

Personal Financial Literacy Expectations

Addendum to Economics and Mathematics Standards Documents



Adopted: December 10, 2009

Purpose of Personal Financial Literacy Addendum Document

This document pulls all of the personal financial literacy expectations from the Colorado social studies and mathematics standards into one document. It is intended to support planning and implementation of personal financial literacy expectations. It is not intended to represent a separate set of standards.

Principles of the Standards Review Process Personal Financial Literacy

The Colorado Model Content Standards revision process has been informed by these guiding principles:

- Begin with the end in mind; define what prepared graduates need to be successful using 21st century skills in our global economy.
- Align K-12 standards with early childhood expectations and higher education.
- Change is necessary.
- Standards will be deliberately designed for clarity, rigor, and coherence.
- Standards will be fewer, higher, and clearer.
- Standards will be actionable.

Notable Information regarding to the Colorado Academic Standards and Personal Financial Literacy

The most evident change to the Colorado standards result from a change from grade band standards (K-4, 5-8, and 9-12) to grade level expectations. These are explained here in addition to other changes to the standards.

1. **Impact of standards articulation by grade level.** The original Colorado Model Content Standards were designed to provide districts with benchmarks of learning for grades 4, 8, and 12. The standards revision subcommittee was charged with providing more a specific learning trajectory of concepts and skills across grade levels, from early school readiness to post-secondary preparedness. Articulating standards by grade level in each area affords greater specificity (clearer standards) in describing the learning path of important across levels (higher standards), while focusing on a few key ideas at each grade level (fewer standards).
2. **Articulation of high school standards.** High school standards are not articulated by grade level but by standard. This is intended to support district decisions on how best to design curriculum and courses, whether through an integrated approach, a traditional course sequence, or through alternative approaches such as through Career and Technical Education. The high school standards delineate what all high school students should know and be able to do in order to be well prepared for any post-secondary option. The individual standards are not meant to represent a course or a particular timeframe. All students should be able to reach these rigorous standards within four years. Students with advanced capability may accomplish these expectations in a shorter timeframe leaving open options for study of other advanced mathematics.
3. **Integration of P-2 Council's recommendations.** The subcommittees have integrated the P-2 Building Blocks document into the P-12 standards, aligning expectations to a great degree. Important concepts and skill are clearly defined across these foundational years, detailing expectations to a much greater extent for teachers and parents.
4. **Standards are written for mastery.** The proposed revisions to standards define mastery of concepts and skills. Mastery means that a student has facility with a skill or concept in multiple contexts. This is not an indication that instruction on a grade level expectation begins and only occurs at that grade level. Maintenance of previously mastered concepts and skills and scaffolding future learning are the domain of curriculum and instruction, not standards.

5. **Intentional integration of technology use, most notably at the high school level.** Using appropriate technology to allow students access to concepts and skills in ways that mirror the 21st century workplace.
6. **Intentional integration of personal financial literacy.** Personal financial literacy was integrated P-13 in the Economics and Mathematics standards in order to ensure the school experience prepared students for the financial expectations that await them on leaving school. Financial Literacy expectations are indicated with (PFL) within the Mathematics and Economics document and the content focuses on four main areas of learning that are considered essential:

Goal Setting, Financial Responsibility and Careers

Understand the importance of personal financial goal setting and responsibility and apply those concepts in a consumer-driven, global marketplace.

Planning, Income, Saving and Investing

Create and manage a financial plan for short-term and long-term financial security to make informed spending and saving decisions that are compatible with changing personal goals.

Using Credit

Analyze and manage factors that affect the choice, credit, costs, sources and legal aspects of using credit.

Risk Management and Insurance

Analyze and apply appropriate and cost effective risk management strategies.

Personal Financial Literacy Subcommittee

Ms. Joan Andersen
Higher Education
Chair of Economics and Investments
Colorado Community College System
Faculty, Arapahoe Community College
Centennial

Ms. Deann Bucher
District
Social Studies Coordinator
Boulder Valley School District
Boulder

Ms. Pam Cummings
High School
Secondary High School Teacher
Jefferson County Public Schools
Littleton

Ms. Annetta J. Gallegos
District
Career and Technical Education
Denver Public Schools
Denver

Dr. Jack L. Gallegos
High School
Teacher
Englewood High School
Englewood

Ms. Dora Gonzales
Higher Education
Field Supervisor/Instructor
Alternative Licensure Program
Pikes Peak BOCES
Colorado Springs

Mr. Richard Martinez, Jr.
Business
President and CEO
Young Americans Center for Financial Education
and Young Americans Bank
Denver

Ms. Julie McLean
Business
Director of Financial Education
Arapahoe Credit Union
Arvada

Ms. Linda Motz
High School
Family and Consumer Sciences Teacher
Palisade High School
Grand Junction

Ms. Patti (Rish) Ord
High School
Business Teacher and Department Coordinator
Overland High School
Aurora

Mr. R. Bruce Potter, CFP®
Business
President, Potter Financial Solutions, Inc.
Westminster

Mr. Ted Seiler
District
Career and Technical Education Coordinator
Cherry Creek School District
Greenwood Village

Mr. Tim Taylor
Business
President
Colorado Succeeds
Denver

Ms. Elizabeth L. Whitham
Higher Education
Business and Economics Faculty
Lamar Community College
Lamar

Ms. Robin Wise
Business
President and CEO
Junior Achievement – Rocky Mountain, Inc.
Denver

Ms. Coni S. Wolfe
High School
Business Department Chairperson
Mesa County Valley School District
Palisade

References used by the financial literacy subcommittee

The subcommittees used a variety of resources representing a broad range of perspectives to inform their work. Those references include:

- **Jump\$tart Coalition for Personal Financial Literacy**
- **Arizona: Standards Based Teaching and Learning**
- **Wisconsin's Model Academic Standards for Personal Financial Literacy**
- **Economics Education and Financial Literacy: Commonwealth of Virginia**
- **Personal Finance and Building Wealth: Tennessee**

General Standards Document Organization and Construction

As the subcommittee began the revision process to improve the existing standards, it became evident that the way the standards information was organized, defined, and constructed needed to change from the existing documents. The new design is intended to provide more clarity and direction for teachers, and to show how 21st century skills and the elements of school readiness and postsecondary and workforce readiness indicators give depth and context to essential learning.

