Financial Algebra

Course Description

Financial Algebra is a semester course for upperclassmen, and the course is designed to develop a strong foundation in logical thinking and problem solving that will enable students to make informed decisions regarding matters of money and finance in their daily lives. This course furthers the development of functions, which include linear, exponential, piece-wise, quadratics, and step functions. Other topics studied include measures of center and spread, graphical representations of data, principles of finance economics, amortization, supply and demand, revenue and profit functions, loans, compound interest and continuous interest, credit card debt, car ownership, and budgets. Students will access the curriculum through *Financial Algebra* by Gerver and Sgroi. The TI-83+ graphing calculator is used extensively for demonstrations, class activities and homework. It is strongly recommended that each student purchase a TI-83+ graphing calculator.

Suggested Course Sequence:

Unit 1: Employment Basics	2 weeks
Unit 2: Banking Services	2 weeks
Unit 3: Prepare a Budget	2 weeks
Unit 4: Independent Living	2 weeks
Unit 5: Automobile Ownership	2 weeks
Unit 6: Income Taxes	2 weeks
Unit 7: Consumer Credit	2 weeks
Unit 8: Modeling a Business	2 weeks
Unit 9: The Stock Market	2 weeks
Unit 10: Planning a Retirement	2 weeks

Prerequisite:

Intermediate Algebra, Algebra II or Honors Algebra II

Unit Overview

Content Area:	Math
Unit Title:	Unit 1: Employment Basics
Grade Level:	11 – 12

Unit Summary:
Students will explore the world of work from the first time they begin to look for employment to years in the future when they will be concerned about retirement benefits. The focus of this chapter is to make them aware of the many aspects of the working world. In this unit, students will make connections between personality traits and potential career possibilities. Lessons provide students strategies for looking for a job based on past experience and completing job applications. Students practice interview skills, and they discuss how the use of time at work is documented for compensation purposes.

Interdisciplinary Connections:
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	.	**CRP1**. Act as a responsible and contributing citizen and employee.
	.	**CRP2.** Apply appropriate academic and technical skills.
	.	**CRP3.** Attend to personal health and financial well-being.
	.	**CRP4.** Communicate clearly and effectively and with reason.
	.	**CRP5.** Consider the environmental, social and economic impacts of decisions.
	.	**CRP6.** Demonstrate creativity and innovation.
	.	**CRP7.** Employ valid and reliable research strategies.
	.	**CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
	.	**CRP9.** Model integrity, ethical leadership and effective management.
	.	**CRP10.** Plan education and career paths aligned to personal goals.
	.	**CRP11.** Use technology to enhance productivity.
	.	**CRP12.** Work productively in teams while using cultural global competence.

Learning Targets

Standards (Content and Technology)**:**

CPI#:	Statement:
A.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
F.IF.A.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
A.CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R*.

A.CED.A.1	Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions*.
A.REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
F.BF.A.1	Write a function that describes a relationship between two quantities.
F.IF.B.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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*.
F.IF.C.7.B	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
F.LE.A.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
- How does one decide where to seek employment? - How does one secure employment? - How does an individual's employment impact society?	- Discovering one's aptitudes contributes to finding satisfying employment. - Effective interview skills require preparation in order to secure employment. - Compensation structures and paycheck withholdings contribute to a healthy society and economy.

Unit Learning Targets/Objectives:
Students will…
- Evaluate the results of a career and personality assessment to determine potential fields of interest
- Research and present employment opportunities aligned with potential fields of interest
- Effectively complete a job application
- Demonstrate appropriate interview skills
- Calculate time cards
- Examine commissions, royalties and piecework pay
- Analyze employee benefits, social security, and Medicare

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 6 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

- **Special Education Students**
  - Allow errors
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions, and permit drawing, as an explanation
  - Accept participation at any level, even one word

- **At-Risk Students**
  - Provide extended time to complete tasks
  - Consult with Guidance Counselors and follow I&RS procedures/action plans
  - Consult with classroom teacher(s) for specific behavior interventions

