Alabama Mathematics

Algebra with Finance (2017): Grades 9, 10, 11, 12

Adopted 2017

Banking Services

1 Understand long-term costs associated with borrowing money.

- a Calculating cost of credit card interest with benefits
- b Utilizing and understanding amortization tables for loans

2 Evaluate banking services for varying purposes including checking, savings, loans, and market investments.

3 Utilize exponential functions to compare compound interest and simple interest.

- a Deriving formulas and use iteration to compute compound interest
- b Creating, interpreting, and analyzing a graph, table, and equation to compare compound interest and simple interest.
- c Applying findings to short-term, long-term, single deposit and periodic deposit accounts
- d Interpreting the limit notation
- e Modeling an infinite series and finding a finite sum for an infinite series with common ratio ½
- f Computing limits of polynomial functions as x → ∞
- g Computing Annual Percentage Yield (APY) where APY = (1 + r/n)ⁿ - 1, given the Annual Percentage Rate (APR)
- h Adapting algebra from banking formulas for input into a spreadsheet

Investing

4 Read, interpret, and algebraically model stock ownership and transaction data.

- a Constructing, interpreting, and analyzing scatterplots by utilizing linear, quadratic, and regression equations to see a complete picture of supply, demand, revenue, and profit
- b Constructing algebraic ratios and proportions
- c Recognizing, representing, and solving proportional relationships using equations.
- d Determining percent increase/decrease of monetary amounts
- Constructing and interpreting scatterplots
- . Identifying form, direction, and strength from a scatterplot

Skip to main content

g Evaluating and using functions to model relationships between quantities

h Translating verbal situations into algebraic linear functions and quadratic function

i Creating algebraic formulas for use in spreadsheets

j Evaluating and using functions to model relationships between algebraic fractions, ratios, and proportions

Employment and Income Taxes

5 **Evaluate the impact of taxes on business ownership including property tax, sales tax, social security, retirement, and disability benefits.**

a Critiquing gross pay and net pay to determine total salary deductions

6 **Evaluate insurance needs and their financial impact for various businesses and industries.**

7 **Use linear and polynomial functions to model Internal Revenue Service and Social Security Administration regulations using linear and polygonal functions.**

a Identifying continuous and discontinuous functions by their graphs

b Graphing pay schedules

c Graphing continuously polynomial functions with multiple slopes and cusps

Automobile Ownership and Operation

8 **Calculate the long-term impact of major purchases on budgets.**

a Critiquing and comparing options for purchasing an automobile including leasing, purchasing by cash, and purchasing by loan.

b Interpreting and analyzing various functions, graphs, graphs, and data analysis in order to make a responsible automobile purchase and to maintain the operation of an automobile.

c Computing braking distance using the formula $BD = 5(.1s)^2$

d Computing distance, rate, and time using D = RT,R = D/T, and T = D/R

e Using geometry theorems involving chords intersecting in a circle and radii perpendicular to chords to determine yaw mark arc length

f Computing total stopping distance of an automobile

g Calculating miles per gallon and distance using the formula D = MPG(G)

Mathematical Operations

9 **Use mathematical operations in the workforce using whole numbers including addition, subtraction, multiplication, and division to solve complex problems.** AF.9

a Using mathematical operations including addition and subtraction using negative numbers

b Solving problems that require multiple mathematical operations

Skip to main content

Solve real-world business and industry problems involving mathematical operations with fractions, decimals, and percentages.

a Finding a common denominator in fractions

b Finding equivalent fractions in lowest terms

c Multiplying mixed numbers

11 Calculate averages, simple ratios, simple proportions, or rates using whole numbers and decimals.

12 Convert numbers from one form to another using whole numbers, fractions, decimals, or percentages.

a Converting units of money and time from one form to another

13 Solve multi-step real-world word problems, first, by placing information in the correct order, then, performing calculations.

14 Analyze a set of data utilizing mean, median, and mode.

Consumer Credit

15 Use algebraic proportions and exponential growth and decay to make wise credit decisions.

a Creating, evaluating, and interpreting algebraic proportions

b Determining the curve of best fit using linear, quadratic, or cubic regression equations

c Using exponential growth and decay equations that model given relationships between quantities

d Calculating finance charge at various percentages

Independent Living

16 Evaluate offers, such as advertisements, warranties, and guarantees, from producers and suppliers to make wise consumer decisions.

17 Compare and contrast housing options including rentals, lease to purchase, mortgage, or purchasing by cash.

a Evaluating the various mortgage products available

b Computing monthly mortgage payments at various terms and interest rates

c Comparing mortgage payments and increasing resale value of a home using a future value of a periodic deposit formula

d Modeling rent increases using exponential relationships

18 Solve real-world and mathematical problems involving perimeter, circumference, area, volume, and surface area.

a Determining surface area and volume of irregular shapes including spheres, cylinders, or cones

b Determining the circumferences of circles

Skip to main content

c Determining area of various shapes including rectangles, squares, parallelograms, triangles, trapezoids, circles, regular polygons, irregular polygons

Retirement Planning and Budgeting

19 Compare personal, state, and federal retirement plans to develop a retirement and personal budget plan.

- a Analyzing overall debt, cash flow, and resources to determine net worth
- b Using the future value of a periodic investment formula to predict balances in future years
- c Identifying the effect that a change in multipliers has to the value of an algebraic expression
- d Creating rational expressions to represent increase over time
- e Creating and interpreting a graph showing linear and a piecewise function and determining the point of intersection
- f Interpreting points on a budget line graph in the context of their relationship to the budget line