

<b>Grade(s):</b>	<b>11-12</b>
<b>Discipline/Course:</b>	<b>Mathematics</b>
<b>Course Title:</b>	<b>Financial Algebra</b>
<b>Prerequisite(s):</b>	Geometry
<b>Course Description:</b> <i>Program of Studies</i>	Financial Algebra focuses on real-world financial literacy, personal finance, and Algebraic approaches to solving problems. Students will apply what they learned in Algebra 1 and Geometry topics including personal income, taxes, checking and savings accounts, credit, loans and payments, car leasing and purchasing, home mortgages, stocks, insurance, and retirement planning. Students will extend their investigations using more advanced mathematics, such as systems of equations when studying cost and profit issues and exponential functions when calculating interest problems.
<b>Course Essential Questions:</b>	<ul style="list-style-type: none"> <li>● In what ways can Algebra be used to better understand finance?</li> </ul>
<b>Course Enduring Understandings:</b>	<ul style="list-style-type: none"> <li>● Mathematics is the basis for sound financial decisions.</li> <li>● Data can be analyzed to make informed decisions using a variety</li> <li>● Financial literacy is critical in a global society.</li> <li>● Financial choices will have benefits, costs and future consequences.</li> </ul>
<b>Duration:</b>	One year
<b>Course Materials/Resources:</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>

**\*Note: Topics listed in the units may evolve over time based on adaptations to implementation. However, the overall content of the entire course will not change**

### Academic Expectations

The Fairfield Public Schools describe a variety of cross curricular expectations that all students should exemplify during their time within the schooling experience. This page gives examples of what the practice standards look like at the specified grade level. Students are expected to:

Standards	Explanations	Example
1. Exploring and Understanding [MP1]	When students engage in problem solving situations, they should be able to understand the problem, determine relevant information, and ask relevant additional questions.	Students should be able to answer the following questions when approaching a problem: <ol style="list-style-type: none"> <li>1. Do you understand all the words used in stating the problem?</li> <li>2. What are you asked to find or show?</li> <li>3. Can you restate the problem in your own words?</li> <li>4. Can you think of a picture or diagram that might help you understand the problem?</li> </ol>
2. Synthesizing and Evaluating	Engaging in a problem solving situation, students should be able to analyze the most efficient approach, and reflect on the process used to solve the problem.	Students should be able to answer the following questions when analyzing how to approach a problem, and also reflect on the result: <ol style="list-style-type: none"> <li>1. Is there enough information to enable you to find a solution? If not, what additional information is needed?</li> <li>2. Are there multiple ways to complete the task? Which approach do you think is most efficient, and why?</li> <li>3. Do you know a related problem? Look at the unknown and try to think of a familiar problem having the same or similar unknown. Can you use it?</li> <li>4. Was your strategy effective? What worked? What didn't?</li> <li>5. Was there another approach that could have been more efficient?</li> <li>6. Is your answer reasonable? How do you know?</li> <li>7. Was your presentation approach effective? If not, what would you change?</li> <li>8. How did the communication tools allow you to get the message across to the intended audience?</li> </ol>

3. Creating and Constructing	Engaged in a problem solving situation, students should implement a plan.	Students should be able to answer the following question to implementing their plan to solve a problem: 1. What strategy will you use to complete the task?
4. Conveying Ideas	Students should be able to use correct mathematical language, logically display their work for the desired problem.	Students should be able to answer the following questions to convey their mathematical thinking to solve a problem: 1. How will you present your information to your intended audience? 2. Does your response illustrate the correct terms and work to the problem?
5. Using Communication Tools	Students should be able to choose the correct tools to illustrate their mathematical work to solve a specific problem.	Students should be able to answer the following question to use specific communication tools to solve a problem: 1. If applicable, what communication tools will you use to convey your ideas and solution?
6. Collaborating Strategically	Students should be able to work collaboratively to solve problems.	Students should be able to answer the following question to collaboratively solve problems: 1. In what ways did you work together to help solve the desired problem?