- Consult with Case Managers and follow IEP accommodations/modifications
- **English Language Learners**
  - Assign a buddy, same language or English speaking
  - Allow errors in speaking
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions
  - Accept participation at any level, even one word

- Provide rewards as necessary
- **Gifted and Talented Students**
  - Provide extension activities
  - Build on students' intrinsic motivations
  - Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
1	Look for Employment	3 days
2	Pay Periods and Hourly Rates	3 days
3	Commissions, Royalties, and Piecework Pay	3 days
4	Employee Benefits	3 days
5	Social Security and Medicare	3 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 10: Retirement
Grade Level:	11 – 12

Unit Summary:
This unit focuses on retirement vocabulary and formulas. The purpose of the chapter is to assist students in realizing that although retirement may be in their very distant future, planning for it should not be. There are things they can do as soon as they get their first job that will help them to be financially secure in their retirement.

**Interdisciplinary
Connections:**
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	. **CRP1**. Act as a responsible and contributing citizen and employee.
	. **CRP2.** Apply appropriate academic and technical skills.
	. **CRP3.** Attend to personal health and financial well-being.
	. **CRP4.** Communicate clearly and effectively and with reason.
	. **CRP5.** Consider the environmental, social and economic impacts of decisions.
	. **CRP6.** Demonstrate creativity and innovation.
	. **CRP7.** Employ valid and reliable research strategies.
	. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
	. **CRP9.** Model integrity, ethical leadership and effective management.
	. **CRP10.** Plan education and career paths aligned to personal goals.
	. **CRP11.** Use technology to enhance productivity.
	. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
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 $y = f(x)$.
F.IF.8B	Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)12^t$, $y = (1.2)^t/10$, and classify them as representing exponential growth or decay.
S.MD.1	Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for

	data distributions.
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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*.
S.MD.2	Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
S.MD.4	Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?*
S.MD.5	Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• How does one plan for retirement? • What strategies support effective retirement planning?	• Planning for retirement starts at the beginning of one's career. • There are a variety of ways to prepare for retirement.

Unit Learning Targets/Objectives:
Students will…
• Analyze retirement income from savings
• Explain how social security benefits contribute to retirement plans
• Present the differences between pensions and 401K plans
• Evaluate the pros and cons of life insurance policies

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 9 in textbook and Teacher's CD
                             Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
                             TI-83+ Graphing Calculator

Modifications:

• **Special Education Students**
  - Allow errors
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions, and permit drawing, as an explanation
  - Accept participation at any level, even one word
  - Consult with Case Managers and follow IEP accommodations/modifications

• **English Language Learners**
  - Assign a buddy, same language or English speaking

• **At-Risk Students**
  - Provide extended time to complete tasks
  - Consult with Guidance Counselors and follow I&RS procedures/action plans
  - Consult with classroom teacher(s) for specific behavior interventions
  - Provide rewards as necessary

• **Gifted and Talented Students**
  - Provide extension activities
  - Build on students' intrinsic motivations

- Allow errors in speaking - Rephrase questions, directions, and explanations - Allow extended time to answer questions - Accept participation at any level, even one word	- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
1	Retirement Income from Savings	2 days
2	Social Security Benefits	2 days
3	Pensions	2 days
4	Life Insurance	2 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 2: Banking Services
Grade Level:	11 – 12

Unit Summary:
This unit focuses on risk and reward. The degree of risk and the degree of reward depends upon the venture undertaken as well as the investor's comfort level with monetary risks. Students will be asked to consider the perceived risks and rewards of savings accounts and checking accounts. Students will practice reconciling a bank statement and explore compound interest using the compound interest formula. Throughout this unit, students manipulate checking accounts and have the opportunity to present knowledge regarding healthy banking practices.