The “Continuum of State Standards Definitions” section that follows shows the hierarchical order of the standards components. The “Standards Template” section demonstrates how this continuum is put into practice.

The elements of the revised standards are:

Prepared Graduate Competencies: The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Standard: The topical organization of an academic content area.

High School Expectations: The articulation of the concepts and skills of a standard that indicates a student is making progress toward being a prepared graduate. *What do students need to know in high school?*

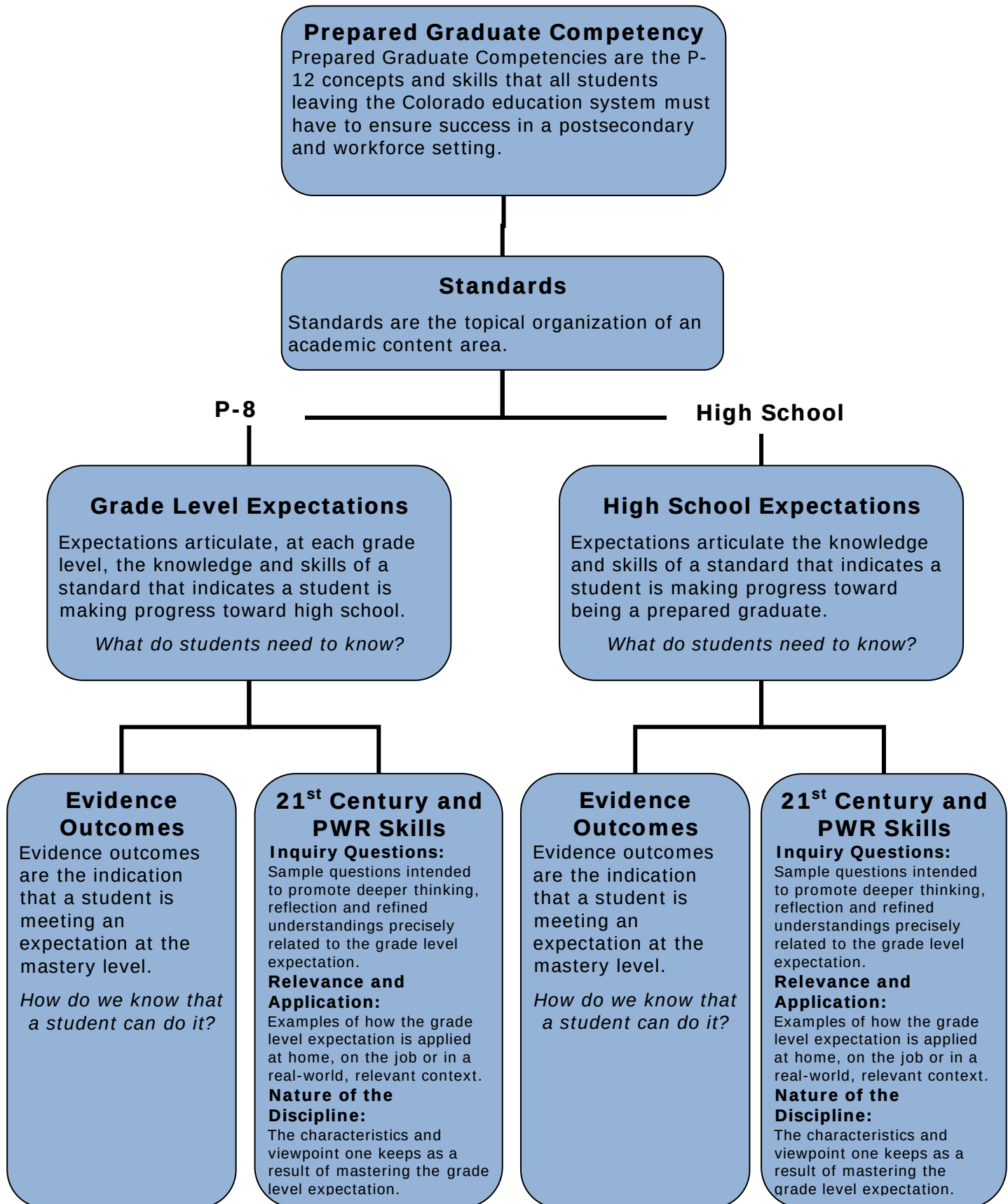
Grade Level Expectations: The articulation (at each grade level), concepts, and skills of a standard that indicate a student is making progress toward being ready for high school. *What do students need to know from preschool through eighth grade?*

Evidence Outcomes: The indication that a student is meeting an expectation at the mastery level. *How do we know that a student can do it?*

21st Century Skills and Readiness Competencies: Includes the following:

- ***Inquiry Questions:***
Sample questions are intended to promote deeper thinking, reflection and refined understandings precisely related to the grade level expectation.
- ***Relevance and Application:***
Examples of how the grade level expectation is applied at home, on the job or in a real-world, relevant context.
- ***Nature of the Discipline:***
The characteristics and viewpoint one keeps as a result of mastering the grade level expectation.

Continuum of State Standards Definitions



STANDARDS TEMPLATE

Content Area: NAME OF CONTENT AREA

Standard: The topical organization of an academic content area.

Prepared Graduates:

- The P-12 concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting

High School and Grade Level Expectations

Concepts and skills students master:

Grade Level Expectation: High Schools: The articulation of the concepts and skills of a standard that indicates a student is making progress toward being a prepared graduate.

Grade Level Expectations: The articulation, at each grade level, the concepts and skills of a standard that indicates a student is making progress toward being ready for high school.

What do students need to know?

Evidence Outcomes

Students can:

Evidence outcomes are the indication that a student is meeting an expectation at the mastery level.

How do we know that a student can do it?

21st Century Skills and Readiness Competencies

Inquiry Questions:

Sample questions intended to promote deeper thinking, reflection and refined understandings precisely related to the grade level expectation.

Relevance and Application:

Examples of how the grade level expectation is applied at home, on the job or in a real-world, relevant context.

Nature of the Discipline:

The characteristics and viewpoint one keeps as a result of mastering the grade level expectation.

