

FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



Financial Algebra

Board Approval Date: March 23, 2023	Course Length: 2 Semesters
Grading: A-F	Credits: 5 Credits per Semester
Proposed Grade Level(s): 11, 12	Subject Area: Mathematics Elective Area (if applicable):
Prerequisite(s): Integrated Math 2 (C or better)	Corequisite(s): none
CTE Sector/Pathway:	
Intent to Pursue ‘A-G’ College Prep Status: Yes	
A-G Course Identifier: (c) Mathematics	
Graduation Requirement: No	
Course Intent: District Course Program (if applicable):	
<p>The Folsom Cordova Unified School District prohibits discrimination, intimidation, harassment (including sexual harassment) or bullying based on a person’s actual or perceived ancestry, color, disability, race or ethnicity, religion, gender, gender identity or gender expression, immigration status, national origin, sex, sexual orientation, or association with a person or group with one or more of these actual or perceived characteristics. For concerns/questions or complaints, contact the Title IX Coordinator(s), Equity Compliance Officer(s) and Section 504 Coordinator(s) :</p> <p>Donald Ogden, Associate Superintendent – Human Resources kmorales@fcusd.org 916-294-9000 ext. 104410 Jim Huber, ED. D., Assistant Superintendent – Educational Services jhuber@fcusd.org 916-294-9000 ext. 104625 Shannon Diaz, Director of Compliance (Investigator) sdiaz@fcusd.org 916-294-9000 ext. 104620 1965 Birkmont Drive, Rancho Cordova, CA 95742</p>	

COURSE DESCRIPTION:

Advanced Algebra with Financial Applications is a mathematical modeling course that is algebra-based, applications-oriented, and technology-dependent. The course addresses college preparatory mathematics topics from Advanced Algebra, Statistics, Probability, Geometry, and Pre-Calculus under seven financial umbrellas: Banking, Investing, Credit, Employment and Income Taxes, Automobile Ownership, Independent Living, and Retirement Planning and Household Budgeting. The course allows students to experience the interrelatedness of mathematical topics, find patterns, make conjectures, and extrapolate from known situations to unknown situations. Students are encouraged to use a variety of problem solving skills and strategies in real-world contexts, and to question outcomes using mathematical analysis and data to support their findings. The course offers students multiple opportunities to use, construct, question, model, and interpret financial situations through symbolic algebraic representations, graphical representations, geometric representations, and verbal representations. It provides students a motivating, young-adult centered financial context for understanding and applying the mathematics they are guaranteed to use in the future and is thus aligned with the recommendations of the Common Core State Standards.

DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
1. Employment and Income Taxes	<p>Can the student compare two job offers, their salaries and benefits packages to determine the best offer for them?</p> <p>Can a student read and understand the payroll deductions listed on their pay stub including Social security tax and Medicare tax?</p> <p>Can the student interpret tax tables to calculate and complete yearly federal income tax 1040 form given various circumstances?</p>	<ul style="list-style-type: none">*Evaluating piecewise functions*Graphing piecewise functions*Solve problems involving minimum wage, hourly pay, pay periods, overtime, etc.*Identify the differences between various employee benefits*Explain the difference between how social security tax and Medicare tax work*Solve problems involving domain and range of functions*Identify whether a relation is a function*Calculate tax using tax tables.*Write functions to represent tax structures*Read and interpret income statements	<ul style="list-style-type: none">*Research a career and present it to the class. Includes median pay, benefits, education required, training, typical work day, etc.*Calculate pay for hourly, salary, commission, royalties, and piecework pay*Write piecewise functions to represent various pay types*Calculate the value of various employee benefits*Calculate social security and Medicare tax*Interpret and complete various tax forms for various income situations*Explain the differences between standard and itemized deductions*Explain the difference between tax deductions and tax credits*Write and graph