Interdisciplinary Connections:
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	. **CRP1**. Act as a responsible and contributing citizen and employee.
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	. **CRP5.** Consider the environmental, social and economic impacts of decisions.
	. **CRP6.** Demonstrate creativity and innovation.
	. **CRP7.** Employ valid and reliable research strategies.
	. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
	. **CRP9.** Model integrity, ethical leadership and effective management.
	. **CRP10.** Plan education and career paths aligned to personal goals.
	. **CRP11.** Use technology to enhance productivity.
	. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
A.SSE.A.1	Interpret expressions that represent a quantity in terms of its context.
A.SSE.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
F.BF.A.1	Write a function that describes a relationship between two quantities.
A.CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*
A.SSE.B.1	Factor a quadratic expression to reveal the zeros of the function it defines.

A.SSE.C.3	Use the properties of exponents to transform expressions for exponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
F.IF.B.8	Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)12^t$, $y = (1.2)^t/10$, and classify them as representing exponential growth or decay.
F.IF.C.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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*
N.RN.1-2	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)3}$ to hold, so $(5^{1/3})^3$ must equal 5.*
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• How does one maintain a checking account? • How does compound interest benefit the bank and the banker?	• Strategies for maintaining a checking account promote wealth • Compound interest impacts both the bank and the banker

Unit Learning Targets/Objectives:
Students will…
• Reconcile a bank statement
• Explain the difference between a checking and savings account
• Examine the impact compound interest has on both the bank and the banker
• Utilize the formula for compound interest and calculate accurately

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 3 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

• **Special Education Students**
  - Allow errors
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions, and permit drawing, as an explanation
  - Accept participation at any level, even one word
  - Consult with Case Managers and follow IEP accommodations/modifications
• **English Language Learners**
  - Assign a buddy, same language or English speaking

• **At-Risk Students**
  - Provide extended time to complete tasks
  - Consult with Guidance Counselors and follow I&RS procedures/action plans
  - Consult with classroom teacher(s) for specific behavior interventions
  - Provide rewards as necessary
• **Gifted and Talented Students**
  - Provide extension activities
  - Build on students' intrinsic motivations

- Allow errors in speaking - Rephrase questions, directions, and explanations - Allow extended time to answer questions - Accept participation at any level, even one word	- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
1	Look for Employment	2 days
2	Pay Periods and Hourly Rates	2 days
3	Commissions, Royalties, and Piecework Pay	2 days
4	Employee Benefits	2 days
5	Social Security and Medicare	2 days
6	Continuous Compounding	2 days
7	Future Value of Investments	2 days
8	Present Value of Investments	2 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 3: Prepare a Budget
Grade Level:	11 – 12

Unit Summary:

In this unit, students are introduced to the typical utility bills homeowners must pay. These include electricity, gas, water, and so on. Lessons on electronic utilities cover cell phones, Internet providers, and cable television. Budgeting includes annual, semi-annual, quarterly, monthly, and weekly expenses, and shows students how to organize and track these expenses. Finally, students will examine how a homeowner can mange the balance of income with debt. Students will look at actual PG&E and MID/TID bills and learn how to read a meter and a bill statement. Students will apply knowledge about cell phone, Internet service, and cable/satellite service to establish a service plan. Students will utilize Google Docs to develop a spreadsheet for a budget, and they will learn cash flow and effective budgeting strategies for both personal and commercial operations.

Interdisciplinary Connections:

Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

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	. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
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Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
A.SSE.A.1	Interpret expressions that represent a quantity in terms of its context.
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.

N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.
A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
A.SSE.B.1	Factor a quadratic expression to reveal the zeros of the function it defines.
N.VM.6	Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
F.IF.7.B.	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
F.IF.7.A.	Graph linear and quadratic functions and show intercepts, maxima, and minima.
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*
F.BF.1	Find inverse functions.
FIF.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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• How does a budget establish healthy spending habits? • How does one read a meter and bill statement? • Why are employment options necessary in light of budgetary considerations?	• Budgets create boundaries and develop healthy disciplines for life-long spending and wealth management • Energy and service providers are a cornerstone in society and literacy is an acquired skill to understand fee structures • Employment opportunities will impact budget considerations

