



Alignment Document
State of Oregon and Aventa Learning Integrated Math

Integrated Math
2005-2007 Benchmark Blueprint

Strand	Common Curriculum Goal	Standard	Unit Name	Course Topic Description
MA.CM.CE Calculations and Estimations	Understand numbers, ways of representing numbers, relationships among numbers, and number systems	MA.CM.CE.01 Compare real numbers	Number Sense	Rational Numbers
			Algebraic Sense	Inequalities
		MA.CM.CE.02 Order and compare numbers expressed in scientific notation to each other and to other forms of real numbers	Operations	Scientific Notation
		MA.CM.CE.03 Recognize that the set of real numbers contains the set of irrational numbers and the set of rational numbers and know the difference between them	Number Sense	Rational Numbers
		MA.CM.CE.04 Locate real numbers on a number line (including approximations of irrational numbers)	Number Sense Algebraic Sense	Rational Numbers Inequalities
MA.CM.CE Calculations and Estimations	Compute fluently and make reasonable estimates	MA.CM.CE.05 Apply equivalent forms of real numbers to solve problems	Number Sense	Rational Numbers
			Algebraic Sense	Expressions with Powers
			Introduction to Probability	Theoretical Probability
MA.CM.CE Calculations and Estimations		MA.CM.CE.06 Compute with real numbers, including absolute value and numbers expressed in scientific notation	Operations	Scientific Notation
			Number Sense	Integers



			Algebraic Sense	Evaluating Expressions with Real Numbers
			Geometric Figures	Points, Lines, & the Plane
		MA.CM.CE.07 Compute with integer exponents and whole number roots	Number Sense	Exponents
			Operations	Number Sense Problem Solving
			Algebraic Sense	Expressions with Powers
		MA.CM.CE.08 Mentally multiply and divide by powers of 10 to estimate results of computations involving numbers expressed in scientific notation	Operations	Scientific Notation
			Number Sense	Single-Step Estimation
		MA.CM.CE.09 Develop and use strategies to estimate the results of real number computations, determine the amount of error, and judge the reasonableness of results	Number Sense	Single-Step Estimation
			Operations	Estimation
		MA.CM.CE.10 Estimate the results of computations with integer powers and roots of real numbers.	Algebraic Sense	Intro to Algebraic Expressions
			Number Sense	Single-Step Estimation
			Number Sense	Exponents
			Operations	Estimation
MA.CM.CE Calculations and Estimations	Understand meanings of operations and how they relate to one another	MA.CM.CE.11 Recognize that taking the n th root of a number corresponds to prime factorization		
		MA.CM.CE.12 Use the inverse operations of n th power and n th root to solve problems and check solutions	Algebraic Sense	Intro to Algebraic Expressions
			Number Sense	Exponents
		MA.CM.CE.13 Apply the associative, commutative, and distributive properties to simplify computations with real numbers	Algebraic Sense	<i>Throughout</i>

		MA.CM.CE.14 Use properties of numbers to demonstrate whether assertions are true or false	Number Sense Algebraic Sense	Overview Inequalities
MA.CM.SP Statistics and Probability	Select and use appropriate statistical methods to analyze data	MA.CM.SP.01 Estimate from a graph or a set of data the mean and standard deviation of a normal distribution and draw conclusions about the distribution of data using measures of center and spread (e.g., analyze a variety of summary statistics and graphical displays)		
		MA.CM.SP.02 Analyze bivariate data and identify the type of function (linear, quadratic, exponential) that could be used to model the data		
MA.CM.SP Statistics and Probability	Understand and apply basic concepts of probability	MA.CM.SP.03 Compute the probability of a compound event (e.g., toss a coin three times to find the probability of two heads)	Introduction to Probability Introduction to Probability	Theoretical Probability Experimental Probability
		MA.CM.SP.04 Determine probabilities of dependent and independent events (e.g., use colored marbles with and without replacement)	Introduction to Probability	Overview
		MA.CM.SP.05 Use conditional probability to solve problems (e.g., from a sample set for the roll of two tetrahedral die; given that a sum is even, what is the probability that the sum is 6?)		
		MA.CM.SP.06 Determine all possible outcomes of a particular event or all possible arrangements of objects in a given set by applying counting strategies, combinations, and permutations	Probability 2 Probability 2	Combinations Permutations
MA.CM.SP Statistics and Probability	Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them	MA.CM.SP.07 Determine appropriate designs for simulations (surveys, observational studies, and experiments) and modeling to study a problem and construct empirical probability distributions to represent results		
		MA.CM.SP.08 Use matrices, histograms, scatter plots, stem-and-leaf plots, and box-and whisker-	Probability 2	Scatter Plots



