



Alignment Document
State of Indiana and Aventa Learning Integrated Math

Integrated Math
2005-2007 Benchmark Blueprint

Standards	Benchmarks	Unit Name	Course Topic Description	
IM1.1 Students simplify and compare expressions. They use rational exponents and simplify square roots.	IM1.1.1 Compare real number expressions.	Operations	Fractions, Decimals, and Percents	
		Operations	Percents to Decimals or Fractions	
		Algebraic Sense	Evaluating Expressions with Real Numbers	
		Algebraic Sense	Solving Single-Step Equations	
	IM1.1.2 Simplify square roots using factors.	Number Sense	Introduction to Square Roots	
		IM1.1.3 Understand and use the distributive, associative, and commutative properties.	Algebraic Sense	The Commutative Property
			Algebraic Sense	The Associative Property
	Algebraic Sense	The Distributive Property		
	IM1.1.4 Use the laws of exponents for rational exponents.	Algebraic Sense	Expressions with Powers	
		IM1.1.5 Use dimensional (unit) analysis to organize conversions and computations.	Operations	Unit Rates
Operations	Proportions			
Operations	Use a Formula			
Measurement	Metric Measurement			

		Measurement	Common Comparisons
		Measurement	Converting Metric Units
		Measurement	Customary Measurements
<p>IM1.2 Students solve linear equations and inequalities in one variable. They write equations of lines and find and use the slope and y-intercept of lines. Students solve pairs of linear equations using graphs and algebra. Students add, subtract, multiply, and divide polynomials and solve word problems using exponential functions.</p>	<p>IM1.2.1 Solve linear equations.</p>	Algebraic Sense	Solving Single-Step Equations
		Algebraic Sense	Solving Equations: Addition and Subtraction
		Algebraic Sense	Solving Equations: Multiplication and Division
		Algebraic Sense	To Find the Equation of a Linear Set of Data
		Algebraic Sense	Solving Two-Step Equations
	<p>IM1.2.2 Solve equations and formulas for a specific variable.</p>	Algebraic Sense	Solving Single-Step Equations
		Algebraic Sense	Solving Equations: Addition and Subtraction
		Algebraic Sense	Solving Equations: Multiplication and Division
		Algebraic Sense	Solving Two-Step Equations
	<p>IM1.2.3 Find solution sets of linear inequalities when possible numbers are given for the variable.</p>	Algebraic Sense	Inequalities
		Algebraic Sense	Graphing & Writing Inequalities
		Algebraic Sense	Graphing Inequalities
	<p>IM1.2.4 Solve linear inequalities using properties of order.</p>	Algebraic Sense	Inequalities
		Algebraic Sense	Graphing Inequalities
	<p>IM1.2.5 Solve word problems that involve linear equations, formulas, and inequalities.</p>	Algebraic Sense	Solving Two-Step Equations

		Algebraic Sense	Graphing & Writing Inequalities
IM1.2.6 Sketch a reasonable graph for a given relationship.		Algebraic Sense	Graphing & Writing Inequalities
		Algebraic Sense	Graphing Equations & Inequalities
		Algebraic Sense	Using a Chart
		Algebraic Sense	Graphing Inequalities
IM1.2.7 Interpret a graph representing a given situation.		Algebraic Sense	Graphing Equations & Inequalities
		Algebraic Sense	Graphing Inequalities
IM1.2.8 Understand the concept of a function, decide if a given relation is a function and link equations to functions.			
IM1.2.9 Find the domain and range of a relation.			
IM1.2.10 Graph a linear equation.		Algebraic Sense	Graphing Equations & Inequalities
		Algebraic Sense	Number Patterns
		Algebraic Sense	Slope
		Algebraic Sense	Y-intercept
		Algebraic Sense	Point-Slope Form
IM1.2.11 Find the slope, x-intercept and y-intercept of a line given its graph, its equation, or two points on the line.		Algebraic Sense	Slope
		Algebraic Sense	Y-intercept
		Algebraic Sense	Point-Slope Form
		Algebraic Sense	Calculating slope using the graph
IM1.2.12 Write the equation of a line in slope-		Algebraic Sense	Point-Slope Form

