



## Statewide Framework Document for: 270305

Standards may be added to this document prior to submission, but may not be removed from the framework to meet state credit equivalency requirements. Performance assessments may be developed at the local level. In order to earn state approval, performance assessments must be submitted within this framework. **This course is eligible for 1 credit of Algebra I.** Washington Mathematics Standards ([Common Core State Standards](#)) support foundational mathematical knowledge and reasoning. While it is important to develop a conceptual understanding of mathematical topics and fluency in numeracy and procedural skills, teachers should also focus on the application of mathematics to career fields to support the [three \(3\) key shifts of CCSS](#). The [Standards for Mathematical Practice](#) develop mathematical habits of mind and are to be modeled and integrated throughout the course.

### Financial Math

<b>Course Title: Financial Math</b>		<b>Total Framework Hours: 180</b>
<b>CIP Code: 270305</b>	<input checked="" type="checkbox"/> Exploratory <input type="checkbox"/> Preparatory	<b>Date Last Modified: May 4, 2015</b>
<b>Career Cluster: Finance</b>		<b>Cluster Pathway: Accounting</b>
<b>Eligible for Equivalent Credit in:</b> <input checked="" type="checkbox"/> Math <input type="checkbox"/> Science		<b>Total Number of Units: 9</b>

### Course Overview

**Summary:**

Financial Math focuses on the application of mathematics and statistics to the finance industry, including the development, critique, and use of various financial models. The course includes instruction in probability theory; statistical analysis; and numerical, computation, and simulation methods. Students will learn about stochastic processes, economics, financial literacy, financial markets, and financial applications.

### Unit 1: Financial Responsibility and Decision Making

**Total Learning Hours for Unit: 10****Unit Summary:**

In this unit, students will:

- Apply reliable information and systematic decision making to personal financial decisions at different stages in life.
- Analyze strategies to manage multiple individual, family, career, and community roles and responsibilities.
- Find and evaluate financial information from a variety of sources.
- Examine individual and family roles in the economic system.
- Apply opportunity costs and trade-offs to financial decision making.
- Recognize the consequences of economic choices.

- Differentiate between types of financial decisions and identify those for which a formal decision-making process should be used.
- Examine how advertising, media and technological advances affect family and consumer decisions.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Use the decision-making process to weigh the pros and cons of a financial decision. They will explain their problem-solving process in a written or oral format, telling why their final decision was the best decision.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

Students will access and evaluate information and think creatively as they create a poster about how advertising and technological advances affect family and consumer decisions. They will communicate clearly and apply technology effectively as they present their findings to the class.

***Industry Standards and Competencies***

**National Jump\$tart Standards:**

Financial Responsibility and Decision Making

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

Planning and Money Management

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 1: Develop a plan for spending and saving.

**National Business Education Association: Personal Finance Achievement Standards:**

Personal Decision Making

Achievement Standard: Use a rational decision-making process as it applies to the roles of citizens, workers, and consumers.

Buying Goods and Services

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

***Aligned Washington State Standards***

**Standards for Mathematical Practice (Common Core State Standards):**

Practice 1: Make sense of problems and persevere in solving them.

Practice 2: Reason abstractly and quantitatively.

Practice 3: Construct viable arguments and critique the reasoning of others.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.  
Practice 6: Attend to precision.  
Practice 7: Look for and make use of structure.  
Practice 8: Look for and express regularity in repeated reasoning.

**Washington Mathematics Standards (Common Core State Standards):**

Cluster: Extend the properties of exponents to rational exponents.

N.RN.A.1 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.

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.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.A.2 Define appropriate quantities for the purpose of descriptive modeling.

N.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

A.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Cluster: Understand solving equations as a process of reasoning and explain the reasoning.

A.REI.A.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Cluster: Solve systems of equations.

A.REI.C.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

A.REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A.REI.C.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.C.8 Represent a system of linear equations as a single matrix equation in a vector variable.

A.REI.C.9 Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension  $3 \times 3$  or greater).

Cluster: Represent and solve equations and inequalities graphically.

