



Alignment Document

State of Virginia And Aventa Learning Consumer Math

Consumer Math 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
0	Algebra I		
0	Expressions and Operations		
A.2	The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables. Students will choose an appropriate computational technique, such as mental mathematics, calculator, or p		
A.2.1	Translate verbal expressions into algebraic expressions with three or fewer terms.	Wages	Review of Equations
		Wages	Evaluating Expressions and Formulas
A.2.2	Relate a polynomial expression with three or fewer terms to a verbal expression.		
A.2.3	Evaluate algebraic expressions for a given replacement set to include integers and rational numbers.		
A.2.4	Apply appropriate computational techniques to evaluate an algebraic expression.	All About Jobs	Order of Operations
A.10	ALGEBRA I The student will apply the laws of exponents to perform operations on expressions with integral exponents, using scientific notation when appropriate.		
A.10.1	Identify the base, exponent, and coefficient in a monomial expression.		
A.10.2	Simplify monomial expressions and ratios of monomial expressions in which the exponents are integers, using the laws of exponents.		



A.10.3	Express numbers, using scientific notation, and perform operations, using the laws of exponents.		
A.11	The student will add, subtract, and multiply polynomials and divide polynomials with monomial divisors, using concrete objects, pictorial and area representations, and algebraic manipulations.		
A.11.1	Model sums, differences, products, and quotients of polynomials with concrete objects and their related pictorial representations.		
A.11.2	Relate concrete and pictorial representations for polynomial operations to their corresponding algebraic manipulations.		
A.11.3	Find sums and differences of polynomials.		
A.11.4	Multiply polynomials by monomials and binomials by binomials symbolically.		
A.11.5	Find the quotient of polynomials, using a monomial divisor.		
A.12	The student will factor completely first- and second-degree binomials and trinomials in one or two variables. The graphing calculator will be used as a tool for factoring and for confirming algebraic factorizations.		
A.12.1	Use the distributive property to "factor out" all common monomial factors.		
A.12.2	Factor second-degree polynomials and binomials with integral coefficients and a positive leading coefficient less than four.		
A.12.3	Identify polynomials that cannot be factored over the set of real numbers.		
A.12.4	Use the x-intercepts from the graphical representation of the polynomial to determine and confirm its factors.		
A.13	The student will express the square root of a whole number in simplest radical form and approximate square roots to the nearest tenth.		
A.13.1	Estimate the square root of a non-perfect square to the nearest tenth by		
A.13.1.a	identifying the two perfect squares it lies between;		
A.13.1.b	finding the square root of those two perfect squares; and		



A.13.1.c	using those values to estimate the square root of the nonperfect square.		
A.13.2	Find the square root of a number, and make a reasonable interpretation of the displayed value for a given situation, using a calculator.		
A.13.3	Express the square root of a whole number less than 1,000 in simplest radical form.		
0	Relations and Functions		
A.5	The student will create and use tabular, symbolic, graphical, verbal, and physical representations to analyze a given set of data for the existence of a pattern, determine the domain and range of relations, and identify the relations that are functions.		
A.5.1	Analyze a table of ordered pairs for the existence of a pattern that defines the change relating input and output values.	Checking and Savings Accounts	Exponential Equations
		Personal Finances	Graphing Linear Equations Using Points
A.5.2	Write a linear equation to represent a pattern in which there is a constant rate of change between variables.	Personal Finances	Writing Linear Equations
		Automobile Expenses	Other Car Topics
A.5.3	Determine from a set of ordered pairs, a table, or a graph whether a relation is a function.		
A.5.4	Identify the domain and range for a relation, given a set of ordered pairs, a table, or a graph.		
A.5.5	Use physical representations, such as algebra manipulatives, to represent quantitative data.		
A.15	The student will, given a rule, find the values of a function for elements in its domain and locate the zeros of the function both algebraically and with a graphing calculator. The value of $f(x)$ will be related to the ordinate on the graph.		
A.15.1	For each x in the domain of f , find $f(x)$.	Wages	Evaluating Expressions and Formulas
		Personal Finances	Graphing an Equation Using Points
		Checking and Savings Accounts	Exponential Equations



