	Finding the Area of Irregular Figures
		HA1-890	Using Models to Derive Formulas for Two-Dimensional Geometric Figures
		HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
DATA AND PROBABILITY			
8.6.1	Identify claims based on statistical data and, in simple cases, evaluate the reasonableness of the claims. Design a study to investigate the claim.	MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
		HA1-877	Drawing Inferences and Making Predictions from Tables and Graphs
8.6.2	Identify different methods of selecting samples, analyzing the strengths and weaknesses of each method, and the possible bias in a sample or display.	MM1-385	Collecting Data
8.6.3	Understand the meaning of, and be able to identify or compute the minimum value, the lower quartile, the median, the upper quartile, the interquartile range, and the maximum value of a data set.	MPA-097	Constructing Box-and-Whisker Plots
8.6.4	Analyze, interpret, and display single- and two-variable data in appropriate bar, line, and circle graphs; stem-and-leaf plots; and box-and-whisker plots and explain which types of display are appropriate for various data sets.	MPA-092	Reading and Interpreting Bar, Line, and Circle Graphs
		MPA-096	Constructing Stem-and-Leaf Plots
		MPA-097	Constructing Box-and-Whisker Plots

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
		HA1-877	Drawing Inferences and Making Predictions from Tables and Graphs
8.6.5	Represent two-variable data with a scatter plot on the coordinate plane and describe how the data points are distributed. If the pattern appears to be linear, draw a line that appears to best fit the data and write the equation of that line.	MPA-132	Interpreting and Creating Scatter Plots
		HA1-877	Drawing Inferences and Making Predictions from Tables and Graphs
		HA1-965	Determining the Best-Fitting Line
8.6.6	Understand and recognize equally likely events.	MPA-089	Using Tree Diagrams
		MPA-091	Finding the Number of Combinations of a Set of Objects
		MPA-090	Finding the Probability of Simple Real-Life Events
		HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
		MM1-230	Finding the Probability of Simple Events
8.6.7	Find the number of possible arrangements of several objects by using the Basic Counting Principle.	MPA-091	Finding the Number of Combinations of a Set of Objects
		HA1-880	Applying Counting Techniques to Permutations and Combinations
PROBLEM SOLVING			
8.7.1	Analyze problems by identifying relationships, telling relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.	MPA-099	Recognizing Misleading Statistics and Graphs
		MPA-104	Recognizing Patterns
		MM1-425	Classifying Information from a Mathematical Story
		Throughout	
8.7.2	Make and justify mathematical conjectures based on a general description of a mathematical question or problem.	HA1-881	Completing and Validating Algebraic Proofs
		Throughout	
8.7.3	Decide when and how to divide a problem into simpler parts.	Throughout	
8.7.4	Apply strategies and results from simpler problems to solve more complex problems.	Throughout	
8.7.5	Make and test conjectures using inductive reasoning.	MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
8.7.6	Express solutions clearly and logically using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.	Throughout	
8.7.7	Recognize the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.	MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
8.7.8	Select and apply appropriate methods for estimating results of rational-number computations.	Throughout	
8.7.9	Use graphing to estimate solutions and check the estimates with analytic approaches.	Throughout	
8.7.10	Make precise calculations and check the validity of the results in the context of the problem.	Throughout	
8.7.11	Decide whether a solution is reasonable in the context of the original situation.	MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
		Throughout	
8.7.12	Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	Throughout	

MM1-Fundamentals of Mathematics

MPA-Pre-Algebra

HA1-Algebra 1

Note: Standards were taken from the Indiana Mathematics Curriculum Framework document adopted by the Indiana State Board of Education in September 2000.