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EDUCATION SYSTEMS

INDIANA

7th Grade Correlation to Mathematics Frameworks

	Mathematics Curriculum Framework	Lesson Number	Lesson Title
NUMBER SENSE			
7.1.1	Read, write, compare, and solve problems using whole numbers in scientific notation.	MPA-021	Converting Between Standard and Scientific Notation
7.1.2	Compare and order rational and common irrational numbers and place them on a number line.	MPA-016	Comparing and Ordering Decimals
		MPA-031	Comparing and Ordering Fractions and Decimals
		HA1-015	Graphing Real Numbers Using a Number Line
		HA1-025	Comparing and Ordering Real Numbers
7.1.3	Identify rational and common irrational numbers from a list.	MPA-124	Classifying Numbers in the Real Number System
7.1.4	Understand and compute whole number powers of whole numbers.	MPA-013	Using Powers and Exponents in Expressions
7.1.5	Find the prime factorization of whole numbers and write the results using exponents.	MPA-025	Identifying Prime and Composite Numbers
		MPA-026	Using Prime Factorization
7.1.6	Understand and apply the concept of square root.	MPA-064	Finding Square Roots of Perfect Squares
7.1.7	Convert terminating decimals into reduced fractions.	MPA-029	Converting Fractions and Decimals
COMPUTATION			
7.2.1	Solve addition, subtraction, multiplication, and division problems that use integers, fractions, decimals, and combinations of the four operations.	MPA-018	Adding and Subtracting Decimals
		MPA-019	Multiplying Decimals
		MPA-020	Multiplying Decimals by Powers of Ten
		MPA-021	Converting Between Standard and Scientific Notation
		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

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		HA1-040	The Addition Rule for Real Numbers
		HA1-045	Subtracting Real Numbers
		HA1-050	Multiplying Real Numbers
		HA1-055	Dividing Real Numbers
		HA1-062	Adding, Subtracting, Multiplying, and Dividing Real Numbers
7.2.2	Calculate the percentage increase and decrease of a quantity.	MPA-087	Finding Percent Increase and Decrease
		HA1-170	Solving Percent of Change Problems
7.2.3	Solve problems that involve discounts, markups, and commissions.	MPA-086	Solving Problems Using Percent
		MPA-088	Solving Real-World Problems Involving Percent
		MPA-127	Solving Real-World Problems Involving Discounts
		HA1-170	Solving Percent of Change Problems
7.2.4	Use estimation to decide whether answers are reasonable in problems involving fractions and decimals.	MPA-017	Rounding Decimals and Estimating Computations Using Decimals
		MPA-023	Rounding Quotients Involving Decimals
		MPA-033	Estimating Computations with Fractions and Mixed Numbers
7.2.5	Use mental arithmetic to compute with simple fractions, decimals, and powers.	MPA-013	Using Powers and Exponents in Expressions
		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
ALGEBRA AND FUNCTIONS			
7.3.1	Use variables and appropriate operations to write an expression, a formula, an equation, or an inequality that represents a verbal description.	MPA-041	Writing Simple Algebraic Expressions from Phrases
		MPA-012	Solving One-Step Equations of Whole Numbers Using All Operations
		MPA-042	Solving Problems Using an Equation
		HA1-095	Translating Word Phrases into Algebraic Expressions
		HA1-104	Translating Word Statements into Equations
		HA1-105	Translating Word Statements into Inequalities
		HA1-150	Writing an Equation to Solve Word Problems
7.3.2	Write and solve two-step linear equations and inequalities in one variable and check the answers.	MPA-100	Solving Two-Step Equations
		MPA-101	Solving Equations by Combining Like Terms
		HA1-125	Solving Equations Using More Than One Property
		HA1-140	Solving Equations by Combining Like Terms
		HA1-195	Solving Inequalities Using More Than One Property
7.3.3	Use correct algebraic terminology, such as variable, equation, term, coefficient, inequality, expression, and constant.	HA1-005	Evaluating Algebraic Expressions
		HA1-075	Simplifying Algebraic Expressions by Combining Like Terms
		HA1-104	Translating Word Statements into Equations
		Throughout	
7.3.4	Evaluate numerical expressions and simplify algebraic expressions by applying the correct order of operations and the properties of rational numbers (e.g., identity, inverse, commutative, associative, distributive). Justify each step in the process.	MPA-002	Adding, Subtracting, Multiplying, and Dividing Whole Numbers
		MPA-013	Using Powers and Exponents in Expressions
		MPA-008	Order of Operations
		HA1-060	Evaluating Expressions Using the Order of Operations
		HA1-065	Evaluating Expressions Containing Exponents
		HA1-085	Simplifying Expressions Using the Properties of Real Numbers
		HA1-075	Simplifying Algebraic Expressions by Combining Like Terms