Colorado's Description for School Readiness

(Adopted by the State Board of Education, December 2008)

School readiness describes both the preparedness of a child to engage in and benefit from learning experiences, and the ability of a school to meet the needs of all students enrolled in publicly funded preschools or kindergartens. School readiness is enhanced when schools, families, and community service providers work collaboratively to ensure that every child is ready for higher levels of learning in academic content.

Colorado's Description of Postsecondary and Workforce Readiness

(Adopted by the State Board of Education, June 2009)

Postsecondary and workforce readiness describes the knowledge, skills, and behaviors essential for high school graduates to be prepared to enter college and the workforce and to compete in the global economy. The description assumes students have developed consistent intellectual growth throughout their high school career as a result of academic work that is increasingly challenging, engaging, and coherent. Postsecondary education and workforce readiness assumes that students are ready and able to demonstrate the following without the need for remediation: Critical thinking and problem-solving; finding and using information/information technology; creativity and innovation; global and cultural awareness; civic responsibility; work ethic; personal responsibility; communication; and collaboration.

How These Skills and Competencies are Embedded in the Revised Standards

Three themes are used to describe these important skills and competencies and are interwoven throughout the standards: *inquiry questions; relevance and application; and the nature of each discipline*. These competencies should not be thought of stand-alone concepts, but should be integrated throughout the curriculum in all grade levels. Just as it is impossible to teach thinking skills to students without the content to think about, it is equally impossible for students to understand the content of a discipline without grappling with complex questions and the investigation of topics.

Inquiry Questions – Inquiry is a multifaceted process requiring students to think and pursue understanding. Inquiry demands that students (a) engage in an active observation and questioning process; (b) investigate to gather evidence; (c) formulate explanations based on evidence; (d) communicate and justify explanations, and; (e) reflect and refine ideas. Inquiry is more than hands-on activities; it requires students to cognitively wrestle with core concepts as they make sense of new ideas.

Relevance and Application – The hallmark of learning a discipline is the ability to apply the knowledge, skills, and concepts in real-world, relevant contexts. Components of this include solving problems, developing, adapting, and refining solutions for the betterment of society. The application of a discipline, including how technology assists or accelerates the work, enables students to more fully appreciate how the mastery of the grade level expectation matters after formal schooling is complete.

Nature of Discipline – The unique advantage of a discipline is the perspective it gives the mind to see the world and situations differently. The characteristics and viewpoint one keeps as a result of mastering the grade level expectation is the nature of the discipline retained in the mind's eye.

Personal Financial Literacy in the 21st Century

Colorado's description of 21st century skills is a synthesis of the essential abilities students must apply in our fast changing world. Today's students need a repertoire of knowledge and skills that are more diverse, complex, and integrated than any previous generation. Personal Financial Literacy is inherently demonstrated in each of Colorado 21st Century Skills, as follows:

Critical Thinking & Reasoning

Financial responsibility is grounded in critical thinking and reasoning. Personal financial literacy provides the content and structure that make it possible to be a productive decision making citizen.

Information Literacy

Personal financial literacy equips a student with the tools and habits of mind to organize and interpret a multitude of resources. Students literate in information discernment can effectively analyze various sources for both positive and negative implications, detect bias, use learning tools, including technology, and clearly communicate thoughts using sound reasoning.

Collaboration

Financial responsibility involves the give and take of ideas between people. In the course of understanding personal financial responsibility, students offer ideas, strategies, solutions, justifications, and proofs for others to evaluate. In turn, the student interprets and evaluates the ideas, strategies, solutions, justifications of others.

Self-direction

Understanding personal financial literacy requires a productive disposition, curiosity and self-direction. This involves monitoring and assessing one's thinking and persisting in search of patterns, relationships, cause and effect, and an understanding of the events.

Invention

Invention is the key element of the expansion both within as students make and test theories, create and use financial tools, understand cause and effect, make connections among ideas, strategies and solutions and embrace an entrepreneurial spirit.

Personal Financial Literacy

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
High School	
Economics	4. Design, analyze, and apply a financial plan based on short- and long-term financial goals 5. Analyze strategic spending, saving, and investment options to achieve the objectives of diversification, liquidity, income, and growth 6. The components of personal credit to manage credit and debt 7. Identify, develop, and evaluate risk-management strategies
Mathematics: 1. Number Sense, Properties, and Operations	2. Formulate, represent, and use algorithms with real numbers flexibly, accurately, and efficiently
Mathematics: 2. Patterns, Functions, and Algebraic Structures	6. Quantitative relationships in the real world can be modeled and solved using functions
Mathematics: 3. Data Analysis, Statistics, and Probability	5. Probability models outcomes for situations in which there is inherent randomness, quantifying the degree of certainty in terms of relative frequency of occurrence
Eighth Grade	
Economics	2. Manage personal credit and debt
Mathematics: 1. Number Sense, Properties, and Operations	2. Formulate, represent, and use algorithms with rational numbers flexibly, accurately, and efficiently
Seventh Grade	
Economics	2. The distribution of resources influences economic production and individual choices
Mathematics: 1. Number Sense, Properties, and Operations	2. Formulate, represent, and use algorithms with integers and positive rational numbers flexibly, accurately, and efficiently 3. Proportional reasoning involves comparisons and multiplicative relationships among ratios
Sixth Grade	
Economics	2. Saving and investing are key contributors to financial well being
Mathematics: 1. Number Sense, Properties, and Operations	2. Quantities can be expressed and compared using ratios and rates

Personal Financial Literacy

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
Fifth Grade	
Economics	2. Use of financial institutions to manage personal finances
Mathematics: 1. Number Sense, Properties, and Operations	2. In the real number system, commonly used rational numbers have multiple equivalent representations
Mathematics: 2. Patterns, Functions, and Algebraic Structures	1. Number patterns and relationships can be described using a variety of tools 2. When a relationship exists between two quantities, a change in one results in a change in the other
Fourth Grade	
Economics	2. The relationship between choice and opportunity cost
Mathematics: 3. Data Analysis, Statistics, and Probability	2. Mathematical models are used to test predictions about the likelihood of events
Third Grade	
Economics	2. Describe how to meet short-term financial goals
Mathematics: 1. Number Sense, Properties, and Operations	4. Multiplying and dividing are inverse operations modeled in a variety of ways
Second Grade	
Economics	2. Apply decision-making processes to financial decision making
Mathematics: 1. Number Sense, Properties, and Operations	2. Formulate, represent, and use algorithms to add and subtract two-digit whole numbers with flexibility, accuracy, and efficiency
Mathematics: 3. Data Analysis, Statistics, and Probability	2. Mathematical models are used to describe the likelihood of an outcome or event

