



Alignment Document
State of Mississippi and Aventa Learning Integrated Math

Integrated Math
2005-2007 Benchmark Blueprint

Strands	Standards	Benchmarks	Unit Name	Course Topic Description
Number and Operations	AI.1 Understand relationships between numbers and their properties and perform operations fluently.	AI.1.a Apply properties of real numbers to simplify algebraic expressions, including polynomials.	Number Sense	Overview
		AI.1.b Use matrices to solve mathematical situations and contextual problems.	Number Sense Algebraic Sense	Overview Algebraic Expressions
Algebra	AI.2 Understand, represent, and analyze patterns, relations, and functions.	AI.2.a Solve, check, and graph multi-step linear equations and inequalities in one variable, including rational coefficients in mathematical and real-world situations.	Algebraic Sense	Graphing Equations & Inequalities
			Algebraic Sense	Solving Two-Step Equations
			Algebraic Sense	Inequalities
		AI.2.b Solve and graph absolute value equations and inequalities in one variable.	Number Sense	Integers
			Algebraic Sense Algebraic Sense	Graphing Equations & Inequalities Inequalities
AI.2.c Analyze the relationship between x and y values, determine whether a relation is a function, and identify domain and range.	Algebraic Sense	Graphing Equations & Inequalities		
AI.2.d Explain and illustrate how a change in one variable may result in a change in another variable and apply to	Algebraic Sense	Solving Two-Step Equations		
	Algebraic Sense	Linear Equations		

		the relationships between independent and dependent variables.	Algebraic Sense	Graphing Equations & Inequalities
		Al.2.e Graph and analyze linear functions.	Algebraic Sense	Linear Equations
			Algebraic Sense	Graphing Equations & Inequalities
		Al.2.f Use algebraic and graphical methods to solve systems of linear equations and inequalities in mathematical and real-world situations.	Algebraic Sense	Systems of two linear equations with two variables
		Al.2.g Add, subtract, multiply, and divide polynomial expressions.	Algebraic Sense	Multi Step Equations
			Algebraic Sense	Solve System of Equations and Inequalities
		Al.2.h Factor polynomials by using Greatest Common Factor (GCF) and factor quadratics that have only rational roots.	Algebraic Sense	Solve System of Equations and Inequalities
			Number Sense	Exponents and Square Roots
		Al.2.i Determine the solutions to quadratic equations by using graphing, tables, completing the square, the Quadratic formula, and factoring.	Algebraic Sense	Graphing Equations & Inequalities
			Algebraic Sense	Solve System of Equations and Inequalities
		Al.2.j Justify why some polynomials are prime over the rational number system.	Algebraic Sense	Check for reasonable solutions
			Number Sense	Rational Numbers
		Al.2.k Graph and analyze absolute value and quadratic functions.	Algebraic Sense	Graphing Equations & Inequalities
			Algebraic Sense	Solve System of Equations and Inequalities
		Al.2.l Write, graph, and analyze inequalities in two variables.	Algebraic Sense	Graphing Equations & Inequalities
Geometry	Al.3 Understand how algebra and geometric representations	Al.3.a Apply the concept of slope to determine if lines in a plane are parallel or	Algebraic Sense	Graphing Equations & Inequalities

	interconnect and build on one another.	perpendicular.	Algebraic Sense	Solve System of Equations and Inequalities
		Al.3.b Solve problems that involve interpreting slope as a rate of change.	Algebraic Sense	Solve System of Equations and Inequalities
			Algebraic Sense	Graphing Equations & Inequalities
Measurement	Al.4 Demonstrate and apply various formulas in problem-solving situations.	Al.4.a Solve real-world problems involving formulas for perimeter, area, distance, and rate.	Measurement	Area
			Measurement	Perimeter
			Operations	Ratio
		Al.4.b Explain and apply the appropriate formula to determine length, midpoint, and slope of a segment in a coordinate plane. (i.e., distance formula, Pythagorean Theorem).	Geometric Figures	Collinear, Coplanar Points and Lines, Pythagorean Theorem (Over View)
		Al.4.c Represent polynomial operations with area models.	Measurement	Area
Data Analysis & Probability	Al.5 Represent, analyze and make inferences based on data with and without the use of technology.	Al.5.a Draw conclusions and make predictions from scatter plots.	Probability 2	Scatter Plots
		Al.5.b Use linear regression to find the line-of-best fit from a given set of data.	Intro Probability	Overview
			Algebraic Sense	Linear Equations
Number and Operations	G.1 Compute and determine the reasonableness of a result in mathematical and real-world situations with and without technology.	G.1.a Apply problem-solving skills to solve and verify the solutions for unknown measures in similar polygons.	Operations	Number Sense Problem Solving
			Geometric Figures	Polygons
		G.1.b Given exact irrational solutions, determine the best rational estimation.	Operations	Estimation
			Number Sense	Single-Step Estimation
		G.1.c Solve real-world or application problems that involve square roots and the Pythagorean Theorem.	Number Sense	Introduction to Square Roots
			Geometric Figures	Pythagorean Theorem
Algebra	G.2 Understand relations, functions, and patterns. Analyze change using	G.2.a Represent data from geometric and real-world contexts with expressions,	Geometric Figures	Overview