A.15.2	Identify the zeros of the function algebraically and confirm them, using the graphing calculator.		
A.18	The student will analyze a relation to determine whether a direct variation exists and represent it algebraically and graphically, if possible.		
A.18.1	Given a table of values, determine whether a direct variation exists.		
A.18.2	Write an equation for a direct variation, given a set of data.		
A.18.3	Graph a direct variation from a table of values or a practical situation.		
0	Equations and Inequalities		
A.1	The student will solve multistep linear equations and inequalities in one variable, solve literal equations (formulas) for a given variable, and apply these skills to solve practical problems. Graphing calculators will be used to confirm algebraic solution		
A.1.1	Translate verbal sentences to algebraic equations and inequalities in one variable.	Wages	Solving Two-Step Equations
		Wages	Review of Equations
		Wages	Salary and Commission
		Wages	Solving Equations: Addition and Subtraction
		Wages	Commission
		Wages	Solving Equations: Multiplication and Division
		Checking and Savings Accounts	Exponential Equations
		Personal Finances	The Costs of Raising a Family
A.1.2	Solve multistep linear equations and noncompound inequalities in one variable with the variable in both sides of the equation or inequality.	Wages	Review of Equations (solves multi-step equations, excludes variable on both sides, inequalities)
A.1.3	Solve multistep linear equations and inequalities in one variable with grouping symbols in one or both sides of the equation or inequality.	Personal Finances	The Costs of Raising a Family
		Wages	Review of Equations
A.1.4	Solve multistep equations and inequalities in one variable with rational coefficients and constants.		



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A.1.5	Solve a literal equation (formula) for a specified variable.	Transportation	Distance
A.1.6	Apply skills for solving linear equations to practical situations.	Checking and Savings Accounts	Checking Accounts
		Checking and Savings Accounts	The Check Register
		Checking and Savings Accounts	Savings Accounts
		Checking and Savings Accounts	Exponential Equations
		Wages	Solving Equations: Addition and Subtraction
		Wages	Commission
		Wages	Solving Equations: Multiplication and Division
		Wages	Solving Two-Step Equations
		Personal Finances	The Costs of Raising a Family
		Automobile Expenses	Used Cars
A.1.7	Confirm algebraic solutions to linear equations and inequalities, using a graphing calculator.		
A.3	The student will justify steps used in simplifying expressions and solving equations and inequalities. Justifications will include the use of concrete objects; pictorial representations; and the properties of real numbers, equality, and inequality.		
A.3.1	Simplify expressions and solve equations and inequalities, using the commutative, associative, and distributive properties.		
A.3.2	Simplify expressions and solve equations and inequalities, using the order of operations.	All about jobs	Review of Order of Operations
		Wages	Solving Two-Step Equations



A.3.3	Solve equations, using the addition, multiplication, closure, identity, and inverse properties.	Wages	Salary and Commission
		Wages	Solving Equations: Addition and Subtraction
		Wages	Commission
		Wages	Solving Equations: Multiplication and Division
		Wages	Solving Two-Step Equations
		Personal Finances	The Costs of Raising a Family
A.3.4	Solve equations, using the reflexive, symmetric, transitive, and substitution properties of equality.		
A.3.5	Create and interpret pictorial representations for simplifying expressions and solving equations and inequalities.		
A.6	The student will select, justify, and apply an appropriate technique to graph linear functions and linear inequalities in two variables. Techniques will include slope-intercept, x- and y-intercepts, graphing by transformation, and the use of the graphing		
A.6.1	Graph linear equations and inequalities in two variables that arise from a variety of practical situations.	Personal Finances	Graphing an Equation Using Points
		Personal Finances	Graphing Using Slope and Y-Intercept
A.6.2	Use the line $y = x$ as a reference, and apply transformations defined by changes in the slope or y-intercept.		
A.6.3	Express linear functions or inequalities in slope-intercept form, and use the graphing calculator to display the relationship.	Personal Finances	Writing Linear Equations (excludes graphing calculator)
A.6.3	Express linear functions or inequalities in slope-intercept form, and use the graphing calculator to display the relationship.	Personal Finances	Graphing Using Slope and Y-Intercept
A.6.4	Explain why a given technique is appropriate for graphing a linear function.	Personal Finances	Graphing Using Slope and Y-Intercept
A.7	The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined. The graphing calculator will		