		plots to interpret data	Introduction to Probability	Theoretical Probability
		MA.CM.SP.09 Identify examples of populations that are normally distributed		
MA.CM.SP Statistics and Probability	Develop and evaluate inferences and predictions that are based on data	MA.CM.SP.10 Make inferences and predictions from data in histograms, scatter plots, and parallel box plots	Probability 2	Scatter Plots
		MA.CM.SP.11 Make predictions about populations based on reported sample statistics	Algebraic Sense	Number Patterns
		MA.CM.SP.12 Understand that inferences about a population drawn from a sample involve uncertainty and that the role of statistics is to measure that uncertainty	Introduction to Probability	Data Samples
MA.CM.AR Algebraic Relationships	Understand patterns, relations, and functions	MA.CM.AR.01 Represent and generalize sequences resulting from linear, quadratic, and exponential relationships using recursive or explicit formulas, tables of values, and graphs	Algebraic Sense	Number Patterns
		MA.CM.AR.02 Produce a valid conjecture using inductive reasoning by generalizing from a pattern of observations	Algebraic Sense	Number Patterns
		MA.CM.AR.03 Evaluate and make a table for two-variable formulas and match a graph or table of values to its formula	Algebraic Sense	Number Patterns
			Algebraic Sense	Graphing Equations and Inequalities
		MA.CM.AR.04 Identify independent and dependent variables and determine the domain and range of a function in a problem situation		
MA.CM.AR Algebraic Relationships	Represent and analyze mathematical situations and structures using algebraic symbols	MA.CM.AR.05 Algebraically represent situations and solve problems involving quadratic and exponential equations, including exponential growth and decay		
		MA.CM.AR.06 Use graphs to solve non-linear equations, including quadratics		
		MA.CM.AR.07 Represent and solve systems of linear equations with two variables using simultaneous equations and by graphing.	Algebraic Sense	Systems of two linear equations with two variables

			Algebraic Sense	The Substitution Method
			Algebraic Sense	The Addition Method
		MA.CM.AR.08 Recognize and generate equivalent forms for algebraic expressions, including combining like terms and expanding binomials	Algebraic Sense	<i>Throughout</i>
		MA.CM.AR.09 Evaluate algebraic expressions and formulas by substituting real numbers	Operations	Number Sense Problem Solving
			Algebraic Sense	<i>Throughout</i>
		MA.CM.AR.10 Translate between and interpret quadratic and exponential relationships represented by words, symbols, tables, and graphs		
		MA.CM.AR.11 Determine and interpret maxima or minima and zeros of quadratic functions, and linear functions where $y = \text{constant}$		
		MA.CM.AR.12 Graph linear inequalities in two variables	Algebraic Sense	Graphing Equations & Inequalities
		MA.CM.AR.13 Graph quadratic and exponential equations		
		MA.CM.AR.14 Analyze how changing a parameter (i.e., k , b) in a quadratic or exponential function of the form $y=kx+b$, $y=kx^2+b$, or $y=k(x+b)^2$ affects its graph		
MA.CM.AR Algebraic Relationships	Use mathematical models to represent and understand quantitative relationships	MA.CM.AR.15 Model situations, make predictions and inferences, and solve problems using linear, quadratic, and exponential functions	Algebraic Sense	Number Patterns
			Algebraic Sense	The Substitution Method
		MA.CM.AR.16 Determine when data represented in a table or graph represents a linear, quadratic, or exponential relationship	Algebraic Sense	Number Patterns
			Algebraic Sense	Graphing Equations & Inequalities
MA.CM.AR Algebraic Relationships	Analyze change in various contexts	MA.CM.AR.17 Approximate and interpret rates of change in graphical and numeric data	Algebraic Sense	Graphing Equations & Inequalities