A.REI.D.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).

Cluster: Understand the concept of a function and use function notation.

F.IF.A.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.A.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

Cluster: Interpret functions that arise in applications in terms of the context.

F.IF.B.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.

Cluster: Analyze functions using different representations.

F.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

7a Graph linear and quadratic functions and show intercepts, maxima, and minima.

7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Cluster: Construct and compare linear, quadratic, and exponential models and solve problems.

F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

1a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

F.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

F.LE.A.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.

F.LE.A.4 For exponential models, express as a logarithm the solution to  $ab^{ct} = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology.

Cluster: Interpret expressions for functions in terms of the situation they model.

F.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.

Cluster: Experiment with transformations in the plane.

G.CO.A.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Cluster: Summarize, represent, and interpret data on a single count or measurement variable.

S.ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables.

S.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

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.

6b Informally assess the fit of a function by plotting and analyzing residuals.

6c Fit a linear function for a scatter plot that suggests a linear association.

Cluster: Interpret linear models.

S.ID.C.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Educational Technology:**

2.1.2 Practice ethical and respectful behavior.

**Unit 2: Career Awareness****Total Learning Hours for Unit: 15****Unit Summary:**

In this unit, students will:

- Assess personal skills, abilities, aptitudes, strengths, and weaknesses as they relate to career exploration and development.
- Assess and analyze personal talents, values, and interests as they may relate to a future career, based on the completion of a standardized career interest survey and personality indicator assessments.
- Correlate personal characteristics with the requirements of specific jobs within career clusters.
- Identify transferable competencies and job-specific skills related to career and job options.
- Apply knowledge gained from individual assessment to a comprehensive set of goals and an individual career plan.
- Relate the importance of lifelong learning to career success.
- Use a variety of research tools (e.g., computer-assisted programs, newspapers, books, professional and trade associations, informational interviews, job shadowing, career fairs, and the Internet) in the career exploration process.
- Relate the importance of workplace expectations to career development.
- Develop a plan to make an effective transition from school to a career.
- Describe the impact of the global economy on jobs and careers and explain how types and availability of jobs are determined primarily by consumer demand in the market-oriented economy of the United States.
- Assess the impact of sociological, economic, and technological changes on future jobs.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Create a career plan for the years immediately following high school and include a financial analysis or plan for that path.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

***Industry Standards and Competencies*****National JumpStart Standards**

Income and Careers

Overall Competency: Use a career plan to develop personal income potential.

Standard 1: Explore career options.

Standard 2: Identify sources of personal income.

Standard 3: Describe factors affecting take-home pay.

***Aligned Washington State Standards*****Standards for Mathematical Practice (Common Core State Standards):**

Practice 1: Make sense of problems and persevere in solving them.

Practice 2: Reason abstractly and quantitatively.

Practice 5: Use appropriate tools strategically.

Practice 6: Attend to precision.

**Washington Mathematics Standards (Common Core State Standards):**

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

A.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

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.

A.CED.A.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.

A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Cluster: Solve equations and inequalities in one variable.

A.REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Cluster: Understand the concept of a function and use function notation.

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.

Cluster: Analyze functions using different representations.

F.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

Cluster: Construct and compare linear, quadratic, and exponential models and solve problems.

F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Educational Technology:**

1.1.1 Generate ideas and create original works for personal and group expression using a variety of digital tools.

1.1.2 Use models and simulations to explore systems, identify trends and forecast possibilities.

1.3.4 Use multiple processes and diverse perspectives to explore alternative solutions.

2.2.1 Develop skills to use technology effectively.

**Unit 3: Income****Total Learning Hours for Unit: 20****Unit Summary:**

In this unit, students will:

- Identify various forms of income and analyze factors that affect take-home pay.
- Identify various ways people earn a living.
- Discuss how income from employment is affected by factors such as supply and demand, geographic location, level of education, type of industry, union membership, productivity, skill level, and work ethic.
- Identify benefits as a component of total income.
- Compare and contrast compensation packages that include varying levels of wages and benefits.
- Investigate employee benefits and incentives.
- Differentiate between earned and unearned income and identify sources of unearned income (e.g., interest, rent, and profit).
- Differentiate between gross and net income.
- Calculate net pay.
- Determine practices that allow families to maintain economic self-sufficiency.
- Explore potential tax deductions and credits on a tax return.
- Calculate personal tax liabilities for various types of taxes (e.g., payroll, property, income, sales, FICA, and Medicare).
- Explain the impact of taxes on personal financial planning.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Use a career plan to develop personal income potential to complete a tax return form.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

***Industry Standards and Competencies*****National JumpStart Standards:****Financial Responsibility and Decision Making**

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

**Income and Careers**

Overall Competency: Use a career plan to develop personal income potential.

Standard 2: Identify sources of personal income.

Standard 3: Describe factors affecting take-home pay.

**National Business Education Association: Personal Finance Achievement Standards:**

Earning and Reporting Income

Achievement Standard: Identify various forms of income and analyze factors that affect income as a part of the career decision-making process.

***Aligned Washington State Standards***

**Standards for Mathematical Practice (Common Core State Standards):**

Practice 1: Make sense of problems and persevere in solving them.

Practice 2: Reason abstractly and quantitatively.

Practice 3: Construct viable arguments and critique the reasoning of others.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.

Practice 6: Attend to precision.

Practice 7: Look for and make use of structure.

Practice 8: Look for and express regularity in repeated reasoning.

**Washington Mathematics Standards (Common Core State Standards):**

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

A.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.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.

A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Cluster: Solve equations and inequalities in one variable.

A.REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

A.REI.B.4 Solve quadratic equations in one variable.

4a Use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from this form.

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  $b$ .

Cluster: Understand the concept of a function and use function notation.

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.

Cluster: Interpret functions that arise in applications in terms of the context.

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.

Cluster: Analyze functions using different representations.

F.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.



Cluster: Build a function that models a relationship between two quantities.

F.BF.A.1 Write a function that describes a relationship between two quantities.

1a Determine an explicit expression, a recursive process, or steps for calculation from a context.

Cluster: Construct and compare linear, quadratic, and exponential models and solve problems.

F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

1a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

Cluster: Interpret expressions for functions in terms of the situation they model.

F.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.

Cluster: Interpret linear models.

S.ID.C.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Unit 4: Planning and Money Management**

**Total Learning Hours for Unit: 35**

**Unit Summary:**

In this unit, students will:

- Organize personal finances and use a budget to manage cash flow.
- Evaluate the need for personal and family financial planning.
- Analyze factors in developing a long-term financial management plan.
- Demonstrate components of a financial planning process that reflect the distinction between needs, wants, values, goals, and economic resources.
- Define fixed and variable expenses and categorize expenses as fixed or variable.
- Construct and use a financial plan and evaluate it according to short- and long-term goals.
- Describe how income and spending patterns change over a lifetime.
- Examine the role of saving and investing in creating a financial plan.
- Analyze the effects of leading economic indicators of a financial plan.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Develop and evaluate a financial plan based on their career plan (possibly completing a budget simulation such as Life In, by FEFE or Junior Achievement).

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

***Industry Standards and Competencies*****National Jump\$tart Standards:**

## Financial Responsibility and Decision Making

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

## Income and Careers

Overall Competency: Use a career plan to develop personal income potential.

Standard 2: Identify sources of personal income.

## Planning and Money Management

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 1: Develop a plan for spending and saving.

Standard 2: Develop a system for keeping and using financial records.

Standard 5: Consider charitable giving.

Standard 6: Develop a personal financial plan.

## Saving and Investing

Overall Competency: Implement a diversified investment strategy that is compatible with personal goals.

Standard 1: Discuss how saving contributes to financial well-being.

**National Business Education Association: Personal Finance Achievement Standards:**

## Earning and Reporting Income

Achievement Standard: Identify various forms of income and analyze factors that affect income as a part of the career decision-making process.

## Managing Finances and Budgeting

Achievement Standard: Develop and evaluate a spending/savings plan.