A.7.1	Recognize that m represents the slope in the equation of the form $y = mx + b$.	Personal Finances	Writing Linear Equations
		Personal Finances	Graphing Using Slope and Y-Intercept
A.7.2	Find the slope of the line, given the equation of a linear function.	Personal Finances	Graphing an Equation Using Points
A.7.3	Calculate the slope of a line, given the coordinates of two points on the line.		
A.7.4	Find the slope of a line, given the graph of a line.		
A.7.5	Recognize and describe a line with a slope that is positive, negative, zero, or undefined.		
A.7.6	Describe slope as a constant rate of change between two variables.	Personal Finances	Writing Linear Equations
A.8	The student will write an equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line.		
A.8.1	Recognize that equations of the form $y = mx + b$ and $Ax + By = C$ are equations of lines.	Personal Finances	Writing Linear Equations
A.8.2	Write an equation of a line when given the graph of a line.		
A.8.3	Write an equation of a line when given two points on the line whose coordinates are integers.		
A.8.4	Write an equation of a line when given the slope and a point on the line whose coordinates are integers.		
A.8.5	Write an equation of a vertical line as $x = c$.		
A.8.6	Write an equation of a horizontal line as $y = c$.		
A.9	The student will solve systems of two linear equations in two variables both algebraically and graphically and apply these techniques to solve practical problems. Graphing calculators will be used both as a primary tool for solution and to confirm an algebraic solution.		
A.9.1	Given a system of two linear equations in two variables that has a unique solution, solve the system by substitution or elimination to find the ordered pair which satisfies both equations.		



A.9.2	Given a system of two linear equations in two variables that has a unique solution, solve the system graphically to find the point of intersection.	Automobile Expenses	Comparing Costs
		Personal Finances	Open Response-Comparing Consumer Costs
A.9.3	Determine whether a system of two linear equations has one solution, no solution, or infinite solutions.		
A.9.4	Write a system of two linear equations that describes a practical situation.	Personal Finances	Open Response-Comparing Consumer Costs
A.9.5	Interpret and determine the reasonableness of the algebraic or graphical solution of a system of two linear equations that describes a practical situation.	Personal Finances	Open Response-Comparing Consumer Costs
A.14	The student will solve quadratic equations in one variable both algebraically and graphically. Graphing calculators will be used both as a primary tool in solving problems and to verify algebraic solutions.		
A.14.1	Solve quadratic equations algebraically or by using the graphing calculator. When solutions are represented in radical form, the decimal approximation will also be given.		
A.14.2	Verify algebraic solutions, using the graphing calculator.		
A.14.3	Identify the x-intercepts of the quadratic function as the solution(s) to the quadratic equation that is formed by setting the given quadratic expression equal to zero.		
0	Statistics		
A.4	The student will use matrices to organize and manipulate data, including matrix addition, subtraction, and scalar multiplication. Data will arise from business, industrial, and consumer situations.		
A.4.1	Represent data from practical problems in matrix form.		
A.4.2	Calculate the sum or difference of two given matrices that are no larger than 4×4 .		
A.4.3	Calculate the product of a scalar and a matrix that is no larger than 4×4 .		



A.4.4	Solve practical problems involving matrix addition, subtraction, and scalar multiplication, using matrices that are no larger than 4×4 .		
A.4.5	Read and interpret the data in a matrix representing the solution to a practical problem.		
A.16	The student will, given a set of data points, write an equation for a line of best fit and use the equation to make predictions.		
A.16.1	Write an equation for the line of a best fit, given a set of six to ten data points in a table, on a graph, or from a practical situation.		
A.16.2	Make predictions about unknown outcomes, using the equation of a line of best fit.		
A.17	The student will compare and contrast multiple one-variable data sets, using statistical techniques that include measures of central tendency, range, and box-and-whisker graphs.		
A.17.1	Calculate the measures of central tendency and range of a set of data with no more than 20 data points.		
A.17.2	Compare measures of central tendency using numerical data from a table with no more than 20 data points.		
A.17.3	Compare and contrast two sets of data, each set having no more than 20 data points, using measures of central tendency and the range.		
A.17.4	Compare and analyze two sets of data, each set having no more than 20 data points, using box-and-whisker plots.		