Personal Financial Literacy

Grade Level Expectations at a Glance

Standard	Grade Level Expectation
First Grade	
Economics	2. Identify short term financial goals
Mathematics: 1. Number Sense, Properties, and Operations	1. The whole number system describes place value relationships from ones to 100 and forms the foundation for efficient algorithms 2. Adding and subtracting involve composing and decomposing using a variety of strategies
Kindergarten	
Economics	2. Discuss how purchases can be made to meet wants and needs
Mathematics: 1. Number Sense, Properties, and Operations	2. Adding and subtracting to 10 involves composing and decomposing using a variety of strategies and representations
Mathematics: 4. Shape, Dimension, and Geometric Relationships	1. Measurement is used to compare and order objects
Preschool	
Economics	2. Recognize money and identify its purpose
Mathematics: 1. Number Sense, Properties, and Operations	1. Quantities can be represented and counted
Mathematics: 4. Shape, Dimension, and Geometric Relationships	1. Measurement is used to compare objects

Content Area: Social Studies

Standard: 3. Economics

Prepared Graduates:

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: High School

Concepts and skills students master:

1. Design, analyze, and apply a financial plan based on short- and long-term financial goals (PFL)

Evidence Outcomes

Students can:

- a. Develop a financial plan including a budget based on short- and long-term goals
- b. Analyze financial information for accuracy, relevance, and steps for identity protection
- c. Describe factors affecting take-home pay
- d. Identify sources of personal income and likely deductions and expenditures as a basis for a financial plan
- e. Describe legal and ethical responsibilities regarding tax liabilities

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. How can you develop short- and long-term financial goals and plans that reflect personal objectives?
2. How does a consumer determine the accuracy, relevancy, and security of financial information?
3. What is the role that various sources of income play in a financial plan?
4. What are the financial and legal consequences of not paying your taxes?
5. What is the role of education in building financial security?

Relevance and Application:

1. Individuals create long- and short-term financial plans that include predictions about education, costs; potential to achieve financial goals; projected income; likely expenditures, savings and interest; credit or loans; and investment decisions including diversification.
2. Individuals are able use the appropriate contracts and identify each party's basic rights and responsibilities to protect financial well-being.
3. Technology allows individuals to research and track information regarding personal finances using such tools as online banking and brokerage accounts.

Nature of Economics:

1. Financially responsible individuals describe factors that influence financial planning.
2. Financially responsible individuals plan for tax liabilities.
3. Financially responsible individuals consider opportunity costs of saving over spending and vice versa.
4. Financially responsible individuals analyze economic cycles and make predictions regarding economic trends.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: High School**Concepts and skills students master:**

5. Analyze strategic spending, saving, and investment options to achieve the objectives of diversification, liquidity, income, and growth (PFL)

Evidence Outcomes**Students can:**

- a. Compare and contrast the variety of investments available for a diversified portfolio
- b. Evaluate factors to consider when managing savings and investment accounts
- c. Explain how economic cycles affect personal financial decisions
- d. Describe the appropriate types of investments to achieve the objectives of liquidity, income and growth

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. How does a consumer choose between investment options?
2. How might changes in the economic cycle affect future earnings on an individual's investments?
3. What are some ways that you might rate the security, accuracy, and relevancy of financial information?
4. How does compound interest manifest in investment and debt situations?

Relevance and Application:

1. Investigation of different investment strategies helps to identify which strategies are appropriate for different life stages such as early adulthood through to retirement.
2. The creation of a plan to diversify a portfolio of investments balances risks and returns and prepares for a solid financial future.
3. A personal career plan includes educational requirements, costs, and analysis of the potential job demand to achieve financial well-being.

Nature of Economics:

1. Financially responsible individuals carefully consider the amount of financial risk that they can tolerate based on life stage and plan for changes in the economic cycles.
2. Financially responsible individuals create plans based on sound economic principles to maximize their standard of living over time.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: High School**Concepts and skills students master:****6. The components of personal credit to manage credit and debt (PFL)****Evidence Outcomes****Students can:**

- a. Analyze various lending sources, services, and financial institutions
- b. Investigate legal and personal responsibilities affecting lenders and borrowers
- c. Make connections between building and maintaining a credit history and its impact on lifestyle

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. Why is it important to know the similarities and differences of revolving credit, personal loans, and mortgages?
2. How does the law protect both borrowers and lenders?
3. Why is a good credit history essential to the ability to purchase goods and insurance, and gain employment?
4. When should you use revolving credit and/or personal loans?

Relevance and Application:

1. The understanding of the components of personal credit allows for the management of credit and debt. For example, individuals can use an amortization schedule to examine how mortgages differ, check a credit history, know the uses of and meaning of a credit score, and use technology to compare costs of revolving credit and personal loans.
2. Knowledge of the penalties that accompany bad credit, such as the inability to qualify for loans, leads to good financial planning.

Nature of Economics:

1. Financially responsible consumers know their rights and obligations when using credit.
2. Financially responsible consumers frequently check their own credit history to verify its accuracy and amend it when inaccurate.
3. Financially responsible consumers make decisions that require weighing benefit against cost.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: High School**Concepts and skills students master:**

7. Identify, develop, and evaluate risk-management strategies (PFL)

Evidence Outcomes**Students can:**

- a. Differentiate between types of insurance
- b. Explain the function and purpose of insurance
- c. Select and evaluate strategies to mitigate risk

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. What are the benefits of car, health, life, mortgage, long-term care, liability, disability, home and apartment insurance?
2. How does a consumer choose between various insurance plans?
3. How does insurance help consumers to prepare for the unexpected?
4. What additional ways can individuals alleviate financial risks?

Relevance and Application:

1. The knowledge of how to evaluate, develop, revise, and implement risk-management strategies allow individuals to be prepared for the future. For example, a plan for insurance may change over the course of life depending on changing circumstances.
2. Individuals seek advice and counsel from insurance companies, financial planners, and other businesses on risk management.