## Saving and Investing

Achievement Standard: Evaluate savings and investment options to meet short- and long-term goals.

***Aligned Washington State Standards*****Standards for Mathematical Practice (Common Core State Standards):**

Practice 1: Make sense of problems and persevere in solving them.

Practice 2: Reason abstractly and quantitatively.

Practice 3: Construct viable arguments and critique the reasoning of others.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.

Practice 6: Attend to precision.

Practice 7: Look for and make use of structure.  
Practice 8: Look for and express regularity in repeated reasoning.

**Washington Mathematics Standards (Common Core State Standards):**

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.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.A.2 Define appropriate quantities for the purpose of descriptive modeling.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

Cluster: Represent and solve equations and inequalities graphically.

A.REI.D.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).

Cluster: Analyze functions using different representations.

F.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

7a Graph linear and quadratic functions and show intercepts, maxima, and minima.

7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Educational Technology:**

1.1.2 Use models and simulations to explore systems, identify trends and forecast possibilities.

1.3.1 Identify and define authentic problems and significant questions for investigation and plan strategies to guide inquiry.

1.3.2 Locate and organize information from a variety of sources and media.

**Unit 5: Saving and Investing**

**Total Learning Hours for Unit: 25**

**Unit Summary:**

In this unit, students will:

- Evaluate savings and investment options to meet short- and long-term goals.
- Discuss how savings contributes to financial well-being.
- Differentiate between saving and investing.
- Distinguish between simple and compound interest.
- Describe the advantages and disadvantages of various savings and investing plans.
- Apply criteria for choosing a savings or investment instrument (e.g., market risk, inflation risk, interest rate risk, liquidity, and minimum investment).
- Describe how to buy and sell investments.

- Analyze the power of compounding interest and the importance of starting early in implementing a plan of saving and investing.
- Calculate and apply the Rule of 72 (to find the number of years required to double money at a given interest rate, divide the interest rate into 72).
- Investigate how agencies that regulate financial markets protect investors.
- Explain why a savings and investing plan changes as one proceeds through life.
- Differentiate between interest, dividends, capital gains, and rent from property.
- Describe how saving and investing influence economic growth.
- Describe investment products, including mutual funds, 401(k), 403(b), annuity, Roth IRA, traditional IRA, tax shelters, etc.
- Evaluate the tax incentives available for certain investments.
- Analyze factors in developing a long-term financial management plan.
- Evaluate the impact of technology on individual and family resources.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Develop a diversified investment plan that is compatible with their personal goals.
- Create an investment portfolio and analyze its progress throughout the course. (One possible strategy would be using the stock market game.)

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

***Industry Standards and Competencies***

**National JumpStart Standards:**

**Financial Responsibility and Decision Making**

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 3: Summarize major consumer protection laws.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

**Planning and Money Management**

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 1: Develop a plan for spending and saving.

Standard 2: Develop a system for keeping and using financial records.

Standard 6: Develop a personal financial plan.

**Saving and Investing**

Overall Competency: Implement a diversified investment strategy that is compatible with personal goals.

Standard 1: Discuss how saving contributes to financial well-being.

Standard 2: Explain how investing builds wealth and helps meet financial goals.

Standard 3: Evaluate investment alternatives.

Standard 4: Describe how to buy and sell investments.  
Standard 5: Explain how taxes affect the rate of return on investments.  
Standard 6: Investigate how agencies that regulate financial markets protect investors.

**National Business Education Association: Personal Finance Achievement Standards:**

Managing Finances and Budgeting

Achievement Standard: Develop and evaluate a spending/savings plan.

Saving and Investing

Achievement Standard: Evaluate savings and investment options to meet short- and long-term goals.

Protecting Against Risk

Achievement Standard: Analyze choices available to consumers for protection against risk and financial loss.

***Aligned Washington State Standards***

**Standards for Mathematical Practice (Common Core State Standards):**

Practice 1: Make sense of problems and persevere in solving them.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.