Unit Learning Targets/Objectives:
Students will…
• Create a budget given parameters
• Evaluate employment options based on budgetary needs
• Read and interpret information from a meter and a service bill statement
• Compare and contrast pricing and service options in selecting data plans

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 10 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:
• **Special Education Students**	• **At-Risk Students**
- Allow errors	- Provide extended time to complete tasks
- Rephrase questions, directions, and explanations	- Consult with Guidance Counselors and follow

- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP accommodations/modifications

- **English Language Learners**
  - Assign a buddy, same language or English speaking
  - Allow errors in speaking
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions
  - Accept participation at any level, even one word

- I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

- **Gifted and Talented Students**
  - Provide extension activities
  - Build on students' intrinsic motivations
  - Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
1	Utility Expenses	3 days
2	Electronic Utilities	3 days
3	Charting a Budget	3 days
4	Cash Flow and Budgeting	3 days

Teacher Notes:

Additional Resources

http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 4: Independent Living
Grade Level:	11 – 12

Unit Summary:
In this unit, students use algebra and geometry skills to investigate the process of looking for a place to live, understanding the layout of the living space, and calculating the costs of renting or buying a home. Students will track meals for a week and use coupons in order to perform a cost analysis. Students will also learn about unit cost comparisons. Other budget issues, such as entertainment options and clothing, for independent living will be explored and analyzed for optimal decision-making. Additionally, students will explore concepts and applications of renting and leasing, the various styles of homes, the mortgage application process, and working with floor plans.

Interdisciplinary Connections:
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	. **CRP1.** Act as a responsible and contributing citizen and employee.
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	. **CRP11.** Use technology to enhance productivity.
	. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
A.SSE.A.1	Interpret expressions that represent a quantity in terms of its context.
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*

A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
S.ID.6.A	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.
S.ID.6.C	Fit a linear function for a scatter plot that suggests a linear association.
S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).
F.BF.1	Find inverse functions.
A.APR.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.
F.LE.1	Distinguish between situations that can be modeled with linear functions and with exponential functions.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• How does unit cost comparison benefit a consumer? • What is the impact of groceries, entertainment, and clothing have on a fixed income? • How does one determine what type of home is the right option based on needs?	• Savvy shoppers look at unit cost comparison when selecting items at the grocery store • Coupons and rewards programs vary in benefits for consumers • Consumers need to consider a variety of factors when determining which type of home and financing is the best option to meet one's needs.

Unit Learning Targets/Objectives:
Students will…
• Analyze and evaluate consumer decisions based on budget and preferences
• Explain the benefits and risks of participating in sales promotions and rewards programs
• Present findings regarding the purchases of entertainment and clothing on a fixed income
• Compare and contrast options for living spaces
• Calculate moving costs
• Read a floor plan
• Analyze the mortgage application process

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 8 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

- **Special Education Students**
  - Allow errors
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions, and permit drawing, as an explanation
  - Accept participation at any level, even one word
  - Consult with Case Managers and follow IEP accommodations/modifications
- **English Language Learners**
  - Assign a buddy, same language or English speaking
  - Allow errors in speaking
  - Rephrase questions, directions, and explanations
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- **At-Risk Students**
  - Provide extended time to complete tasks
  - Consult with Guidance Counselors and follow I&RS procedures/action plans
  - Consult with classroom teacher(s) for specific behavior interventions
  - Provide rewards as necessary
- **Gifted and Talented Students**
  - Provide extension activities
  - Build on students' intrinsic motivations
  - Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
1	Find a Place to Live	3 days
2	Read a Floor Plan	3 days
3	Mortgage Application Process	3 days
4	Purchase a Home	3 days
5	Rentals, Condominiums and Cooperatives	3 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview

Content Area:	Math
Unit Title:	Unit 5: Automobile Ownership
Grade Level:	11 – 12

Unit Summary:

This unit offers several lessons pertaining to the automobile. Students explore formulas of varying degrees of mathematical sophistication as they work on pricing structures, insurance issues, automobile depreciation, and data that can assist them in making wise and safe driving decisions. Students will explore automobile ownership, insurance policies, and driving safety data. In order to make informed automobile purchases, students will have the opportunity to compare and contrast suggested retail prices against vehicle values. Calculating depreciation will support informed purchasing decisions.