Nature of Economics:

1. Financially responsible individuals mitigate the risks associated with everyday life through planning, saving, and insurance.
2. Financially responsible individuals consider insurance as a part of their financial plan.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency

Grade Level Expectation: High School

Concepts and skills students master:

2. Formulate, represent, and use algorithms with real numbers flexibly, accurately, and efficiently

Evidence Outcomes

Students can:

(These evidence outcomes will be assessed in Standard 2, 3, and 4).

- a. Use appropriate computation methods that encompass estimation and calculation
- b. Use technology to perform operations (addition, subtraction, multiplication, and division) on numbers written in scientific notation
- c. **Describe factors affecting take-home pay and calculate the impact (PFL)**
- d. **Design and use a budget, including income (net take-home pay) and expenses (mortgage, car loans, and living expenses) to demonstrate how living within your means is essential for a secure financial future (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. Can numbers ever be too big or too small to be useful?
2. How much money is enough for retirement? (PFL)
3. Is education worth the cost? (PFL)

Relevance and Application:

1. The reading, interpreting, and writing of numbers in scientific notation with and without technology is used extensively in the natural sciences such as representing large or small quantities such as speed of light, distance to other planets, distance between stars, the diameter of a cell, and size of a micro-organism.
2. Fluency with computation and estimation allows individuals to analyze aspects of personal finance, such as calculating a monthly budget, estimating the amount left in a checking account, making informed purchase decisions, and computing a probable paycheck given a wage (or salary), tax tables, and other deduction schedules.

Nature of Mathematics:

1. Using mathematics to solve a problem requires choosing what mathematics to use; making simplifying assumptions, estimates, or approximations; computing; and checking to see whether the solution makes sense.

Content Area: Mathematics

Standard: 2. Patterns, Functions, and Algebraic Structures

Prepared Graduates:

- Use critical thinking to recognize problematic aspects of situations, create mathematical models, and present and defend solutions

Grade Level Expectation: High School

Concepts and skills students master:

6. Quantitative relationships in the real world can be modeled and solved using functions

Evidence Outcomes	21 st Century Skills and Readiness Competencies
Students can: a. Represent, solve*, and interpret problems in various contexts using linear, quadratic, and exponential functions b. Represent, solve*, and interpret problems involving direct and inverse variations and a combination of direct and inverse variation c. Analyze* the impact of interest rates on a personal financial plan (PFL) d. Evaluate* the costs and benefits of credit (PFL) e. Analyze various lending sources, services, and financial institutions (PFL) *Using all tools including graphing technology	Inquiry Questions: 1. What phenomena can be modeled with particular functions? 2. Which financial applications can be modeled with exponential functions? Linear functions? 3. What elementary function or functions best represent a given scatter plot of two-variable data? 4. How much would today's purchase cost tomorrow?
	Relevance and Application: 1. The knowledge of how functions model real-world phenomena allows exploration and improved understanding of complex systems such as how population growth may affect the environment , how interest rates or inflation affect a personal budget, how stopping distance is related to reaction time and velocity, and how volume and temperature of a gas are related. 2. Biologists use polynomial curves to model the shapes of jaw bone fossils. They analyze the polynomials to find potential evolutionary relationships among the species. 3. Physicists use basic linear and quadratic functions to model the motion of projectiles.
	Nature of Mathematics: 1. Mathematicians use their knowledge of functions to create accurate models of complex systems. 2. Mathematicians use models to better understand systems and make predictions about future systemic behavior.

Content Area: Mathematics

Standard: 3. Data Analysis, Statistics, and Probability

Prepared Graduates:

- Recognize and make sense of the many ways that variability, chance, and randomness appear in a variety of contexts

Grade Level Expectation: High School

Concepts and skills students master:

5. Probability models outcomes for situations in which there is inherent randomness, quantifying the degree of certainty in terms of relative frequency of occurrence

Evidence Outcomes

Students can:

- Develop* simulations that demonstrate probability as a long-run relative frequency
- Apply and solve problems using the concepts of independence and conditional probability
- Apply and solve problems using the concept of mutually exclusive properties when combining probabilities
- Evaluate* and interpret probabilities using a normal distribution
- Find* and interpret the expected value and standard deviation of a discrete random variable X
- Analyze* the cost of insurance as a method to offset the risk of a situation (PFL)**

*Using all tools including graphing technology

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. Can probability be used to model all types of uncertain situations? For example, can the probability that the 50th president of the United States will be female be determined?
2. How and why are simulations used to determine probability when the theoretical probability is unknown?
3. How does probability relate to obtaining insurance?

Relevance and Application:

1. Comprehension of probability allows informed decision-making, such as whether the cost of insurance is less than the expected cost of illness, when the deductible on car insurance is optimal, whether gambling pays in the long run, or whether an extended warranty justifies the cost.
2. Probability is used in a wide variety of disciplines including physics, biology, engineering, finance, and law. For example, employment discrimination cases often present probability calculations to support a claim.

Nature of Mathematics:

1. Some work in mathematics is much like a game. Mathematicians choose an interesting set of rules and then play according to those rules to see what can happen.
2. Mathematicians explore randomness and chance through probability.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Eighth Grade**Concepts and skills students master:****2. Manage personal credit and debt (PFL)****Evidence Outcomes****Students can:**

- a. Identify and differentiate between purposes and reasons for debt
- b. Analyze benefits and costs of credit and debt
- c. Compare sources of credit
- d. Describe the components of a credit history

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. Why is understanding credit and debt important?
2. How do you manage debt?
3. Why is it important to know about different types of credit?
4. How do you view debt and credit?
5. When is debt useful?

Relevance and Application:

1. Technology aids in the research of purchases to find the lowest available cost, compare sources of credit, and track debt.
2. Analysis of the cost of borrowing helps to determine how to manage debt for such items as higher education and automobile purchases.
3. Technology is used to research credit history, credit scores, and the variables that impact a credit history to protect personal financial security.