**Washington Mathematics Standards (Common Core State Standards):**

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.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.A.2 Define appropriate quantities for the purpose of descriptive modeling.

N.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

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.

A.CED.A.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.

A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Cluster: Solve equations and inequalities in one variable.

A.REI.B.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

A.REI.B.4 Solve quadratic equations in one variable.

4a Use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from this form.

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  $b$ .

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Educational Technology:**

1.1.2 Use models and simulations to explore systems, identify trends and forecast possibilities.

1.3.2 Locate and organize information from a variety of sources and media.

2.2.2 Use a variety of hardware to support learning.

**Unit 6: Buying Goods and Services**

**Total Learning Hours for Unit: 20**

**Unit Summary:**

In this unit, students will:

- Apply a decision-making model to maximize consumer satisfaction when buying goods and services.
- Demonstrate management of individual and family resources including food, clothing, shelter, health care, recreation, and transportation.
- Develop communication strategies for discussing financial issues.
- Apply comparison-buying practices, using alternative sources for purchases, such as online stores, e-malls, retail stores, wholesale shopping, and catalogs.
- Discuss various ways that competition among buyers helps the consumer.
- Describe reasons why there is variance in price for a given item bought from different providers.
- Compare the costs and benefits of purchasing, leasing, and renting.
- Summarize major consumer protection laws.
- Identify and describe consumer assistance services provided by public and private organizations.
- Calculate the costs of utilities, services, maintenance, and other expenses.
- Describe the role that supply and demand and market structure play in determining the availability and price of goods and services.
- Examine behaviors that conserve, reuse, and recycle resources to maintain the environment.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Conduct a consumer research project for a product and then produce an advertisement that explains how one product is better than another.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.

- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

### ***Industry Standards and Competencies***

#### **National Jump\$tart Standards:**

##### Financial Responsibility and Decision Making

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 3: Summarize major consumer protection laws.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

##### Planning and Money Management

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 4: Apply consumer skills to purchase decisions.

#### **National Business Education Association: Personal Finance Achievement Standards:**

##### Buying Goods and Services

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

### ***Aligned Washington State Standards***

#### **Washington Mathematics Standards (Common Core State Standards):**

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.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.A.2 Define appropriate quantities for the purpose of descriptive modeling.

N.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

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.

A.CED.A.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.

A.CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Cluster: Understand solving equations as a process of reasoning and explain the reasoning.

A.REI.A.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

Cluster: Solve systems of equations.

A.REI.C.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

A.REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A.REI.C.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.C.8 Represent a system of linear equations as a single matrix equation in a vector variable.

A.REI.C.9 Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension  $3 \times 3$  or greater).

Cluster: Represent and solve equations and inequalities graphically.

A.REI.D.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.D.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.REI.D.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.

Cluster: Understand the concept of a function and use function notation.

F.IF.A.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  $y = f(x)$ .

Cluster: Interpret functions that arise in applications in terms of the context.

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.

F.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

F.IF.B.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.

Cluster: Analyze functions using different representations.

F.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

8b Use the properties of exponents to interpret expressions for exponential functions.

Cluster: Build a function that models a relationship between two quantities.

F.BF.A.1 Write a function that describes a relationship between two quantities.

1a Determine an explicit expression, a recursive process, or steps for calculation from a context.

1b Combine standard function types using arithmetic operations.

1c Compose functions.

Cluster: Construct and compare linear, quadratic, and exponential models and solve problems.

F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

1a Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

1b Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

F.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).



F.LE.A.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.

F.LE.A.4 For exponential models, express as a logarithm the solution to  $ab^{ct} = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology.

Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables.

S.ID.B.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

S.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

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.

6b Informally assess the fit of a function by plotting and analyzing residuals.

6c Fit a linear function for a scatter plot that suggests a linear association.

Cluster: Interpret linear models.

S.ID.C.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

S.ID.C.8 Compute (using technology) and interpret the correlation coefficient of a linear fit.

S.ID.C.9 Distinguish between correlation and causation.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Educational Technology:**

1.3.1 Identify and define authentic problems and significant questions for investigation and plan strategies to guide inquiry.

