Texas CTE

Financial Mathematics

General requirements. This course is recommended for students in Grades 10-12. Prerequisite: Algebra I. This course satisfies a high school mathematics graduation requirement. Students shall be awarded one credit for successful completion of this course. A

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Introduction. B

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. B.1

(2) The Finance Career Cluster focuses on planning, services for financial and investment planning, banking, insurance, and business financial management. B.2

(3) Financial Mathematics is a course about personal money management. Students will apply critical-thinking skills to analyze personal financial decisions based on current and projected economic factors. B.3

(4) Financial Mathematics will integrate career and postsecondary education planning into financial decision making. B.4

(5) The mathematical process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the

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reasonableness of the solution. Students will select appropriate tools such as real objects, manipulatives, paper and pencil, and technology and techniques such as mental math, estimation, and number sense to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication. B.5

(6) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations. B.6

(7) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples. B.7

Knowledge and skills. C

(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to: C.1

(A) demonstrate an understanding of appropriate communication with customers, employers, and coworkers through verbal, nonverbal, or digital means; C.1.A

(B) demonstrate an understanding of the use of business etiquette; C.1.B

(C) demonstrate an understanding of appropriate customer service such as building customer relationships and resolving customer complaints; and C.1.C

(D) demonstrate an understanding of ethical and legal issues in business. C.1.D

(2) The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: C.2

(A) apply mathematics to problems arising in everyday life, society, and the workplace; C.2.A

(B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; C.2.B

(C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; C.2.C

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; C.2.D

(E) create and use representations to organize, record, and communicate mathematical ideas; C.2.E

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(F) analyze mathematical relationships to connect and communicate mathematical ideas; and C.2.F

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. C.2.G

(3) The student applies mathematical process standards to demonstrate an understanding of employment earnings. The student is expected to: C.3

(A) identify sources of income, including wages and salaries, interest, rent, dividends, and capital gains; C.3.A

(B) compare common employee benefits such as health insurance, sick leave, and retirement plans; C.3.B

(C) differentiate among and calculate gross, net, and taxable income; C.3.C

(D) analyze and interpret payroll deductions, including federal taxes, state taxes, and city taxes, using current tax rates; C.3.D

(E) examine and evaluate the reasons for federal income taxation, Social Security taxation, and Medicare taxation, including earnings limitations as applicable; C.3.E

(F) calculate net pay; C.3.F

(G) compare and contrast between independent contractor earnings and employee earnings, including tax requirements, tax forms (W-2, W-4, 1099, and Form 941), and benefit requirements; C.3.G

(H) calculate the various earnings as affected by the laws related to minimum wage, overtime, income from tips, exempt and non-exempt status, and contract and employee status; C.3.H

(I) calculate the impact of paying with after-tax dollars versus pre-tax dollars for items such as medicine, services, and investments; C.3.I

(J) analyze and interpret total compensation, including payroll, Federal Insurance Contribution Act (FICA) tax, employer cost of benefits, employers' matching costs for FICA and Medicare, and employer match in savings plans, to explain how compensation is more than what is reflected in a paycheck; C.3.J

(K) compare total compensation as a self-employed or independent contractor with total compensation as an employee; and C.3.K

(L) analyze how economic and other conditions can affect income and career opportunities and the need for lifelong training and education. C.3.L

(4) The student applies mathematical process standards to demonstrate an understanding of the various federal taxes. The student is expected to: C.4

(A) calculate federal income taxes owed or refunded, including the completion of a 1040EZ and 1040, using current rates; C.4.A

(B) calculate capital gains tax using current rates; C.4.B

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(C) calculate self-employment or independent contractor taxes using current rates; C.4.C

(D) define and locate sources for current rates for estate and inheritance taxes; C.4.D

(E) analyze gift and estate taxes using current rates; C.4.E

(F) calculate tax on interest income and use regression methods available through technology to analyze data and interpret the results by tax bracket; C.4.F

(G) calculate personal exemptions; C.4.G

(H) calculate itemized deductions and compare to standard deductions; C.4.H

(I) calculate deductible charitable contributions; C.4.I

(J) understand filing status as it applies to X, Y, and Z tax schedules; C.4.J

(K) compare marginal tax rates to effective income tax rates and the misuse of these terms in advertising; C.4.K

(L) describe the relationships among education tax credit, student loan interest, dependency and filing status, and income tax liability; and C.4.L

(M) research and locate options for tax return preparation such as software programs and tax preparation providers. C.4.M

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(5) The student applies mathematical process standards to demonstrate an understanding of the various financial institutions and accounts. The student is expected to: C.5