Interdisciplinary Connections:

Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	. **CRP1**. Act as a responsible and contributing citizen and employee.
	. **CRP2.** Apply appropriate academic and technical skills.
	. **CRP3.** Attend to personal health and financial well-being.
	. **CRP4.** Communicate clearly and effectively and with reason.
	. **CRP5.** Consider the environmental, social and economic impacts of decisions.
	. **CRP6.** Demonstrate creativity and innovation.
	. **CRP7.** Employ valid and reliable research strategies.
	. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
	. **CRP9.** Model integrity, ethical leadership and effective management.
	. **CRP10.** Plan education and career paths aligned to personal goals.
	. **CRP11.** Use technology to enhance productivity.
	. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets

Standards (Content and Technology)**:**

CPI#:	Statement:
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
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 $y = f(x)$.

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.
F.IF.7B	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
S.ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).
S.ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
S.ID.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
S.ID.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
S.ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*.
F.IF.7E	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
F.IF.7A	Graph linear and quadratic functions and show intercepts, maxima, and minima.
F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum*.
F.LE.1C	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
F.LE.1B	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
S.ID.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R*.
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.SSE.1B	Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P*.
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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*.
A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
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.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• How do consumers prepare for purchasing an automobile? • What are the various financing options available to consumers	• Consumers should determine needs and research options prior to purchasing an automobile. • Financing options are available for purchasing an automobile.

Unit Learning Targets/Objectives:

Students will…

• Investigate options for financing an automobile
• Compare and contrast retail price and Kelly Blue Book values
• Analyze car insurance prices and services
• Research accident reports and present safety data
• Calculate depreciation values

Evidence of Learning

Formative Assessments:

Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):

Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 5 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

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Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
1	Classified Ads	2 days
2	Buy or Sell a Car	2 days
3	Graph Frequency Distributions	2 days
4	Automobile Insurance	2 days
5	Linear Automobile Depreciation	2 days

6	Historical and Exponential Depreciation	1 day
7	Driving Data	1 day
8	Driving Safety Data	1 day
9	Accident Investigation Data	1 day

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 6: Income Taxes
Grade Level:	11 – 12

Unit Summary:
In this unit, students will use tax tables, as well as discover the equations and piecewise functions upon which the progressive tax system is based.

Interdisciplinary Connections:
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	. **CRP1.** Act as a responsible and contributing citizen and employee.
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	. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.
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	. **CRP10.** Plan education and career paths aligned to personal goals.
	. **CRP11.** Use technology to enhance productivity.
	. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*.
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 $y = f(x)$.
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.
F.IF.7B	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute

	value functions.
F.BF.1A	Determine an explicit expression, a recursive process, or steps for calculation from a context.
F.BF.1	Write a function that describes a relationship between two quantities.
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• What strategies make filing taxes efficient and effective? • How are income taxes calculated?	• Income taxes are as aspect of society that require an understanding of practical math skills • When filing taxes, there are a variety of strategies to support the process and make it as efficient and effective as possible.

Unit Learning Targets/Objectives:
Students will…
• Create model tax schedules
• Calculate taxes using tax tables, worksheets, and schedules
• Compare and contrast tax forms to determine the correct form to use for a variety of purposes
• Evaluate a tax preparers job responsibilities
• Explain how the tax system operates and supports a healthy society

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 7 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

• **Special Education Students**
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• **Gifted and Talented Students**
  - Provide extension activities
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Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)

1	Tax Tables, Worksheets, and Schedules	3 days
2	Modeling Tax Schedules	3 days
3	Income Statements	3 days
4	Forms 1040EZ and 1040A	3 days
5	Form 1040 and Schedules A and B	3 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 7: Consumer Credit
Grade Level:	11 – 12

Unit Summary:
Students will discuss how credit is based on honesty, responsibility, and the ability to pay back money borrowed.