intercept form. Understand how the slope and y-intercept are related to the equation.	Algebraic Sense	The slope-intercept equation
IM1.2.13 Write the equation of a line given appropriate information.	Algebraic Sense	Point-Slope Form
	Algebraic Sense	The slope-intercept equation
IM1.2.14 Write the equation of a line that models a given situation and use (or the graph of the line) to make predictions. Describe the slope of the line in terms of the given situation, recognizing that the slope is the rate of change.	Algebraic Sense	So there are many roads to the same destination
IM1.2.15 Use the graph to estimate the solution of a pair of linear equations in two variables.	Algebraic Sense	Systems of two linear equations with two variables
IM1.2.16 Understand and use the substitution method to solve a pair of linear equations in two variables.	Algebraic Sense	The Substitution Method
	Algebraic Sense	More practice with the substitution method
IM1.2.17 Understand and use the addition or subtraction method to solve a pair of linear equations in two variables.	Algebraic Sense	The Addition Method
IM1.2.18 Understand and use multiplication with the addition or subtraction method to solve a pair of linear equations in two variables.	Algebraic Sense	The Addition Method
IM1.2.19 Use pairs of linear equations to solve word problems.	Algebraic Sense	Systems of two linear equations with two variables
IM1.2.20 Add and subtract polynomials.		
IM1.2.21 Multiple and divide monomials.		
IM1.2.22 Find powers and roots of monomials (only when the answer has an integer exponent).		
IM1.2.23 Multiply polynomials.		
IM1.2.24 Divide polynomials by monomials.		
IM1.2.25 Understand and describe the relationships among the solutions of an equation, the zeros of a function, the x-intercepts of a graph, and the factors of a		

	polynomial expression.		
	IM1.2.26 Graph quadratic, cubic, and radical equations.	Algebraic Sense	Graphing Equations & Inequalities
	IM1.2.27 Solve quadratic equations by using the quadratic formula.		
	IM1.2.28 Use quadratic equations to solve word problems.		
	IM1.2.29 Use graphing technology to find approximate solutions of quadratic and cubic equations.		
	IM1.2.30 Graph exponential functions.		
	IM1.2.31 Solve word problems involving applications of exponential functions to growth and decay.		
IM1.3 Students identify and describe polygons, including finding measures of sides, perimeters, and areas. They use congruence, similarity, symmetry, tessellations, and transformations. Students understand the Pythagorean Theorem and use it to solve problems. They describe relationships and symmetries in geometric solids.	IM1.3.1 Identify and describe convex, concave, and regular polygons.	Geometric Figures	What are Polygons?
		Geometric Figures	Types of Polygons
		Geometric Figures	The Rhombus and Its Properties
		Geometric Figures	The Trapezoid
	IM1.3.2 Apply transformations (slides, flips, turns, expansions, and contractions) to polygons to determine congruence, similarity, symmetry, and tessellations. Know that images formed by slides, flips, and turns are congruent to the original shape.	Geometric Movement	Translations
		Geometric Movement	Reflections
		Geometric Movement	Rotations
	IM1.3.3 Find and use measures of sides, perimeter, and areas of polygons, and relate these measures to each other using formulas.	Measurement	Perimeter
		Measurement	Area of a Square
		Measurement	Area of a Rectangle
Measurement		Area of a Parallelogram	

		Measurement	Area of a Trapezoid
		Measurement	Area of a Circle
		Measurement	Area of a Triangle
		Measurement	Volume
		Geometric Figures	Angle Measures in Polygons
		Geometric Figures	How to Classify Angles
		Geometric Figures	Angle Based Classification of Triangles
	IM1.3.4 Use properties of congruent and similar quadrilaterals to solve problems involving lengths and areas.	Measurement	Area
		Geometric Figures	Pairs of Angles
		Geometric Figures	Congruent Angles
	IM1.3.5 Find and use measures of sides, perimeters, and areas of quadrilaterals, and relate these measures to each other using formulas.	Measurement	Perimeter
		Measurement	Area of a Square
		Measurement	Area of a Rectangle
		Measurement	Area of a Parallelogram
		Measurement	Area of a Trapezoid
		Operations	Estimation
	IM1.3.6 Prove and use the Pythagorean Theorem.		
	IM1.3.7 Describe relationships between the faces, edges, and vertices of polyhedra.	Geometric Figures	Prisms, Cones & Pyramids
	IM1.3.8 Describe symmetries of geometric solids.		