		MA.CM.AR.18 Analyze the nature of change of each variable in a non-linear relationship as suggested by a table of values, a graph, or a formula		
MA.CM.ME Measurement	Understand measurable attributes of objects and the units, systems and processes of measurement	MA.CM.ME.01 Determine the appropriate units, scales, and tools for problem situations involving measurement	Measurement	Metric Measurement
		MA.CM.ME.02 Solve problems involving unit conversions (e.g., mile per hour to feet per second) given the unit equivalencies.	Measurement	Customary Measurements
		MA.CM.ME.03 Determine the precision of a given measuring tool (e.g., 1 degree for a standard protractor)	Measurement	<i>Throughout</i>
MA.CM.ME Measurement	Apply appropriate techniques, tools, and formulas to determine measurements	MA.CM.ME.04 Develop and use strategies and formulas for calculating surface area and volume of cones and spheres	Measurement	Volume
		MA.CM.ME.05 Use formulas to solve problems involving finding missing dimensions given perimeter, area, surface area, and volume of polygons, circles, prisms, pyramids, cones, cylinders, and spheres	Geometric Figures	Prisms, Cones & Pyramids
			Geometric Movement	Geometric Problem Solving
			Measurement	Perimeter
		MA.CM.ME.06 Develop and understand, and use the formula for determining arc length (e.g., portion of a circle).	Measurement	Area
Measurement	Volume			
MA.CM.ME.07 Determine perimeter and area of shapes of circles and polygons (annulus, etc.) in context	Geometric Figures	Prisms, Cones & Pyramids		
			Measurement	Area
			Measurement	Perimeter



		MA.CM.ME.08 Determine the surface area and volume of a complex figure composed of a combination of two or more geometric figures or a figure derived from a regular solid (e.g., hemisphere, frustum of a cone)	Measurement	Volume
		MA.CM.ME.09 Compare and contrast the formulas for surface area and volume of cylinders and cones	Measurement Geometric Figures	Volume Prisms, Cones & Pyramids
		MA.CM.ME.10 Determine a shape that has minimum or maximum perimeter, area, surface area, or volume under specified conditions	Measurement Measurement	Volume Area
		MA.CM.ME.11 Make and use scale drawings and models to solve problems		
MA.CM.GE Geometry	Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships	MA.CM.GM.01 Determine defining properties that characterize classes of three-dimensional figures and their component parts	Geometric Movement	Geometric Problem Solving
		MA.CM.GM.02 Recognize and represent three-dimensional figures and their component parts	Geometric Figures	Prisms, Cones & Pyramids
		MA.CM.GM.03 Justify and use theorems involving the angles formed by parallel lines cut by a transversal	Geometric Figures	Perpendicular and Parallel Lines
		MA.CM.GM.04 Develop, understand, and apply properties of circles and of inscribed and circumscribed polygons		
		MA.CM.GM.05 Use measures of sides and of interior and exterior angles of polygons to classify figures and solve problems	Geometric Figures Geometric Figures Geometric Figures Measurement	Angles Polygons Triangles Area of Triangle
		MA.CM.GM.06 Prove congruence of two triangles or their corresponding component parts		

		MA.CM.GM.07 Determine the measures of corresponding angles, sides, and corresponding parts of congruent and similar figures		
		MA.CM.GM.08 Use angle, side length, and triangle inequality relationships to solve problems		
		MA.CM.GM.09 Use trigonometric functions, and angle and side relationships of special right triangles (30- 60-right triangles and isosceles right triangles) to solve for an unknown length and determine distances and solve problems		
		MA.CM.GM.10 Investigate relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles		
		MA.CM.GM.11 Construct and judge the validity of a logical argument and give counterexamples to disprove a statement		
		MA.CM.GM.12 Justify and use theorems involving the properties of triangles, quadrilaterals, circles, and their component parts to verify congruence and similarity	Geometric Figures	Triangles
MA.CM.GE Geometry	Use visualization, spatial reasoning, and geometric modeling to solve problems	MA.CM.GM.13 Model, sketch, label and where appropriate construct cones and spheres, and basic elements of geometric figures (e.g., altitudes, midpoints, medians, angle bisectors, and perpendicular bisectors) using compass and straightedge or technology	Geometric Figures	<i>Throughout</i>
		MA.CM.GM.14 Describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect)		
		MA.CM.GM.15 Make a model of a three-dimensional figure from a two-dimensional drawing and make a two-dimensional representation of a three-dimensional object through scale drawings, perspective drawings, blueprints, or computer simulations	Geometric Figures	Prisms, Cones & Pyramids