	various geometric properties.	formulas, tables, charts, graphs, relations, and functions.	Algebraic Sense	Algebraic Expressions
			Algebraic Sense	Graphing Equations & Inequalities
		G.2.b Recognize and write the equation of a circle in standard form $(x-h)^2 + (y-k)^2 = r^2$ and identify the center and radius.	Algebraic Sense	Graphing Equations & Inequalities
			Geometric Figures	Overview
			Probability 2	Geometric Concepts
		G.2.c Use slope to analyze and write equations for parallel and perpendicular lines.	Algebraic Sense	Graphing Equations & Inequalities
	Algebraic Sense	Linear Equations		
	Geometric Figures	Overview (Collinear Points, Lines)		
	G.2.d Apply the Midpoint and Distance Formulas to solve application problems involving the coordinate plane.	Geometric Movement	Overview	
		Probability	Geometric Concepts	
	G.2.e Determine the effects of rigid (translations, rotations, and reflections) and nonrigid (dilations) motions and compositions when performed on objects on the coordinate plane.	Geometric Movement	Transformations	
		Geometric Movement	Overview	
Geometry	G.3 Investigate, apply, and prove properties and theorems from postulates and definitions related to angles, lines, circles, polygons, and two- and three-dimensional figures. Explore applications of patterns and transformational geometry.	G.3.a Use inductive reasoning to make conjectures and deductive reasoning to make valid conclusions.	Intro Probability	Overview
		G.3.b Develop and evaluate mathematical arguments and proofs to include paragraph, two-column, and flow chart forms.	Probability 2	Geometric Concepts
			Intro Probability	Overview
	G.3.c Identify, classify, and apply angle relationships formed by parallel lines cut by transversals.	Geometric Figures	Angles	

		G.3.d Use the properties of altitudes, medians, angle bisectors, and perpendicular bisectors of triangles to solve problems.	Geometric Figures Geometric Figures	Triangles Angles
		G.3.e Classify triangles and apply postulates and theorems to test for triangle inequality, congruence, and similarity.	Geometric Figures	Triangles
		G.3.f Determine and justify if a given shape could be tessellated.	Geometric Movement	Overview
		G.3.g Describe and draw cross-sections of prisms, cylinders, pyramids, and cones.	Geometric Figures	Prisms, Cones & Pyramids
		G.3.h Graph a vector and determine the magnitude and direction of a given vector.	Geometric Movement	Overview
		G.3.i Given the pre-image or image, find figures obtained by applying reflections, translations, rotations, and dilations; describe and justify the method used.	Geometric Movement	Reflections, translations, rotations and dilations
Measurement	G.4 Select and apply various strategies, tools, and formulas to calculate length, surface area, volume, and angle measurements.	G.4.a Use the properties of circles using arc, angle, and segment relationships to find missing measures.	Geometric Figures Measurement	Angles Perimeter, Area
		G.4.b Solve real-world applications and mathematical problems to find missing measurements in right triangles by applying special right triangle relationships, geometric means, or trigonometric functions.	Geometric Figures Geometric Figures	Angles Pythagorean Theorem
		G.4.c Solve real-world and mathematical problems involving the lateral area, surface area and volume of three-dimensional figures, including prisms, cylinders, cones, pyramids, and spheres.	Measurement Geometric Figures	Volume Prisms, Cones & Pyramids
		G.4.d Explain and use the properties of 45-45-90 and 30-60-90 triangles.	Geometric Figures	Triangles
		G.4.e Apply the relationships of sine, cosine, and tangent to problems involving	Geometric Figures	Triangles