<b>Unit Number and Title:</b>	Unit 1: Checking and Savings Accounts
<b>Duration:</b>	5 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	<p><b>NUMBER AND QUANTITIES</b></p> <p><b>Quantities (N-Q)</b></p> <p>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.</p> <p>N-Q 3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p><b>FUNCTIONS</b></p> <p><b>Building Functions (BF)</b></p> <p>Build a function that models a relationship between two quantities</p> <p>F-BF.1 Write a function that describes a relationship between two quantities.</p> <p><b>Linear, Quadratic, and Exponential Models* F-LE</b></p> <p><b>Construct and compare linear, quadratic, and exponential models and solve problems.</b></p> <p>F-LE 1 Distinguish between situations that can be modeled with linear functions and with exponential functions.</p> <p>F-LE 1c</p>

	<p>Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p> <p>F-LE 3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.</p> <p>F-LE 5 Interpret the parameters in a linear or an exponential function in terms of a context.</p> <p><b>Interpreting Functions (IF)</b> <b>Understand the concept of a function and use function notation</b></p> <p>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.</p>
<p><b>Essential Question(s):</b></p>	<ul style="list-style-type: none"> <li>● How do you deposit money into a checking/saving account?</li> <li>● How do you withdraw money from a checking/saving account?</li> <li>● How do you calculate interest on your balance in a checking/saving account?</li> <li>● How do you reconcile your account?</li> <li>● What are the appropriate forms associated with banking accounts?</li> <li>● How are banking balances maintained?</li> <li>● How can Algebraic and graphical approaches be used to better understand present and future balances of a banking account?</li> </ul>
<p><b>Enduring Understanding(s):</b></p>	<ul style="list-style-type: none"> <li>● A checking account enables you to spend money with several advantages.</li> <li>● Having a savings account in a federally insured institution provides you with the opportunity to save money; earn interest and the security of knowing that your money will be there when you need it.</li> </ul>

**Learning Goal(s):**

*Students will be able to use their learning to:*

1. Describe why and how people save.
2. Differentiate between saving and investing.
3. Distinguish between simple and compound interest.
4. Analyze the power of compounding and the importance of starting early in implementing a plan of saving and investing.
5. Identify various types of financial institutions.
6. Describe the basic services provided by financial institutions.
7. Identify the rights and responsibilities associated with using a checking account.
8. Describe the steps involved in opening and using a checking account.
9. Compare and contrast the different types of checking accounts offered by various financial institutions.
10. Differentiate among types of electronic monetary transactions (e.g., debit cards, ATM, and automatic deposits/payments) offered by various financial institutions.
11. Reconcile a balance sheet by hand and using technology
12. Create graphical representations of expenditures using technology

<b>Unit Number and Title:</b>	Unit 2: Gross and Net Pay
<b>Duration:</b>	3 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	<p><b>NUMBER AND QUANTITY</b>  <b>Quantities</b>  <b>Reason quantitatively and use units to solve problems.</b></p> <p>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.</p> <p>N-Q 3  Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p>
<b>Essential Question(s):</b>	<ul style="list-style-type: none"> <li>● What are different ways pay is earned?</li> <li>● What are different ways you receive your pay?</li> <li>● What decision making process can you use to choose optimal employment based on potential income?</li> <li>● In what ways do deductions affect your gross and net pay?</li> <li>● How can Algebraic and graphical approaches be used to better understand gross and net income?</li> </ul>
<b>Enduring Understanding(s):</b>	<ul style="list-style-type: none"> <li>● Knowing your income enables you to set a budget in order to reach financial goals.</li> <li>● Different methods of payment allow comparison of gross pay for different jobs in the event a change of employment is sought.</li> <li>● Understanding your deductions allows you to understand your net pay and how it differs from</li> </ul>

	your gross pay.
<b>Learning Goal(s):</b> <i>Students will be able to use their learning to:</i>	<b>EARNING AND REPORTING INCOME</b> <b>Identify various forms of income and analyze factors that affect income as a part of the career decision-making process.</b> <ol style="list-style-type: none"> <li>1. Calculate [gross and] net pay.</li> <li>2. Explain the effect on take-home pay of changing the allowances claimed on an “Employees’ Withholding Allowance Certificate” (IRS Form W-4).</li> </ol>

### Unit Template

<b>Unit Number and Title:</b>	Unit 3: Managing Finances and Budgeting,
<b>Duration:</b>	4 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	<p><b>NUMBER AND QUANTITY</b>  <b>Quantities</b>  <b>Reason quantitatively and use units to solve problems.</b></p> <p>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.</p> <p>N-Q 3        Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p>
<b>Essential Question(s):</b>	<ul style="list-style-type: none"> <li>● How can Algebraic and graphical approaches be used to better understand present and future balances of a banking account?</li> <li>● How do you differentiate between fixed and variable expenses?</li> <li>● What are efficient ways to track your expenditures?</li> </ul>
<b>Enduring Understanding(s):</b>	<ul style="list-style-type: none"> <li>● Keeping track of the money you spend is essential to money management.</li> <li>● Budgeting allows you to pay all of your bills and helps to implement a plan so you can afford future purchases.</li> <li>● Seeing your expenditures on a budget sheet may improve your financial decision making process.</li> </ul>

**Learning Goal(s):**

*Students will be able to use their learning to:*

**MANAGING FINANCES AND BUDGETING**

**Develop and evaluate a budget plan.**

1. Construct and use a personal budget plan and evaluate it according to short- and long-term goals.
2. Define fixed and variable expenses.
3. Categorize and classify expenses as fixed or variable.
4. Determine discretionary income in a budget plan.