Nature of Economics:

1. Financially responsible individuals manage debt.
2. Financially responsible individuals understand the responsibilities associated with the use of credit.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency

Grade Level Expectation: Eighth Grade

Concepts and skills students master:

2. Formulate, represent, and use algorithms with rational numbers flexibly, accurately, and efficiently

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Add, subtract, multiply and divide rational numbers including integers, positive and negative fractions and decimals b. Apply computational methods to solve multi-step application problems involving percents and rational numbers c. Analyze how credit and debt impact personal financial goals (PFL)	Inquiry Questions: 1. How do operations with rational numbers compare to operations with whole numbers? 2. How do you know if a computational strategy is sensible? 3. Why would estimation be used in problem-solving?
	Relevance and Application: 1. Computational fluency with rational numbers allows individuals to accomplish daily tasks in life and work such as adjusting recipes, comparing the cost of credit from different providers, calculating overtime pay, determining selling prices to make profits, calculating interest, finding percent error, gratuities, or fees. 2. Rational numbers are used extensively in measurement tasks such as home remodeling, clothes alterations, graphic design, and engineering.
	Nature of Mathematics: 1. Mathematicians describe their processes and solutions using careful vocabulary and precise notation.

Content Area: Social Studies

Standard: 3. Economics

Prepared Graduates:

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Seventh Grade

Concepts and skills students master:

2. The distribution of resources influences economic production and individual choices (Economics and PFL)

Evidence Outcomes	21 st Century Skills and Readiness Competencies
Students can: - Give examples that illustrate connections between resources and manufacturing - Identify patterns of trade between places based on distribution of resources - Compare and contrast the relative value and different uses of several types of resources - Use supply and demand analysis to explain how prices allocate scarce goods in a market economy - Define resources from an economic and personal finance perspective Explain the role of taxes in economic production and distribution of resources (PFL) Define the various types of taxes students will pay as adults (PFL) Demonstrate the impact of taxes on individual income and spending (PFL)	Inquiry Questions: - How is it advantageous and disadvantageous when a country has valuable resources located within its borders? - How does a country acquire resources it does not have? - How does the availability or the lack of resources influence production and distribution? - What would countries look like without taxes?
	Relevance and Application: Various factors that influence production, including resources, supply and demand, and price (PFL), affect individual consumer choices over time. - Technology is used to explore relationships of economic factors and issues related to individual consumers. - Analysis of the distribution and location of resources helps businesses to determine business practices such as large companies locating near transportation.
	Nature of Economics: - Economic thinkers analyze factors impacting production, distribution, and consumption. - Economic thinkers gather data regarding trends in production, use of resources, and consumer choices. - Financially responsible individuals understand the purposes of and responsibility to pay various taxes such as property, income and sales.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency

Grade Level Expectation: Seventh Grade

Concepts and skills students master:

2. Formulate, represent, and use algorithms with integers and positive rational numbers flexibly, accurately, and efficiently

Evidence Outcomes	21st Century Skills and Readiness Competencies
Students can: a. Simplify numeric expressions using the order of operations b. Add, subtract, multiply, and divide integers c. Use mental math and estimation strategies to solve problems involving percents d. Solve problems involving percent of a number, discounts, taxes, simple interest, percent increase, and percent decrease (PFL)	Inquiry Questions: 1. How do operations with rational numbers compare to operations with integers? 2. How do you know if a computational strategy is sensible? 3. Why does the order of operations exist? 4. What other tasks/processes require the use of a strict order of steps?
	Relevance and Application: 1. The use and understanding algorithms help individuals spend money wisely. For example, compare discounts to determine best buys and compute sales tax. 2. Estimation with rational numbers enables individuals to make decisions quickly and flexibly in daily life such as estimating a total bill at a restaurant, the amount of money left on a gift card, and price markups and markdowns. . 3. People use percentages to represent quantities in real-world situations such as amount and types of taxes paid, increases or decreases in population, and changes in company profits or worker wages).
	Nature of Mathematics: 1. Mathematicians see algorithms as familiar tools in a tool chest. They combine algorithms in different ways and use them flexibly to accomplish various tasks.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Make both relative (multiplicative) and absolute (arithmetic) comparisons between quantities. Multiplicative thinking underlies proportional reasoning

Grade Level Expectation: Seventh Grade

Concepts and skills students master:

3. Proportional reasoning involves comparisons and multiplicative relationships among ratios

Evidence Outcomes

Students can:

- Use ratio relationships to solve for a missing value in a proportion
- Model proportional relationships with bar models, ratio tables, and similar figures
- Explain the difference between a ratio, rate, and unit rate
- Estimate and compute unit cost of consumables (to include unit conversions if necessary) sold in quantity to make purchase decisions based on cost and practicality (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

- What information can be determined from a relative comparison that cannot be determined from an absolute comparison?
- What comparisons can be made using ratios?
- How do you know when a proportional relationship exists?
- How can proportion be used to argue fairness?
- When is it better to use an absolute comparison?
- When is it better to use a relative comparison?

Relevance and Application:

- The use of ratios, rates, and proportions allows sound decision-making in daily life such as determining best values when shopping, mixing cement or paint, adjusting recipes, calculating car mileage, using speed to determine travel time, or enlarging or shrinking copies.
- Proportional reasoning is used extensively in the workplace. For example, determine dosages for medicine; develop scale models and drawings; adjusting salaries and benefits; or prepare mixtures in laboratories.
- Proportional reasoning is used extensively in geometry such as determining properties of similar figures, and comparing length, area, and volume of figures.

Nature of Mathematics:

- Mathematicians look for relationships that can be described simply in mathematical language and applied to a myriad of situations. Proportions are a powerful mathematical tool because proportional relationships occur frequently in diverse settings.

Content Area: Social Studies

Standard: 3. Economics

Prepared Graduates:

- Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy

Grade Level Expectation: Sixth Grade

Concepts and skills students master:

2. Saving and investing are key contributors to financial well-being (PFL)

Evidence Outcomes

Students can:

- a. Differentiate between saving and investing
- b. Give examples of how saving and investing can improve financial well-being
- c. Describe the advantages and disadvantages of saving for short- and medium-term goals
- d. Explain the importance of an emergency fund
- e. Explain why saving is a prerequisite to investing
- f. Explain how saving and investing income can improve financial well-being

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. Why is it important to save and invest?
2. What types of items would an individual save for to purchase?
3. What are risky investments and why would someone make that type of investment?
4. Why is it important to research and analyze information prior to making financial decisions?