		MA.CM.GM.16 Recognize representations of three-dimensional objects from different perspectives and identify cross-sections of three-dimensional objects	Geometric Figures	Prisms, Cones & Pyramids
MA.CM.GE Geometry	Specify locations and describe spatial relationships using coordinate geometry and other representational systems	MA.CM.GM.17 Determine the relative placement (e.g., intersecting, parallel, perpendicular) of two lines on a coordinate plane given the algebraic equations representing them	Algebraic Sense	Systems of two linear equations with two variables
		MA.CM.GM.18 Calculate slope, distance and midpoint between points with an emphasis on practical applications (use coordinate formulas)	Geometric Movement	The Coordinate Plane
			Algebraic Sense	Graphing Equations & Inequalities
			Geometric Movement	The Coordinate Plane
			Geometric Movement	Transformations
MA.CM.GE Geometry	Apply transformations and use symmetry to analyze mathematical situations	MA.CM.GM.19 Use coordinate geometry to determine whether a figure is symmetrical with respect to a line or a point	Geometric Figures	Points, Lines, & the Plane
		MA.CM.GM.20 Determine whether a given pair of figures on a coordinate plane represent a translation, reflection, rotation, and/or dilation	Geometric Movement	The Coordinate Plane
			Geometric Movement	Transformations
		MA.CM.GM.21 Determine the image of a figure on a coordinate graph under translations, reflections, and rotations	Geometric Movement	Transformations
		MA.CM.GM.22 Given a figure and its image on a coordinate graph, determine the translation vector or locate the axis of reflection	Geometric Movements	Transformations
		MA.CM.GM.23 Determine the coordinates of and draw the dilation of a figure on a coordinate graph		
		MA.CM.GM.24 Analyze the congruence, similarity, and line or rotational symmetry of figures using transformations	Geometric Movement	Transformations
		Geometric Movement	Overview	



<p>MA.CM.PS Mathematical Problem Solving</p>	<p>Select, apply, and translate among mathematical representations to solve problems.</p>	<p>MA.CM.PS.01 Interpret the concepts of a problem-solving task and translate them into mathematics</p>	<p>Operations Algebraic Sense Geometric Figures Geometric Movement Measurement</p>	<p>Number Sense Problem Solving <i>Throughout</i> <i>Throughout</i> <i>Throughout</i> <i>Throughout</i></p>
<p>MA.CM.PS Mathematical Problem Solving</p>	<p>Apply and adapt a variety of appropriate strategies to solve problems.</p>	<p>MA.CM.PS.01 Choose strategies that can work and then carry out the strategies chosen</p>	<p>Operations Algebraic Sense Geometric Movement Measurement</p>	<p>Number Sense Problem Solving <i>Throughout</i> Geometric Problem Solving <i>Throughout</i></p>
<p>MA.CM.PS Mathematical Problem Solving</p>	<p>Monitor and reflect on the process of mathematical problem solving.</p>	<p>MA.CM.PS.03 Produce identifiable evidence of a second look at the concepts/strategies/calculations to defend a solution</p>	<p>Operations Algebraic Sense</p>	<p>Number Sense Problem Solving <i>Throughout</i></p>
<p>MA.CM.PS Mathematical Problem Solving</p>	<p>Communicate mathematical thinking coherently and clearly. Use the language of mathematics to express mathematical ideas precisely.</p>	<p>MA.CM.PS.04 Use pictures, symbols, and/or vocabulary to convey the path to the identified solution</p>	<p>Operations Algebraic Sense Algebraic Sense Geometric Figures Geometric Movement</p>	<p>Number Sense Problem Solving Graphing Equations & Inequalities Systems of two linear equations with two variables <i>Throughout</i> <i>Throughout</i></p>



MA.CM.PS Mathematical Problem Solving	Accurately solve problems that arise in mathematics and other contexts.	MA.CM.PS.05 Accurately solve problems using mathematics	Operations Algebraic Sense Geometric Figures Geometric Movement Measurement	Number Sense Problem Solving <i>Throughout</i> <i>Throughout</i> Geometric Problem Solving <i>Throughout</i>
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