(A) demonstrate an understanding of various forms of financial exchange, including cash, checks, credit cards, debit cards, and electronic funds transfers; C.5.A

(B) identify and explain the advantages and disadvantages of interest-bearing accounts such as savings accounts, checking accounts, certificates of deposits, and money market accounts; C.5.B

(C) calculate the time value of money, with or without technology, using exponential and rational functions that include graphs, tables, and algebraic methods related to simple and compound interest; C.5.C

(D) analyze various representations of exponential functions with respect to compound interest situations and use the rule of 72 to determine the number of years it will take for savings to double in value; C.5.D

(E) analyze a bank statement for accuracy; C.5.E

(F) compare financial services offered in the community; and C.5.F

(G) identify the sources of funds such as savings, earnings, or debt to be used to purchase consumable and nonconsumable goods. C.5.G

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(6) The student applies mathematical process standards to demonstrate an understanding of the various types of credit. The student is expected to: C.6

(A) determine the advantages and disadvantages of credit cards such as cashback rewards, balance transfer, foreign currency, interest rates charged, late payment fees, credit score, and bonus incentives; C.6.A

(B) calculate the cost of using credit cards, including various financial fees; C.6.B

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(C) analyze and compare graphically, with or without technology, the differences in the cost of borrowing such as using a bank loan, a credit union loan, a student loan, and an easy-access loan such as a pay-day loan and an auto title loan; C.6.C

(D) analyze the risks for each type of loan; C.6.D

(E) evaluate the process for a bank loan or a credit union loan; C.6.E

(F) collect and organize data, make and interpret scatterplots, interpret the results, and make critical judgments about loan balances when equal monthly payments are made; C.6.F

(G) analyze credit scores and explain the meanings of the scores; C.6.G

(H) explain ways a negative credit report can affect a consumer's financial options; and C.6.H

(I) analyze a personal credit report. C.6.I

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(7) The student applies mathematical process standards to demonstrate an understanding of the cost of housing by comparing home purchases and renting. The student is expected to: C.7

(A) analyze data of mortgage payments with various additional principal payments involving exponential functions using tables, graphs, or algebraic methods; C.7.A

(B) create an amortization table using technology to collect and organize data to make decisions and critical judgments about varying the down payment, period of loan, special principal payment, and interest rate for a home loan; C.7.B

(C) compare options for saving for a down payment on a home; C.7.C

(D) determine costs associated with home ownership, including property taxes; mortgage insurance; homeowner's insurance, including property damage, liability, and flood and earthquake insurances; and closing costs; C.7.D

(E) analyze and interpret mortgage tax deductions; C.7.E

(F) determine other costs associated with home ownership, including cost of maintenance, repairs, utilities, and association fees; C.7.F

(G) determine the appropriate savings needed to maintain home payments in the event of a financial emergency; C.7.G

(H) demonstrate an understanding of the consequences to individuals in times of recession and falling home prices such as during the mortgage crisis of 2007-2008 and identify how the financial and personal impact could have been reduced; C.7.H

(I) compare the cost of homeownership versus renting, identifying benefits and drawbacks to both homeownership and renting such as the mortgage-related income tax deductions; C.7.I

(J) use the multiple listing service to identify and compare housing properties; C.7.J

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(K) analyze and explain a typical apartment lease such as terms, deposit, occupancy, parking, and cancellation contract policy; and C.7.K

(L) compare options for coverage for renter's insurance. C.7.L

(8) The student applies mathematical process standards to demonstrate an understanding of the difference between a vehicle purchase and a vehicle lease and costs associated with each. The student is expected to: C.8

(A) create an amortization table using technology to collect and organize data to make decisions and critical judgments about varying the down payment, period of loan, special principal payment, and interest rates for a vehicle loan; C.8.A

(B) determine the costs associated with owning and leasing a vehicle, including insurance, maintenance, repairs, and fuel; C.8.B

(C) compare the total cost of buying and owning a vehicle to leasing a vehicle; C.8.C

(D) compare the total cost of purchase and maintenance of several possible vehicles; C.8.D

(E) identify and understand the costs and benefits of maintenance contracts and vehicle warranties; C.8.E

(F) calculate the funding needed to maintain vehicle payments in the event of a financial emergency; and C.8.F

(G) research various options for a driver's education course and the benefits of the course and the impact of a moving violation on insurance rates. C.8.G

(9) The student applies mathematical process standards to demonstrate an understanding of investment options. The student is expected to: C.9