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		HA1-076	Basic Distributive Property
7.3.5	Solve an equation or formula with two variables for a particular variable.	HA1-175	Solving Literal Equations
7.3.6	Define slope as vertical change per unit of horizontal change and recognize that a straight line has constant slope or rate of change.	HA1-385	Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
7.3.7	Find the slope of a line from its graph.	HA1-385	Finding the Slope of a Line from its Graph or from the Coordinates of Two Points
7.3.8	Draw the graph of a line given the slope and one point on the line, or two points 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
7.3.9	Identify functions as linear or nonlinear and examine their characteristics in tables, graphs, and equations.	HA1-437	Identifying Relations as Functions
7.3.10	Identify and describe situations with constant or varying rates of change and know that a constant rate of change describes a linear function.	HA1-398	Graphing Linear Equations Using Slope and y-Intercept or Slope and a Point
		HA1-965	Determining the Best-Fitting Line
GEOMETRY			
7.4.1	Understand coordinate graphs and use them to plot simple shapes, find lengths and areas related to the shapes, and find images under translations (slides), rotations (turns), and reflections (flips).	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
		MM1-500	Using Translations, Rotations and Reflections to Transform Shapes
7.4.2	Understand that transformations such as slides, turns, and flips preserve the length of segments, and that figures resulting from slides, turns, and flips are congruent* to the original figures.	MPA-108	Graphing Translations and Reflections on the Coordinate Plane
		MM1-500	Using Translations, Rotations and Reflections to Transform Shapes
7.4.3	Know and understand the Pythagorean Theorem and use it to find the length of the missing side of a right triangle and the lengths of other line segments. Use direct measurement to test conjectures about triangles.	MPA-066	Solving Problems Using the Pythagorean Theorem
7.4.4	Construct two-dimensional patterns (nets) for three-dimensional objects, such as right prisms, pyramids, cylinders, and cones.	MPA-106	Identifying a Solid Figure From a Net
MEASUREMENT			
7.5.1	Compare lengths, areas, volumes, weights, capacities, times, and temperatures within measurement systems.	MPA-062	Converting Units in Customary System
		MPA-061	Converting Metric Units of Length, Capacity, and Mass
		MM1-535	Converting Customary Units of Measurement for Length
		MM1-540	Converting Customary Unit of Measurement for Capacity and Weight
		MM1-545	Converting Metric Units of Measurement for Length
		MM1-550	Converting Metric Units of Measurement for Mass and Capacity
7.5.2	Use experimentation and modeling to visualize similarity problems. Solve problems using similarity.	MPA-059	Classifying Triangles and Quadrilaterals
		MPA-111	Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids
		MPA-121	Identifying Similar and Congruent Polygons Using Proportions
		MM1-470	Using Ratios to Identify Similar Figures
		MM1-475	Using Proportions to Solve for Unknown Lengths of Sides of Similar Figures
7.5.3	Read and create drawings made to scale, construct scale models, and solve problems related to scale.	MPA-110	Solving Problems Using Proportions, Scale Drawings, Models, and Maps
		MPA-111	Comparing Perimeters, Areas, and Volumes of Similar Geometric Figures and Solids
7.5.4	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, right prisms, and cylinders.	MPA-055	Finding the Perimeter of a Figure

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		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
7.5.5	Estimate and compute the area of more complex or irregular two-dimensional shapes by dividing them into more basic shapes.	MPA-068	Finding the Area of Irregular Figures
7.5.6	Use objects and geometry modeling tools to compute the surface area of the faces and the volume of a three-dimensional object built from rectangular solids.	MPA-107	Constructing Three-Dimensional Figures and Examining Their Dimensions
		HA1-891	Using Models to Derive Formulas for Three-Dimensional Solids
DATA AND PROBABILITY			
7.6.1	Analyze, interpret, and display data in appropriate bar, line, and circle graphs and stem-and-leaf plots and justify the choice of display.	MPA-092	Reading and Interpreting Bar, Line, and Circle Graphs
		MPA-096	Constructing Stem-and-Leaf Plots
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
7.6.2	Make predictions from statistical data.	MPA-099	Making Predictions from Graphs and Choosing the Correct Graph
7.6.3	Describe how additional data, particularly outliers, added to a data set may affect the mean, median, and mode.	MPA-095	Find the Mean, Median, and Mode
		HA1-541	Analyzing Data Using the Measures of Central Tendency and the Range
7.6.4	Analyze data displays, including ways that they can be misleading. Analyze ways in which the wording of questions can influence survey results.	MPA-092	Reading and Interpreting Bar, Line, and Circle Graphs
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
		MPA-099	Recognizing Misleading Statistics and Graphs
7.6.5	Know that if P is the probability of an event occurring, then 1 - P is the probability of that event not occurring.	MPA-114	Finding the Odds of Events and Experimental Probability from a Math Model
		HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
7.6.6	Understand that the probability of either one or the other of two disjoint events occurring is the sum of the two individual probabilities.	MPA-113	Finding the Probability of Compound Events Through Experimentation
		HA1-565	Solving Problems Involving Independent, Dependent, and Mutually Exclusive and Inclusive Events
7.6.7	Find the number of possible arrangements of several objects using a tree diagram.	MPA-089	Using Tree Diagrams
7.6.1	Analyze, interpret, and display data in appropriate bar, line, and circle graphs and stem-and-leaf plots and justify the choice of display.	MPA-092	Reading and Interpreting Bar, Line, and Circle Graphs
		MPA-096	Constructing Stem-and-Leaf Plots
		MPA-098	Making Predictions from Graphs and Choosing the Correct Graph
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		HA1-560	Determining Probability of an Event and Complementary Event from a Random Experiment
PROBLEM SOLVING			
7.7.1	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	
7.7.2	Make and justify mathematical conjectures based on a general description of a mathematical question or problem.	HA1-881	Completing and Validating Algebraic Proofs
		Throughout	
7.7.3	Decide when and how to divide a problem into simpler parts.	Throughout	
7.7.4	Apply strategies and results from simpler problems to solve more complex problems.	Throughout	
7.7.5	Make and test conjectures using inductive reasoning.	MPA-006	Determining Reasonableness of Answers and Appropriate Method of Computation
7.7.6	Express solutions clearly and logically using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.	Throughout	
7.7.7	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
		Throughout	
7.7.8	Select and apply appropriate methods for estimating results of rational-number computations.	Throughout	
7.7.9	Use graphing to estimate solutions and check the estimates with analytic approaches.	Throughout	
7.7.10	Make precise calculations and check the validity of the results in the context of the problem.	Throughout	
7.7.11	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	
7.7.12	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.