Relevance and Application:

1. It's important to understand why to save and invest for the future.
2. Technology allows individuals and businesses to track investment earnings.
3. The creation of criteria for use of emergency funds helps to save responsibly.
4. The comparison of returns of various savings and investment options and an adjustment of the investments for good financial decision-making.

Nature of Economics:

1. Financially responsible individuals manage savings and investments for their financial well-being.
2. Financially responsible individuals understand the risks and rewards associated with investing and saving.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Make both relative (multiplicative) and absolute (arithmetic) comparisons between quantities. Multiplicative thinking underlies proportional reasoning

Grade Level Expectation: Sixth Grade

Concepts and skills students master:

3. Quantities can be expressed and compared using ratios and rates

Evidence Outcomes

Students can:

- Apply the multiplicative identity to create equivalent fractions and to reduce fractions to simplest form
- Express the comparison of two whole number quantities using differences, part-to-part ratios, and part-to-whole ratios in real contexts, including investing and saving (PFL)**
- Compute unit rates in real-world situations involving mixtures, concentrations, and distance-time relationships

21st Century Skills and Readiness Competencies

Inquiry Questions:

- What is the golden ratio and where does it appear in nature?
- How are ratios different from fractions?
- What is the difference between quantity and number?

Relevance and Application:

- Knowledge of ratios and rates allows sound decision-making in daily life such as determining best values when shopping, creating mixtures, adjusting recipes, calculating car mileage, using speed to determine travel time, or making saving and investing decisions.
- Ratios and rates are used to solve important problems in science, business, and politics. For example developing more fuel-efficient vehicles, understanding voter registration and voter turnout in elections, or finding more cost-effective suppliers.
- Rates and ratios are used in mechanical devices such as bicycle gears, car transmissions, and clocks.

Nature of Mathematics:

- Mathematicians develop simple procedures to express complex mathematical concepts.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Fifth Grade**Concepts and skills students master:**

- 2. Use of financial institutions to manage personal finances (PFL)

Evidence Outcomes**Students can:**

- a. Identify different financial institutions
- b. Identify the products and services of financial institutions to include but not limited to: checking accounts, savings accounts, investments, and loans
- c. Compare and contrast financial institutions, their products, and services

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. What factors are important when establishing savings or investments goals?
2. What risks and benefits are associated with spending versus saving and investing?
3. How can a checking account help to decide how to spend and save?
4. Why do people use financial institutions and not self-banking?
5. How do people choose a financial institution?
6. Why do people need income?

Relevance and Application:

1. Analysis of the benefits and risks of investing and saving with “virtual” and “brick and mortar” financial institutions helps to make informed financial decisions.
2. Evaluation of the opportunity costs help to make financial decisions.
3. Technology is used to track and graph the interest accrued on a “virtual” investments, checking and savings accounts, investments, and loans.

Nature of Economics:

1. Financially responsible individuals make informed decisions about saving and investing for short- and long-term goals.
2. Financially responsible individuals research, analyze, and make choices regarding their needs when using financial institutions.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error

Grade Level Expectation: Fifth Grade

Concepts and skills students master:

2. In the real number system, commonly used rational numbers have multiple equivalent representations

Evidence Outcomes	21 st Century Skills and Readiness Competencies
Students can: - Find equivalent forms of commonly used fractions, decimals, and percents using models, drawings, and computational strategies Use common fractions and percents to calculate parts of whole numbers in problem situations including comparisons of savings rates at different financial institutions (PFL) - Model addition, subtraction, and multiplication of fractions, decimals, and percents - Compose and decompose multi-digit whole numbers and decimals based on place value - Represent numbers to 1,000,000 with expanded notation and exponents	Inquiry Questions: - Why can't the denominator of a fraction be zero? - Are there more fractions than whole numbers? - Why can a decimal model always be immediately read as a fraction, but a fraction model cannot always be immediately read as a decimal? - Is there a smallest fraction? Why? - Is there a decimal closest to one? Why?
	Relevance and Application: - Fluent conversion between commonly used fractions, decimals, and percents helps to make daily decisions such as determining discounts in stores for comparison shopping, interpreting sports statistics, and comparing savings rates. - Situations from daily life can be modeled using operations with fractions, decimals, and percents such as determining the quantity of paint to buy or the number of pizzas to order for a large group. - Rational numbers are used to represent data and probability such as getting a certain color of gumball out of a machine, the probability that a batter will hit a home run, or the percent of a mountain covered in forest.
	Nature of Mathematics: Mathematicians explore number properties and relationships because they enjoy discovering beautiful new and unexpected aspects of number systems. They use their knowledge of number systems to create appropriate models for all kinds of real-world systems.

Content Area: Mathematics

Standard: 2. Patterns, Functions, and Algebraic Structures

Prepared Graduates:

- Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data

Grade Level Expectation: Fifth Grade

Concepts and skills students master:

1. Number patterns and relationships can be described using a variety of tools

Evidence Outcomes

Students can:

- a. Analyze and describe patterns and relationships using words, tables, graphs, symbols, and technology
- b. Explain, extend, and use patterns and relationships in solving problems, including those involving saving and checking accounts such as understanding that spending more means saving less (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. How can patterns and relationships be used to describe and explain real-life situations?
2. What makes a pattern difficult to describe?
3. How can patterns be used to make predictions?

Relevance and Application:

1. The recognition and extension of patterns helps to solve problems and make predictions such as how saving and investing can help someone to reach a financial goal, how weather affects sales, or how a child's height changes over time.
2. The understanding of patterns prepares for work with linear functions. For example, working with the pattern 3, 6, 9, 12, ... leads to the linear function $y = 3x$.

Nature of Mathematics:

1. Mathematics has always depended on the convenience of tools.

Content Area: Mathematics

Standard: 2. Patterns, Functions, and Algebraic Structures

Prepared Graduates:

- Apply transformation to numbers, shapes, functional representations, and data

Grade Level Expectation: Fifth Grade

Concepts and skills students master:

2. When a relationship exists between two quantities, a change in one results in a change in the other

Evidence Outcomes

Students can:

- Express change relationships involving whole numbers with if/then statements, input/output boxes, function tables, and rule statements
- Select, describe, and use symbols to express unknown quantities
- Use patterns to solve problems including those involving saving and checking accounts such as the pattern created when saving \$10 a month (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

- Does a function table always have to show a pattern? Why?
- Do changes in one quantity always result in a change in another? How do you know?