1.3.2 Locate and organize information from a variety of sources and media.

1.3.3 Analyze, synthesize and ethically use information to develop a solution, make informed decisions and report results.

1.3.4 Use multiple processes and diverse perspectives to explore alternative solutions.

2.2.2 Use a variety of hardware to support learning.

**Unit 7: Banking and Finance**

**Total Learning Hours for Unit: 15**

**Unit Summary:**

In this unit, students will:

- Identify various types of financial institutions and list basic services provided by each.
- Identify the rights and responsibilities associated with using a checking account.
- Describe the steps involved in opening and using a checking account.
- Compare and contrast the different types of checking accounts offered by various financial institutions.
- Evaluate the impact of technology on individual and family resources.
- Differentiate among types of electronic monetary transactions (e.g., debit cards, ATM, and automatic deposits/payments/transfers) and fees.
- Evaluate services and related costs associated with financial institutions.
- Describe and use the steps involved in the bank reconciliation process.
- Compare and contrast the various forms of endorsement.

- Maintain a checking account (i.e., recording transactions in a register, writing a check, using a debit card, online banking).
- Compare costs and benefits of online and traditional banking.
- Analyze privacy and security issues associated with financial transactions.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Choose a financial service from two different institutions and compare the costs and benefits. They will be able to analyze which institution would be the better choice and why.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

***Industry Standards and Competencies***

**National Jump\$tart Standards:**

Financial Responsibility and Decision Making

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 3: Summarize major consumer protection laws.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

Planning and Money Management

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 2: Develop a system for keeping and using financial records.

Standard 3: Describe how to use different payment methods.

Standard 4: Apply consumer skills to purchase decisions.

Credit and Debt

Overall Competency: Maintain creditworthiness, borrow at favorable terms, and manage debt.

Standard 2: Explain the purpose of a credit record and identify borrowers' credit report rights.

**National Business Education Association: Personal Finance Achievement Standards:**

Banking and Financial Institutions

Achievement Standard: Evaluate services provided by financial deposit institutions to transfer funds.

## Aligned Washington State Standards

### Standards for Mathematical Practice (Common Core State Standards):

Practice 1: Make sense of problems and persevere in solving them.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.

### Washington Mathematics Standards (Common Core State Standards):

Cluster: Extend the properties of exponents to rational exponents.

N.RN.A.1 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.

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.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.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

A.SSE.A.2 Use the structure of an expression to identify ways to rewrite it.

Cluster: Write expressions in equivalent forms to solve problems.

A.SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

3a Factor a quadratic expression to reveal the zeros of the function it defines.

3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

3c Use the properties of exponents to transform expressions for exponential functions.

A.SSE.B.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

Cluster: Solve systems of equations.

A.REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

Cluster: Understand the concept of a function and use function notation.

F.IF.A.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  $y = f(x)$ .

Cluster: Interpret functions that arise in applications in terms of the context.

F.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

Cluster: Analyze functions using different representations.

F.IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

7a Graph linear and quadratic functions and show intercepts, maxima, and minima.

7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

7c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.

7d Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

F.IF.C.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

8b Use the properties of exponents to interpret expressions for exponential functions.

F.IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

Cluster: Build a function that models a relationship between two quantities.

F.BF.A.1 Write a function that describes a relationship between two quantities.

1a Determine an explicit expression, a recursive process, or steps for calculation from a context.

1b Combine standard function types using arithmetic operations.

1c Compose functions.

Cluster: Construct and compare linear, quadratic, and exponential models and solve problems.

F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.

1c Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

F.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

F.LE.A.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.

F.LE.A.4 For exponential models, express as a logarithm the solution to  $ab^ct = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology.

Cluster: Interpret expressions for functions in terms of the situation they model.

F.LE.B.5 Interpret the parameters in a linear or exponential function in terms of a context.

Cluster: Summarize, represent, and interpret data on a single count or measurement variable

S.ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

S.ID.A.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.A.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.A.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.

Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables.

S.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

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.

