

Personal Finance Class Curriculum (One Semester)

Mathematical Domain	Cluster	Standard	Sample Teaching Strategy/Possible Integration
Number and Quantity Standards (N-RN)	Extend the properties of exponents to rational exponents.	N-RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. <i>For example: Write equivalent representations that utilize both positive and negative exponents.</i>	Compound interest and Exponential Growth
Number and Quantity Standards (N-Q)	Reason quantitatively and use units to solve problems.	N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Markups, Discounts, Pay checks, Net income
		N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.	Use appropriate units
		N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Accuracy of rounding
Algebra Standards (A-SSE)	Interpret the structure of expressions.	A-SSE.1. Interpret expressions that represent a quantity in terms of its context.* a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. <i>For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.</i>	Hourly pay, commission, taxes, budgeting, recordkeeping
	Write expressions in equivalent forms to solve problems.	A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* a. Factor a quadratic expression to reveal the zeros of the function it defines. <i>For example, $x^2 + 4x + 3 = (x + 3)(x + 1)$.</i> b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. <i>For example, $x^2 + 4x + 3 = (x + 2)^2 - 1$.</i> c. Use the properties of exponents to transform expressions for exponential functions. <i>For example the expression $1.15t$ can be rewritten as $(1.151/12)^{12t} \approx 1.01212t$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</i>	Taxes, finding unknowns in paycheck

Mathematical Domain	Cluster	Standard	Sample Teaching Strategy/Possible Integration
Algebra Standards (A-APR)	Perform arithmetic operations on polynomials.	A-APR.1. Add, subtract, and multiply polynomials. Understand that polynomials form a system similar to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.	Loans, paying off and combining
Algebra Standards (A-CED)	Create equations and inequalities that describe numbers or relationships.	A-CED.1. Create equations and inequalities in one variable and use them to solve problems. <i>Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</i>	Credit cards, Housing costs, Insurance
		A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Closing costs
		A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. <i>For example, represent inequalities describing cost constraints in various situations.</i>	Tax Tables and income
		A-CED.4. Rearrange formulas (literal equations) to highlight a quantity of interest, using the same reasoning as in solving equations. <i>For example, rearrange Ohm's law $V = IR$ to highlight resistance R.</i>	Buying vehicles, Purchases with discounts and markups
Functions Standards (F-IF)	Understand the concept of a function and use function notation.	F-IF.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x . The graph of f is the graph of the equation $y = f(x)$.	Savings accounts
		F-IF.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Purchasing a new vehicle
	Interpret functions that arise in applications in terms of the context.	F-IF.4. For a function that models a relationship between two quantities, ☐ interpret key features of graphs and tables in terms of the quantities, and ☐ sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums;</i>	Home and vehicle loans and purchases

Mathematical Domain	Cluster	Standard	Sample Teaching Strategy/Possible Integration
	Analyze functions using different representations.	<p><i>symmetries; end behavior; and periodicity.*</i></p> <p>F-IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*</p> <p>F-IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*</p> <p>a. Graph linear and quadratic functions and show intercepts, maxima, and minima.</p> <p>b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</p> <p>c. Graph polynomial functions, identifying zeros (using technology) or algebraic methods when suitable factorizations are available, and showing end behavior.</p> <p>d. (+) Graph rational functions, identifying zeros and discontinuities (asymptotes/holes) using technology, and algebraic methods when suitable factorizations are available, and showing end behavior.</p> <p>e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.</p>	<p>Cost of item changing, inflation</p> <p>Interest rates, taxes, purchasing homes, Payments</p>
Functions Standards (F-BF)	Build a function that models a relationship between two quantities.	<p>F-BF.1. Write a function that describes a relationship between two quantities.*</p> <p>a. Determine an explicit expression, a recursive process, or steps for calculation from a context.</p> <p>b. Combine standard function types using arithmetic operations. <i>For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.</i></p> <p>c. (+) Compose functions. <i>For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the</i></p>	Paychecks, taxes, insurance

Mathematical Domain	Cluster	Standard	Sample Teaching Strategy/Possible Integration
		<i>weather balloon as a function of time.</i>	
Functions Standards (F-LF)	Construct and compare linear, quadratic, and exponential models and solve problems.	F-LE.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Show that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Paying off loans, Compound interest
		F-LE.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Simple interest versus compound interest
	Interpret expressions for functions in terms of the situation they model.	F-LE.5. Interpret the parameters in a linear or exponential function in terms of a context.	Tax tables, comparing purchases and housing costs
Geometry Standards (G-MG)	Apply geometric concepts in modeling situations.	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	Pie charts