			<p>absolute-value and quadratic functions using transformations</p> <p>*Add, subtract, multiply, & divide polynomials</p>
<p>2. Investing (Stock Market & Business Modeling)</p>	<p>Can the student understand and invest in the stock market?</p> <p>Can the student differentiate between savings and investing?</p> <p>Can the student analyze the costs and expenses in starting a company and figure the break-even point?</p> <p>Can the student generate and interpret graphs in order to maximize the profit of the business?</p>	<p>*Writing algebraic expressions and equations to model a situation</p> <p>*Simplifying algebraic expressions</p> <p>*Calculating percent change.</p> <p>Solving proportional equations</p> <p>*Create and read various stock charts</p> <p>*Calculate simple moving averages</p> <p>*Calculate stock splits and stock transactions</p> <p>*Solve and graph linear and quadratic functions</p> <p>*Solve systems of linear and quadratic equations</p>	<p>*Create a spreadsheet to track a stock's price over time</p> <p>*Create line graphs on a spreadsheet to track stock data</p> <p>*Analyze the performance of a particular stock over a given period of time and offer insights into potential reasons for fluctuations in price</p> <p>*Create a scatter plot, analyze association, calculate linear and exponential regression equations, use regression equations to interpolate and extrapolate data</p> <p>*Explain the effects of supply and demand on the price of a product</p> <p>*Write revenue and expense functions</p> <p>Calculate profit algebraically and graphically as the intersection of an expense and revenue function</p> <p>*Analyze break-even points</p> <p>*Factor, solve, and graph polynomial functions</p> <p>*Functions operations and composition of functions.</p> <p>*Write and graph inverse functions</p>
<p>3. Banking</p>	<p>Can the student</p>	<p>*Derive compound and</p>	<p>*Interpret and reconcile</p>

<p>Services</p>	<p>demonstrate the relationship between simple interest and linear growth and the relationship of compound interest and exponential growth? Can the student identify and choose the best banking accounts for personal use?</p>	<p>continuous compounding interest equations *Explore the limits of functions *Calculate the interest on certificates of deposit *Compare the risk/reward between interest account investments and stock investments *Solving literal equations</p>	<p>bank statements *Calculate simple interest *Calculate compound interest *Calculate balance, interest, time, or principal in an interest equation *Calculate continuous compounding interest. *Calculate the future and present value of investments *Solve and graph radical equations and inequalities *Write explicit rules for arithmetic and geometric sequences *Compute the sum of arithmetic and geometric sequences</p>
<p>4. Consumer Credit</p>	<p>Can a student understand the responsibility of using credit? Can the student analyze the advantages and disadvantages of different types of loans?</p>	<p>*How can we use credit responsibly *How do we improve our credit score and what kind of events impact our credit score *Calculate the finance charge on credit card purchases. Read and understand the terms on a promissory note *Understand the many acts that protect credit users *Derive the loan length formula</p>	<p>*Calculate the monthly payment for a loan using the monthly payment formula *Calculate the length of a loan using the loan length formulas *Calculate the average daily balance on a credit card bill *Read and check the accuracy of a credit card statement *Simplify exponential & logarithmic expressions. Solve exponential and logarithmic equations *Graph exponential & logarithmic functions</p>
<p>5. Automobile Ownership</p>	<p>Can the student understand the financial responsibility of owning and operating a car? Can the students compare</p>	<p>*Find the mean, median, mode, quartiles of a set of data *Create stem and leaf and box and whisker plots</p>	<p>*Complete a research project comparing the costs involved with purchasing a new and used car on credit</p>