**BUYING GOODS AND SERVICES**

**Apply a decision-making model to maximize consumer satisfaction when buying goods and services.**

5. Calculate the costs of utilities, services, maintenance, and other expenses involved in independent living.

<b>Unit Number and Title:</b>	Unit 5: Using Credit I
<b>Duration:</b>	5 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	<p><b>FUNCTIONS</b>  <b>Interpreting Functions</b>  <b>Interpret functions that arise in applications in terms of the context</b>  <b>F-IF 4</b></p> <p>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.*</p>
<b>Essential Question(s):</b>	<ul style="list-style-type: none"> <li>● What are the benefits and risks of credit cards?</li> <li>● What information can you use to determine the best credit card for an individual?</li> <li>● How can Algebraic and graphical approaches be used to determine how interest is calculated and reported?</li> </ul>
<b>Enduring Understanding(s):</b>	<ul style="list-style-type: none"> <li>● Using a credit card to make purchases allows the card holder the flexibility to “buy now, pay later.”</li> <li>● There is considerable responsibility in using a credit card, and it is important that the user understands how interest is calculated.</li> </ul>
<b>Learning Goal(s):</b> <i>Students will be able to use their learning to:</i>	<p><b>USING CREDIT</b>  <b>Analyze factors that affect the choice of credit, the cost of credit, and the legal aspects of using</b></p>

**credit.**

1. Describe the process of borrowing to purchase goods and services.
2. Describe the risks and responsibilities associated with using credit.
3. Identify the opportunity cost of credit decisions.
4. Identify methods of establishing and maintaining a good credit rating.
5. Determine the advantages and disadvantages of using credit.
6. Describe the various methods of financing a purchase.
7. Describe interest as a cost of credit and explain why it is charged.
8. Describe the importance of a sound credit rating.
9. Analyze credit card features and their impact on personal financial planning.
10. Explain why an interest rate varies with the amount assumed risk.
11. Explain credit ratings and reports and describe why they are important to consumers.
12. Describe examples of the benefits of financial responsibility and the costs of financial irresponsibility.
13. Identify strategies for effective debt management.
14. Identify specific steps that consumers can take to minimize their exposure to identity theft.
15. Describe problems that occur when an individual is the victim of identity theft.
16. Identify specific steps that should be taken by a victim of identity theft.
17. Identify ways that thieves can fraudulently obtain personal information.
18. Compare and contrast the various aspects of credit cards (e.g., APR, grace period, incentive buying, methods of calculating interest, and fees).

<b>Unit Number and Title:</b>	Unit 6: Using Credit II
<b>Duration:</b>	5 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	<p><b>FUNCTIONS</b>  <b>Interpreting Functions</b>  <b>Interpret functions that arise in applications in terms of the context</b>            F-IF 4</p> <p>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.</p>
<b>Essential Question(s):</b>	<ul style="list-style-type: none"> <li>● What are the benefits and risks of loans?</li> <li>● What information can you use to determine the best loan for an individual?</li> <li>● How can Algebraic and graphical approaches be used to determine how interest is calculated and reported?</li> </ul>
<b>Enduring Understanding(s):</b>	<ul style="list-style-type: none"> <li>● Obtaining a loan to make purchases allows the individual the flexibility to “buy now, pay later.”</li> <li>● There is considerable responsibility in obtaining a loan, and it is important that the user understands how interest is calculated.</li> </ul>
<b>Learning Goal(s):</b> <i>Students will be able to use their learning to:</i>	<p><b>USING CREDIT</b>  <b>Analyze factors that affect the choice of credit, the cost of credit, and the legal aspects of using credit.</b></p>

1. Describe the process of borrowing to purchase goods and services.
2. Describe the risks and responsibilities associated with using credit.
3. Identify the opportunity cost of credit decisions.
4. Identify methods of establishing and maintaining a good credit rating.
5. Determine the advantages and disadvantages of using credit.
6. Identify the components listed on a credit report and explain how that information is used and is received by and reported from the credit reporting agencies.
7. Explain why an interest rate varies with the amount assumed risk.
8. Explain credit ratings and reports and describe why they are important to consumers.
9. Describe examples of the benefits of financial responsibility and the costs of financial irresponsibility.