Interdisciplinary Connections:
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21st Century Themes and Skills:	. **CRP1**. Act as a responsible and contributing citizen and employee.
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	. **CRP11.** Use technology to enhance productivity.
	. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.
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.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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*
F.BF.1A	Determine an explicit expression, a recursive process, or steps for calculation from a context.
A.SSE.1B	Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.*
A.SSE.2	Use the structure of an expression to identify ways to rewrite it. *For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.*

F.IF.8B	Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)12^t$, $y = (1.2)^t/10$, and classify them as representing exponential growth or decay.
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.
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.
S.ID.6A	Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.
A.SSE.3C	Use the properties of exponents to transform expressions for exponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} ≈ 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	**Unit Enduring Understandings:**
How does one live within their income, even if borrowing money is necessary?	- Living within one's income does not mean not ever borrowing money. - Borrow money that can be repaid.

Unit Learning Targets/Objectives:
Students will…
- Evaluate consumer credit systems
- Calculate interest on various loans
- Analyze credit card statements

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 4 in textbook and Teacher's CD
        Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
        TI-83+ Graphing Calculator

Modifications:

- **Special Education Students**
  - Allow errors
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- **Gifted and Talented Students**
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  - Build on students' intrinsic motivations
  - Consult with parents to accommodate students'

- Allow extended time to answer questions - Accept participation at any level, even one word	interests in completing tasks at their level of engagement

Lesson Plans		
Lesson Name/Topic	**Lesson Objective(s)**	**Time frame (day(s) to complete)**
1	Introduction to Consumer Credit	2 days
2	Loans	2 days
3	Loan Calculators and Regressions	2 days
4	Credit Cards	2 days
5	Credit Card Statement	2 days
6	Average Daily Balance	2 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

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Unit Overview

Content Area:	Math
Unit Title:	Unit 8: Business Plan
Grade Level:	11 – 12

Unit Summary:

In this unit, mathematical modeling is used to model a business. Point out that the word model can be used as a noun or a verb. You can create a mathematical model, or model a real-life situation mathematically. Students learn to graph and interpret scatterplots, linear functions, and parabolas.

Interdisciplinary Connections:

Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21ˢᵗ Century Themes and Skills:	. **CRP1.** Act as a responsible and contributing citizen and employee.
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Learning Targets

Standards (Content and Technology)**:**

CPI#:	Statement:
N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.
N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
F.IF.7A	Graph linear and quadratic functions and show intercepts, maxima, and minima.
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 $y = f(x)$.
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. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*.
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*
F.IF.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
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.
S.ID.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
S.ID.9	Distinguish between correlation and causation.
S.ID.6C	Fit a linear function for a scatter plot that suggests a linear association.
S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.
A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
A.REI.4B	Solve quadratic equations by inspection (e.g., for x^2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.
A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.
A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).
A.REI.11	Explain why the *x*-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
A.SSE.1A	Interpret parts of an expression, such as terms, factors, and coefficients.
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
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. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*.
A.REI.12	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
- How is a business plan developed? - What factors contribute to long term success of a business?	Business, more than any other occupation, is a continual dealing with the future; it is a continual calculation, an instructive exercise in foresight.

Unit Learning Targets/Objectives:
Students will…

- Manipulate supply and demand and explain relationships between concepts
- Evaluate fixed and variable expenses
- Graph expenses and revenue functions
- Complete a breakeven analysis
- Create and present a business plan

Evidence of Learning

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 2 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

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Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
1	Interpret Scatterplots	2 days
2	Linear Regression	2 days
3	Supply and Demand	2 days
4	Fixed and Variable Expenses	2 days
5	Graphs of Expense and Revenue Functions	2 days
6	Breakeven Analysis	2 days
7	The Profit Equation	2 days
8	Mathematically Modeling a Business	2 days

Teacher Notes:
Additional Resources http://ahsavidandlinkcrew.weebly.com/financial-algebra.html

Unit Overview	
Content Area:	Math
Unit Title:	Unit 9: The Stock Market
Grade Level:	11 – 12

Unit Summary:
An in-depth study of the stock market is the focus of this unit. Most students are familiar with the existence of the market, but are unfamiliar with how it works. The concept of risk and reward is a constant presence. Students use mathematics to understand market events and make wise decisions about personal investments.