	insurance companies and their rates to find the best deal?	*Use IQR to identify outliers Calculate payment situations for various car insurance claims	(includes creating scatter plots, creating trend lines, doing regression analysis, finding break-even points, etc.) *Explain the differences between various types of auto insurance policies *Calculate measures of central tendency and spread for univariate data *Explain the differences between various statistical sampling methods and how to design statistical studies that are representative and unbiased *Create confidence intervals and determine statistical significance
6. Independent Living	Can the student analyze the advantages and disadvantages of fixed rate, variable rate and balloon mortgages? Can the student determine the amount of mortgage that can be afforded on a certain budget?	*Understand critical issues to think about when searching for a home to rent or buy *Understand common home buying and renting terms. *Understand how to read and create a floor plan *Find the perimeter and area of various polygons *Use the monte carlo method to determine the area of non-traditional shapes *Understand the closing costs associated with buying a home *Use linear and exponential regression to predict future values of homes and future rental prices *Understand the escrow process when buying a home	*Calculate various probabilities *Calculate front-end and back-end ratios *Calculate monthly payment on a mortgage. *Calculate property taxes and insurance for buying a home *Calculate payments on balloon mortgages and interest only mortgages *Create and use an amortization table *Compare and contrast the expenses related between renting and buying for a particular area
7. Retirement Planning and Budgeting	Can the student understand the importance of diversifying their investments? Can the student explain the	*Understand different terms relating to retirement *Compare and contrast the different retirement account options and their effects on	*Understand the terms involved in life insurance *Calculate costs related to life insurance *Calculate saving

	<p>difference between pre-tax and post-tax investments and the benefits of each?</p> <p>Can students create a monthly cash flow plan (working budget) that includes Income and Expenses?</p> <p>Can the student create charts/graphs to compare the amount spent in the different expense categories budgeted?</p>	<p>taxes</p> <p>*Calculate the present and future values of retirement accounts</p> <p>*Calculate the taxes due for varying retirement account situations</p> <p>*Calculate payouts for social security benefits</p> <p>*Understand how contributions and payout works for various types of pensions plans</p> <p>*Calculate probability and expected value</p>	<p>requirements to reach retirement goals</p> <p>*Calculate balances on various retirement accounts</p> <p>*Create and analyze circle graphs, bar charts, and line graphs</p> <p>*Calculate the area and perimeter of circles</p> <p>*Calculate the arc length and area of sectors</p> <p>*Create a spreadsheet to analyze cash flow and budgeting</p> <p>*Calculate assets, liabilities, and net worth</p> <p>*Create a debt reduction plan</p> <p>*Simplify rational expressions</p> <p>*Solve rational equations</p>
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ESSENTIAL STANDARDS:

A-APR6, A-CED1, A-CED2, A-CED3, A-CED4
A-REI2, A-REI3, A-REI4b, A-REI6, A-REI7, A-REI10, A-REI11, A-REI12
A-SSE1, A-SSE1b, A-SSE3
F-BF1, F-IE4 F-IF1,F-IF2,F-IF5, F-IF4, F-IF6, F-IF7a, F-IF7b, F-IF7e, F-IF8, F-IF8b, F-IF9, F-LE1, F-LE1b, F-LE1c, F-LE5,
S-ID1, S-ID2, S-ID3, S-ID4, S-ID6, S-ID6a, S-ID7, S-ID8, S-ID9, S-MD1, S-MD2, S-MD4, S-MD5
N-Q1, N-Q2, N-Q3
G-C5
N-VM6

RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:

Link to Common Core Standards (if applicable):

Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.

http://www.corestandards.org/wp-content/uploads/Math_Standards1.pdf

Link to Framework (if applicable):

Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which also reviews and recommends textbooks and other instructional materials to be adopted by the SBE.

<https://www.cde.ca.gov/ci/ma/cf/>

Link to Subject Area Content Standards (if applicable):

Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.

Link to Program Content Area Standards (if applicable):

Program Content Area Standards apply to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

TEXTBOOKS AND RESOURCE MATERIALS:**Textbooks**

Board Approved	Pilot Completion Date (If applicable)	Textbook Title	Author(s)	Publisher	Edition	Date
<i>Yes</i>		<i>Advanced Algebra with Financial Applications</i>	Robert Gerver	Cengage Learning	1	<i>1/1/2014</i>
<i>Yes</i>		<i>Big Ideas Integrated Math 3</i>	Ron Larson	Big Ideas Learning	1	<i>1/1/2016</i>

Other Resource Materials

N/A

Supplemental Materials

Board approved supplemental materials (Including but not limited to: Film Clips, Digital Resources, Supplemental texts, DVDs, Programs (Pebble Creek, DBQ, etc.):

N/A