IM1.4 Students find measures of the center and variability of a set of data, as well as construct and analyze data displays and plot least square regression lines.	IM1.4.1 Construct a line plot.		
	IM1.4.2 Find measures of central tendency for a set of data.	Introduction to Probability	Mean, Median, and Mode
	IM1.4.3 Find skewness and symmetry from a graph of data.		
	IM1.4.4 Construct a histogram using a graphing calculator.	Introduction to Probability	Histograms
	IM1.4.5 Identify clusters, gaps, and outliers for a set of data.	Introduction to Probability	Data Concerns
		Introduction to Probability	Data Samples
	IM1.4.6 Find a linear transformation.		
	IM1.4.7 Construct a stem-and-leaf plot using a graphing calculator.	Introduction to Probability	Stem-and-Leaf Diagrams
	IM1.4.8 Find the mean absolute deviation for a set of data.		
	IM1.4.9 Find the standard deviation and describe its properties.		
	IM1.4.10 Construct a frequency table for a set of data.	Introduction to Probability	Frequency Expectation
	IM1.4.11 Summarize and interpret sets of data using center and variability.		
	IM1.4.12 Construct a scatterplot from a set of data.	Probability 2	Scatter Plots
	IM1.4.13 Calculate the sum of squared differences for a set of data.		
	IM1.4.14 Plot the least square regression line from a set of data.		
	IM1.4.15 Compare sets of data using scatterplots and the line $y = x$, and interpret these comparisons for real-world data.	Probability 2	Scatter Plots
IM1.4.16 Recognize patterns in tables and graphs that are modeled by linear equations.	Algebraic Sense	Number Patterns	
	Probability 2	Permutations	



		Probability 2	Combinations
		Probability 2	Multiplication Principle
IM1.5 Students use simulations, find probabilities, and use the Law of Large Numbers.	IM1.5.1 Design and use simulations in order to estimate answers related to probability.	Introduction to Probability	Overview
		Introduction to Probability	Using Data to Make Predictions
		Introduction to Probability	Experimental Probability
	IM1.5.2 Use empirical (experimental) and theoretical probabilities.	Introduction to Probability	Theoretical Probability
		Introduction to Probability	Overview
		Introduction to Probability	Using Data to Make Predictions
Introduction to Probability		Experimental Probability	
IM1.5.3 Understand independent events.			
IM1.5.4 Use the Law of Large Numbers to understand situations involving chance.			
IM1.5.5 Understand the concept of a probability distribution. Understand how an approximate probability can be constructed using simulation involving chance.	Introduction to Probability	Frequency Expectation	
	Introduction to Probability	Interpretation	
IM1.6 Students construct graphs, explore algorithms, and use recursion equations and matrices.	IM1.6.1 Construct vertex-edge graph models involving relationships among a finite number of elements.		
	IM1.6.2 Construct digraphs.		
	IM1.6.3 Use Euler paths and circuits to solve		



	real-world problems.		
	IM1.6.4 Develop the skill of algorithmic problem solving: designing, using, and analyzing systematic procedures for problem solving.	Operations	Number Sense Problem Solving
	IM1.6.5 Use a recursion function to describe an exponential function.		
	IM1.6.6 Use a variety of recursion equations to describe a function.		
	IM1.6.7 Use a recursion function to describe a fractal.		
	IM1.6.8 Use an adjacency matrix to describe a vertex-edge graph.		
	IM1.6.9 Perform row and column sums for matrix equations.		
IM1.7 Students use a variety of strategies to solve problems and develop and evaluate mathematical arguments and proofs.	IM1.7.1 Use a variety of problem solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	Number Sense	Single-Step Estimation
		Number Sense	Clustering
		Operations	Estimation
		Operations	Number Sense Problem Solving
		Operations	Guess, Check, and Revise
		Operations	Making a Drawing
		Algebraic Sense	Using a Chart
		Algebraic Sense	So there are many roads to the same destination
	Geometric Movement	Geometric Problem Solving	
IM1.7.2 Decide whether a solution is reasonable in the context of the original situation.	Number Sense	Single-Step Estimation	
	Number Sense	Clustering	

		Operations	Estimation
		Operations	Number Sense Problem Solving
		Operations	Guess, Check, and Revise
	IM1.7.3 Use the properties of the real number system and the order of operations to justify the steps of simplifying functions and solving equations.	Operations Number Sense	Order of Operations
		Operations Number Sense	Overview
	IM1.7.4 Understand that the logic of equation solving begins with the assumption that the variable is a number that satisfies the equation, and that the steps taken when solving equations create new equations that have, in most cases, the same solution set as the original. Understand that similar logic applies to solving systems of equations simultaneously.	Algebraic Sense	Intro to Algebraic Expressions
		Algebraic Sense	Translating into Symbols
		Algebraic Sense	Translating into Words
		Algebraic Sense	Number Patterns
	IM1.7.5 Decide whether a given algebraic statement is true always, sometimes, or never (statements involving linear or quadratic expressions, equations, inequalities).		
	IM1.7.6 Distinguish between inductive and deductive reasoning, identifying, and providing examples of each.		
	IM1.7.7 Use counterexamples to show that statements are false, recognizing that a single counterexample is sufficient to prove a general statement false.		