Interdisciplinary Connections:
Students will build upon prior knowledge and skills in arithmetic and mathematics as they apply these concepts in real world contexts. Students will have the opportunity to evaluate how the fields of psychology, government, sociology, business, and humanities impact real world decision-making processes and how relevant quantitative and computational thinking is for long-term success in life.

21ˢᵗ Century Themes and Skills:

. **CRP1**. Act as a responsible and contributing citizen and employee.

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. **CRP3.** Attend to personal health and financial well-being.

. **CRP4.** Communicate clearly and effectively and with reason.

. **CRP5.** Consider the environmental, social and economic impacts of decisions.

. **CRP6.** Demonstrate creativity and innovation.

. **CRP7.** Employ valid and reliable research strategies.

. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.

. **CRP9.** Model integrity, ethical leadership and effective management.

. **CRP10.** Plan education and career paths aligned to personal goals.

. **CRP11.** Use technology to enhance productivity.

. **CRP12.** Work productively in teams while using cultural global competence.

Learning Targets	

Standards (Content and Technology)**:**

CPI#:	Statement:
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.
N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.
N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
A.CED.1	Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions*.
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.*
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.
8.1.12.A.1	Create a personal digital portfolio, which reflects personal and academic interests, achievements, and career aspirations by using a variety of digital tools and resources.
8.1.12.D.4	Research and understand the positive and negative impact of one's digital footprint.

Unit Essential Question(s):	Unit Enduring Understandings:
• How is wealth accumulated and managed via the stock market?	• The stock market presents opportunities to make money; however, there are significant risks associated with managing money via stocks.

Unit Learning Targets/Objectives:
Students will…
- Analyze a business organization
- Compare and contrast stock market data and organize information using charts
- Calculate stock transaction fees
- Analyze dividend income and present findings

<div align="center">Evidence of Learning</div>

Formative Assessments:
Problem of the day; Classwork; Question and answer; Exit questions; Class participation; Teacher observation; Use of resources; and Students' responses/explanations

Summative/Benchmark Assessment(s):
Tests; Quizzes; Projects; Homework

Resources/Materials: Chapter 1 in textbook and Teacher's CD
Financial Algebra. Gerver, R. & Sgroi, R. South-Western/Cengage Learning: Mason, OH: 2014.
TI-83+ Graphing Calculator

Modifications:

- **Special Education Students**
  - Allow errors
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions, and permit drawing, as an explanation
  - Accept participation at any level, even one word
  - Consult with Case Managers and follow IEP accommodations/modifications
- **English Language Learners**
  - Assign a buddy, same language or English speaking
  - Allow errors in speaking
  - Rephrase questions, directions, and explanations
  - Allow extended time to answer questions
  - Accept participation at any level, even one word

- **At-Risk Students**
  - Provide extended time to complete tasks
  - Consult with Guidance Counselors and follow I&RS procedures/action plans
  - Consult with classroom teacher(s) for specific behavior interventions
  - Provide rewards as necessary
- **Gifted and Talented Students**
  - Provide extension activities
  - Build on students' intrinsic motivations
  - Consult with parents to accommodate students' interests in completing tasks at their level of engagement

<div align="center">Lesson Plans</div>

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
1	Business Organization	2 days

2	Stock Market Data	2 days
3	Stock Market Data Charts	2 days
4	Simple Moving Averages	2 days
5	Stock Market Ticker	2 days
6	Stock Transactions	2 days
7	Stock Transaction Fees	2 days
8	Stock Splits	2 days
9	Dividend Income	2 days

Teacher Notes:

Additional Resources
http://ahsavidandlinkcrew.weebly.com/financial-algebra.html