(A) identify the factors involved in the various methods of buying and selling stocks and mutual funds, including load and no-load funds, by evaluating the stock dividend yield, price-earnings ratio, return on investment, earnings per share, and net asset value; C.9.A

(B) calculate the cost of buying and selling bonds and analyze the investment return from bond yield and bond interest payment; C.9.B

(C) compare differences among investments, including stocks, bonds, mutual funds, Exchange Traded Funds, and real estate; and C.9.C

(D) compare the risk and return for a diversified and non-diversified investment portfolio in a student-created portfolio. C.9.D

(10) The student applies mathematical process standards to demonstrate an understanding of various types of insurance, including life, health, disability, and income insurances, and special protection. The student is expected to: C.10

(A) analyze the costs and benefits of term and permanent (whole) life insurance such as the cost of premiums, dividends, accumulation of cash value, tax treatment of death benefits, and protection from creditors of death benefits and cash values; C.10.A

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(B) estimate the amount of life insurance needed using a needs approach or an earnings multiple approach; C.10.B

(C) estimate the cost of healthcare coverage, including the cost of health insurance premiums, co-payments, deductibles, and out-of-pocket expenses; C.10.C

(D) explain the need for disability income insurance and research the cost; C.10.D

(E) compare the benefits to the costs of special protection coverages such as cancer, pet, vacation, burial, international travel, and purchase protection; C.10.E

(F) demonstrate an understanding of the actuarial process used to set premiums; and C.10.F

(G) demonstrate an understanding of insurance company and agent selection and professional designations within the insurance profession. C.10.G

(11) The student applies mathematical process standards to demonstrate an understanding of retirement plans. The student is expected to: C.11

(A) compare tax advantage retirement plans, including Individual Retirement Accounts (IRAs), Roth IRAs, 401(k) plans, and 403(b) plans, and determine an appropriate investment for retirement; C.11.A

(B) calculate and graph the exponential function showing the benefits of starting early to invest with continuous contributions; C.11.B

(C) calculate tax treatment penalty for early withdrawal; and C.11.C

(D) calculate, using technology, the amount that must be saved annually to achieve financial independence by a desired age. C.11.D

(12) The student applies mathematical process standards to demonstrate an understanding of a fixed pension, a variable pension, social security, and an annuity. The student is expected to identify an annuity and calculate and display graphically the future value of an annuity. C.12

(13) The student applies mathematical process standards to demonstrate an understanding of wills and trusts for the distribution of assets at death. The student is expected to identify how wills and trusts support the distribution of assets after death. C.13

(14) The student applies mathematical process standards to demonstrate an understanding of charitable giving. The student is expected to demonstrate an understanding of the value and benefits of charitable giving. C.14

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(15) The student applies mathematical process standards to demonstrate an understanding of the budgeting process. The student is expected to: C.15

(A) create a comprehensive balanced personal budget, including fixed and variable expenses, college savings, emergency savings, and retirement savings; C.15.A

(B) identify free resources to assist with maintaining a budget; and C.15.B

(C) compare different standards of living in the United States, including poverty, minimum wage, living wage, and desired standards of living. C.15.C

(16) The student applies mathematical process standards to demonstrate an understanding of identity theft. The student is expected to: C.16

(A) define and explain types of identity theft; C.16.A

(B) create a plan for prevention of identity theft; and C.16.B

(C) identify suitable methods for reporting identity theft. C.16.C

(17) The student applies mathematical process standards to demonstrate an understanding for a postsecondary plan. The student is expected to: C.17

(A) understand educational, military, and current job opportunities; C.17.A

(B) research and align interests and skills with potential careers and postsecondary education to assure a life strategy that will produce employment the student enjoys with a desired standard of living; C.17.B

(C) calculate the total funding required to complete a desired postsecondary education program; C.17.C

(D) identify different resources for acquiring funding for education after high school such as personal savings, employment, Free Application for Federal Student Aid (FAFSA), Texas Application for Federal Student Aid, Expected Family Contribution, Pell Grants, work-study programs, student loans, Individual Development Accounts, scholarships such as the Preliminary SAT/National Merit Scholarship Qualifying Test (PSAT/NMSQT®), and internships to reduce the projected cost of education; C.17.D

(E) identify benefits and potential savings for students investing in themselves such as taking Advanced Placement and dual credit classes; C.17.E

(F) graph and compare compensation earnings of potential careers and the cost of postsecondary education; and C.17.F

(G) calculate the Return on Investment from completing a desired postsecondary education program, taking into consideration anticipated earnings for a selected degree and the cost of attending a specific postsecondary program. C.17.G