<b>Unit Number and Title:</b>	Unit 7: Protecting Against Risk
<b>Duration:</b>	3 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	N/A
<b>Essential Question(s):</b>	<ul style="list-style-type: none"> <li>● Why is it important for individuals to purchase insurance for their property and belongings?</li> <li>● What are the most common types of risk?</li> <li>● What factors will influence your insurance goals?</li> <li>● What should you look for in a health insurance policy?</li> </ul>
<b>Enduring Understanding(s):</b>	<ul style="list-style-type: none"> <li>● Various types of insurance offer financial protection for both you and your property.</li> <li>● A good financial plan should include health and life insurance.</li> </ul>
<b>Learning Goal(s):</b> <i>Students will be able to use their learning to:</i>	<p><b>PROTECTING AGAINST RISK</b></p> <p><b>Analyze choices available to consumers for protection against risk and financial loss.</b></p> <ol style="list-style-type: none"> <li>1. Identify risk in life and how to gain protection against the consequences of risk.</li> <li>2. Evaluate insurance as a risk management strategy.</li> <li>3. Identify the type of insurance associated with different types of risk (e.g., automobile, personal and professional liability, home and apartment, health, life, long term care, and disability).</li> <li>4. Explain the role of insurance in financial planning.</li> <li>5. Determine recommendations for insurance coverage for individuals/families at different income levels and varying risks.</li> </ol>

<b>Unit Number and Title:</b>	Unit 8: Saving and Investing
<b>Duration:</b>	4 weeks
<b>Resource(s):</b>	<i>Glencoe Mathematics for Business and Personal Finance</i>
<b>Learning Goals</b>	
<b>Standard(s):</b>	<p><b>FUNCTIONS</b>  <b>Building Functions</b>  <b>Build a function that models a relationship between two quantities</b>  <b>F-BF.1</b>          Write a function that describes a relationship between two quantities.</p> <p><b>Linear, Quadratic, and Exponential Models* F-LE</b>  <b>Construct and compare linear, quadratic, and exponential models and solve problems.</b>  <b>F-LE 1</b>          Distinguish between situations that can be modeled with linear functions and with exponential functions.</p> <p><b>F-LE 1c</b>          Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p> <p><b>F-LE 3</b>          Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.</p> <p><b>F-LE 5</b>          Interpret the parameters in a linear or an exponential function in terms of a context.  <b>Interpreting Functions</b>          Understand the concept of a function and use function notation</p> <p><b>F-IF 2</b></p>

	<p>Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p> <p><b>ALGEBRA</b>  <b>Creating Equations</b>  <b>Create equations that describe numbers or relationships.</b></p> <p>A-CED 1          Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear functions ....</p> <p>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.</p> <p>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 <math>V = IR</math> to highlight resistance <math>R</math>.</p>
<p><b>Essential Question(s):</b></p>	<ul style="list-style-type: none"> <li>● Why is it impossible to create a “one size fits all” investment strategy for everyone?</li> <li>● What research and planning can you do now to help secure your financial future?</li> <li>● What do you need to know about stocks before you invest your hard earned money?</li> <li>● How can Algebraic and graphical approaches be used to determine possible future values of investments?</li> </ul>
<p><b>Enduring Understanding(s):</b></p>	<ul style="list-style-type: none"> <li>● Informed investors know how to save and plan wisely for reaching goals and achieving financial security.</li> <li>● Exploring stock markets can help you understand your choices, risks, and benefits when investing in stock.</li> </ul>
<p><b>Learning Goal(s):</b>  <i>Students will be able to use their learning to:</i></p>	<p><b>SAVING AND INVESTING</b>          Evaluate savings and investment options to meet short- and long-term goals.</p> <ol style="list-style-type: none"> <li>1. Describe why and how people save.</li> </ol>

2. Identify the opportunity costs of saving.
3. Differentiate between saving and investing.
4. Describe how the stock market functions.
5. Identify the risk/return trade-offs for saving and investing.
6. Analyze the power of compounding and the importance of starting early in implementing a plan of saving and investing.
7. Compare the tax savings by making contributions to pre-tax retirement savings accounts.
8. Calculate an employer's matching contribution to a retirement account.