		right triangles.		
Data Analysis & Probability	G.5 Represent, analyze, and make inferences based on data with and without the use of technology.	G.5.a Apply multiple strategies and representations, including area models, to solve probability problems.	Probability 2	Overview
Number and Operations	All.1 Understand relationships among numbers and compute fluently. Verify with technology.	All.1.a Diagram the relationship among the subsets of the complex number system.	Number Sense	Overview
		All.1.b Compute with rational and radical expressions and complex numbers, expressing in simplest form.	Number Sense	Overview
		All.1.c Evaluate powers of the imaginary unit, i .	Algebraic Sense	Intro to Algebraic Expressions
			Number Sense	Exponents
		All.1.d Perform computations, including addition, scalar multiplication, multiplication, determinants, and inverses on matrices.	Number Sense	Overview
		All.1.e Solve applications and problems in mathematical settings involving arithmetic and geometric sequences and series.	Algebraic Sense	Number Patterns
		All.1.f Explain and use the inverse relationship between exponential and logarithmic expressions.	Algebraic Sense	Intro to Algebraic Expressions
			Number Sense	Exponents
		All.1.g Use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	Number Sense	Exponents
All.1.h Solve application problems involving exponential functions related to growth and decay.	Number Sense	Exponents		
	Algebraic Sense	Solve System of Equations		
	Algebraic Sense	Graphing Equations & Inequalities		
Algebra	All.2 Use algebraic concepts to identify patterns, use multiple representations of relations and functions, and apply operations to expressions, equations, and inequalities.	All.2.a Solve compound and absolute value inequalities, graphing and writing solutions in interval notation.	Algebraic Sense	Graphing Equations & Inequalities
			Algebraic Sense	Graphing Equations & Inequalities
		Algebraic Sense	Solve System of Equations	

		All.2.c Given constraints, find the maximum and minimum value(s) of a system of linear inequalities and explain your reasoning.	Algebraic Sense	Solve System of Equations & Inequalities
			Algebraic Sense	Linear Equations
		All.2.d Given the solution(s) to a quadratic equation, find a quadratic equation to fit the solution(s) and explain or justify the solution process.	Algebraic Sense	Solve System of Equations & Inequalities
			Algebraic Sense	Multi-Step Equations
		All.2.e Use the discriminant to classify and predict the types of solutions of quadratic equations and justify the classification.	Algebraic Sense	Solve System of Equations & Inequalities
		All.2.f Factor sums and differences of cubes and factor polynomials by grouping.	Algebraic Sense	Multi-Step Equations
		All.2.g Solve radical equations.	Algebraic Sense	Solve System of Equations & Inequalities
		All.2.h Write equivalent forms of rational expressions using real and complex conjugates.	Algebraic Sense	Intro to Algebraic Expressions
		All.2.i Solve equations involving rational expressions and verify solutions.	Algebraic Sense	Solve System of Equations & Inequalities
		All.2.j Explain the results of compositions of functions.	Algebraic Sense	Check for solutions
		All.2.k Explain the Binomial Theorem and use it to expand binomial expressions raised to positive integral powers.	Number Sense	Exponents
			Algebraic Sense	Overview
		All.2.l Interpret the zeros and maximum or minimum value(s) of quadratic functions.	Algebraic Sense	Solve System of Equations & Inequalities
			Algebraic Sense	Check for solutions
Geometry	All.3 Use coordinate geometry to specify locations, describe relationships, and apply transformations to analyze algebraic relationships.	All.3.a Determine and justify whether the inverse of a relation or a function exists.	Geometric Movement	Overview
			Probability 2	Geometric Concepts
		All.3.b Classify functions based on	Geometric	Overview

		sketches of their graphs.	Movement	
		All.3.c Sketch and describe transformations of quadratic and absolute value functions.	Geometric Movement	Overview
		All.3.d Represent complex numbers and the sum of complex numbers in a complex coordinate plane.	Geometric Movement	Overview
		All.3.e Identify and sketch the essential graphs of the four conic sections: circle, parabola, ellipse, and hyperbola.	Geometric Movement	Overview
Measurement	All.4 Understand measurable attributes of objects and apply appropriate techniques and formulas to determine measurements.	All.4.a Verify the appropriateness of the numerical value and the units of a variable in an equation.	Measurement	Measuring Time
		All.4.b Describe the level of accuracy of measurements in real-world situations by using absolute value inequalities.	Measurement	Overview
			Measurement	System of Measurement and Conversion
Data Analysis & Probability	All.5 Use technology to represent, analyze, and make inferences based on data.	All.5.a Through the use of technology, use scatter plots and linear and quadratic regression analysis to determine an appropriate function to model real-life data.	Probability 2	Scatter Plots
		All.5.b Solve simple combinations.	Probability 2	Combinations
		All.5.c Model a data set using the median-fit-method with a linear equation and make predictions based on the model and the equation.	Algebraic Sense	Number Patterns
		All.5.d Identify the difference between permutations and combinations and use them to solve real-world problems.	Probability 2	Combinations
			Probability 2	Permutations