6b Informally assess the fit of a function by plotting and analyzing residuals.

6c Fit a linear function for a scatter plot that suggests a linear association.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.9 Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Unit 8: Credit and Debit****Total Learning Hours for Unit: 30****Unit Summary:**

In this unit, students will:

- Explain when and why borrowing is used for the purchase of goods and services.
- Describe the risks, responsibilities, and impact associated with using credit.
- Identify the opportunity cost of credit decisions.
- Identify methods of establishing and maintaining a credit rating.
- Determine advantages and disadvantages of using credit.
- Evaluate the various methods of financing a purchase.
- Define interest as a cost of credit and explain why it is charged.
- Analyze credit card features and their impact on financial planning.
- Explain how the amount of principal, the period of the loan, and the interest rate affect the amount of interest charged.
- Explain why the interest rate varies with the amount of assumed risk.
- Calculate a payment schedule for a loan.
- Analyze various sources and types of credit, including payday loans.
- Explain credit ratings and credit reports and describe why they are important to consumers.
- Describe the relationship between a credit rating and the cost of credit.
- Analyze the sources of assistance for debt management.
- Analyze policies that support consumer rights and responsibilities.
- Compare and contrast the legal aspects of different forms of credit.
- Identify the components listed on a credit report and explain how that information is used and how it is received by and reported from the credit reporting agencies.
- Identify specific steps to minimize their exposure to identify theft.
- Summarize major consumer credit laws.
- Explain the implications of bankruptcy.
- Analyze the interrelationship between the economic system and consumer actions.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Compare two different credit card offers and determine which would be the better offer and why.
- Identify and describe factors that affect credit worthiness, borrowing, and management of debt.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

## ***Industry Standards and Competencies***

### **National JumpStart Standards:**

#### Financial Responsibility and Decision Making

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 3: Summarize major consumer protection laws.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

#### Planning and Money Management

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 3: Describe how to use different payment methods.

Standard 4: Apply consumer skills to purchase decisions.

#### Credit and Debt

Overall Competency: Maintain creditworthiness, borrow at favorable terms, and manage debt.

Standard 1: Identify the costs and benefits of various types of credit.

Standard 2: Explain the purpose of a credit record and identify borrowers' credit report rights.

Standard 3: Describe ways to avoid or correct debt problems.

Standard 4: Summarize major consumer credit laws.

### **National Business Education Association: Personal Finance Achievement Standards:**

#### Using Credit

Achievement Standard: Analyze factors that affect the choice of credit, the cost of credit, and the legal aspects of using credit.

## ***Aligned Washington State Standards***

### **Standards for Mathematical Practice (Common Core State Standards):**

Practice 1: Make sense of problems and persevere in solving them.

Practice 4: Model with mathematics.

Practice 5: Use appropriate tools strategically.

Practice 6: Attend to precision.

Practice 7: Look for and make use of structure.

### **Washington Mathematics Standards (Common Core State Standards):**

Cluster: Reason quantitatively and use units to solve problems.

N.Q.A.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.A.2 Define appropriate quantities for the purpose of descriptive modeling.

Cluster: Interpret the structure of expressions.

A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

1a Interpret part of an expression, such as terms, factors, and coefficients.

1b Interpret complicated expressions by viewing one or more of their parts as a single entity.

Cluster: Create equations that describe numbers or relationships.

A.CED.A.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.

Cluster: Summarize, represent, and interpret data on a single count or measurement variable.

S.ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

S.ID.A.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.A.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

Cluster: Summarize, represent, and interpret data on two categorical and quantitative variables.

S.ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

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.

6b Informally assess the fit of a function by plotting and analyzing residuals.

6c Fit a linear function for a scatter plot that suggests a linear association.

**Washington English Language Arts Standards (Common Core State Standards) - Science and Technology Literacy Standards (Grades 9-10):**

RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**Unit 9: Risk Management and Insurance**

**Total Learning Hours for Unit: 10**

**Unit Summary:**

In this unit, students will:

- Identify risks and how to gain protection against the consequences of risk.
- Explain the role of insurance in financial planning.
- Explain how all types of insurance are based on the concept of risk sharing and statistical probability.
- Explain the purpose and importance of property and liability insurance protection.
- Explain the purpose and importance of health, disability, and life insurance protection.
- Explain why insurance needs change during one's life.
- Examine state and federal policies, and laws providing consumer protection and consumer rights.

**Performance Assessments:**

*Performance assessments may be developed at the local level. In order to earn approval at the state level, performance assessments must be submitted within this framework.*

*It is expected that students will:*

- Calculate the financial and opportunity costs related to insurance.
- Describe at least two options available to consumers for protection against risk, fraud, and financial loss.

**Leadership Alignment:**

- Leadership activities should include 21st Century Skills embedded in curriculum and instruction for this unit of instruction. Include leadership skills that are being taught and assessed within the class for all students.
- The event, activity, or project and the associated 21st Century Skill should be clearly articulated.  
Example: Students will demonstrate the ability to communicate clearly through their group project presentation.

***Industry Standards and Competencies*****National JumpStart Standards:**

## Financial Responsibility and Decision Making

Overall Competency: Apply reliable information and systematic decision making to personal financial decisions.

Standard 1: Take responsibility for personal financial decisions.

Standard 2: Find and evaluate financial information from a variety of sources.

Standard 4: Make financial decisions by systematically considering alternatives and consequences.

Standard 5: Develop communication strategies for discussing financial issues.

Standard 6: Control personal information.

## Planning and Money Management

Overall Competency: Organize personal finances and use a budget to manage cash flow.

Standard 4: Apply consumer skills to purchase decisions.

Standard 7: Examine the purpose and importance of a will.

## Risk Management and Insurance

Overall Competency: Use appropriate and cost-effective risk management strategies.

Standard 1: Identify common types of risks and basic risk management methods.

Standard 2: Explain the purpose and importance of property and liability insurance protection.

Standard 3: Explain the purpose and importance of health, disability, and life insurance protection.

**National Business Education Association: Personal Finance Achievement Standards:**

## Personal Decision Making

Achievement Standard: Use a rational decision-making process as it applies to the roles of citizens, workers, and consumers.

## Protecting Against Risk

Achievement Standard: Analyze choices available to consumers for protection against risk and financial loss.

***Aligned Washington State Standards*****Standards for Mathematical Practice (Common Core State Standards):**

Practice 5: Use appropriate tools strategically.

**Washington Mathematics Standards (Common Core State Standards):**

Cluster: Calculate expected values and use them to solve problems.

S.MD.A.2 Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.

S.MD.A.4 Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value.

Cluster: Use probability to evaluate outcomes of decisions.

S.MD.B.5 Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.

5a Find the expected payoff for a game of chance.

5b Evaluate and compare strategies on the basis of expected values.



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RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

**21st Century Skills**

Students will demonstrate in this course:

**LEARNING & INNOVATION**

**Creativity and Innovation**

- Think Creatively
- Work Creatively with Others
- Implement Innovations

**Critical Thinking and Problem Solving**

- Reason Effectively
- Use Systems Thinking
- Make Judgments and Decisions
- Solve Problems

**Communication and Collaboration**

- Communicate Clearly
- Collaborate with Others

**INFORMATION, MEDIA & TECHNOLOGY SKILLS**

**Information Literacy**

- Access and Evaluate Information
- Use and Manage Information

**Media Literacy**

- Analyze Media
- Create Media Products

**Information, Communications and Technology (ICT Literacy)**

- Apply Technology Effectively

**LIFE & CAREER SKILLS**

**Flexibility and Adaptability**

- Adapt to Change
- Be Flexible

**Initiative and Self-Direction**

- Manage Goals and Time
- Work Independently
- Be Self-Directed Learners

**Social and Cross-Cultural**

- Interact Effectively with Others
- Work Effectively in Diverse Teams

**Productivity and Accountability**

- Manage Projects
- Produce Results

**Leadership and Responsibility**

- Guide and Lead Others
- Be Responsible to Others