Relevance and Application:

- Analysis of situations helps to see the effect of changes such as what happens to saving capability if spending increases, what happens to a phone bill when a family makes more calls, what happens to the balance of a checking account when more checks are written or more deposits are made, or what happens to the number of cookies a family can make when they buy more flour.
- The use of symbols to express unknown quantities helps to find the unknown quantity such as finding the average speed of a bike ride by using the distance traveled and time spent riding, or finding how old a girl's father was when she was born by using her current age and her father's current age.

Nature of Mathematics:

- Mathematicians analyze patterns of change to better understand how the world changes with time.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Fourth Grade**Concepts and skills students master:****2. The relationship between choice and opportunity cost (PFL)****Evidence Outcomes****Students can:**

- a. Define choice and opportunity cost
- b. Analyze different choices and their opportunity costs
- c. Give examples of the opportunity costs for individual decisions
- d. Identify risks that individuals face (PFL)
- e. Analyze methods of limiting financial risk (PFL)

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. What different ways does an individual have to get information when making a decision?
2. How do you know when you've made a good decision?
3. How do you know when you've made a bad decision?

Relevance and Application:

1. Knowledge of the relationship between choice and opportunity cost leads to good decision-making. For example, a business may have an opportunity to purchase inexpensive land, but the cost may be in the travel time.
2. Decisions are made daily regarding risks such as riding a bicycle, skiing, riding in a car, and spending all of an allowance immediately rather than saving.
3. Businesses make choices about risk. For example, a company locates in a country that has an unstable government or extends credit to individuals.

Nature of Economics:

1. Economic thinkers analyze opportunity costs associated with making decisions.
2. Economic thinkers analyze data to forecast possible outcomes.
3. Financially responsible individuals understand and categorize the components of risk.
4. Financially responsible individuals mitigate and analyze potential risk.

Content Area: Mathematics

Standard: 3. Data Analysis, Statistics, and Probability

Prepared Graduates:

- Recognize and make sense of the many ways that variability, chance, and randomness appear in a variety of contexts

Grade Level Expectation: Fourth Grade

Concepts and skills students master:

2. Mathematical models are used to test predictions about the likelihood of events

Evidence Outcomes

Students can:

- Formulate a question to test a prediction, and conduct an experiment using chance devices, such as coins, spinners, and number cubes, to test predictions
- Represent the outcomes of experiments with fractions, and describe using the concepts of impossible, unlikely, likely, and certain
- Describe the likelihood of real-life situations using the concepts of impossible, unlikely, likely and certain (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

- How can you know all of the possible outcomes for an event?
- How can knowing the likely outcomes in a situation help you make decisions?
- In what situations is every possible outcome equally likely?
- In what situations are some possible outcomes not equally likely?
- Why are fractions a good way to describe the likelihood of an event?

Relevance and Application:

- Consideration of likely and unlikely outcomes allows better decision-making. For example, if you are likely to lose a game, you may choose not to play; or since falling and getting injured is a possible outcome when you ride your bike, you may choose to wear a helmet.

Nature of Mathematics:

- Mathematicians support anyone who needs advice about the likelihood of an outcome.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Third Grade**Concepts and skills students master:****2. Describe how to meet short term financial goals (PFL)****Evidence Outcomes****Students can:**

- a. Identify sources of income including gifts, allowances, and earnings
- b. Recognize that there are costs and benefits associated with borrowing to meet a short-term financial goal
- c. Identify jobs children can do to earn money for personal, philanthropic, or entrepreneurial goals
- d. Create a plan for a short-term financial goal
- e. Describe the steps necessary to reach short-term financial goals

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. What would happen if an individual spent all earning on entertainment?
2. Why do individuals give away money?
3. How would an individual decide between purchasing a want or a need?

Relevance and Application:

1. Personal financial goal setting is a lifelong activity and short-term goal setting is essential to that process. For example, students save for a fish aquarium or skateboard.
2. Analysis of various options and creating short- and long-term goals for borrowing is a lifelong skill. For example, adults borrow to buy a car or a vacation.

Nature of Economics:

1. Financially responsible individuals create goals and work toward meeting them.
2. Financially responsible individuals understand the cost and the accountability associated with borrowing.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency
- Apply transformation to numbers, shapes, functional representations, and data

Grade Level Expectation: Third Grade

Concepts and skills students master:

4. Multiplying and dividing are inverse operations modeled in a variety of ways

Evidence Outcomes

Students can:

- a. Demonstrate fluency with multiplication and division facts with single-digit factors
- b. Describe relationships between related facts and between multiplication and division
- c. Represent multiplication and division problems with drawings, models, number sentences, and stories
- d. **Model strategies to achieve a personal financial goal using arithmetic operations (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. How are multiplication and division related?
2. How can you use a multiplication or division fact to find a related fact?
3. Why was multiplication invented? Why not just add?
4. Why was division invented? Why not just subtract?

Relevance and Application:

1. Many situations in daily life can be modeled with multiplication and division such as how many tables to set up for a party, how much food to purchase for the family, or how many teams can be created.
2. Use of multiplication and division helps to make decisions about spending allowance or gifts of money such as how many weeks of saving an allowance of \$5 per week to buy a soccer ball that costs \$32?.
3. Multiplication is an essential component of mathematics. Knowledge of multiplication is the basis for understanding division, fractions, geometry, and algebra.

Nature of Mathematics:

1. Mathematicians often learn concepts on a smaller scale before applying them to a larger situation.

Content Area: Social Studies

Standard: 3. Economics

Prepared Graduates:

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Second Grade

Concepts and skills students master:

- 2. Apply decision-making processes to financial decisions (PFL)

Evidence Outcomes

Students can:

- a. Identify components of financial decision-making including gathering, evaluating, and prioritizing information based on a financial goal, and predicting the possible outcome of a decision
- b. Differentiate between a long-term and a short-term goal

21st Century Skills and Readiness Competencies

Inquiry Questions:

- 1. How do individuals make and analyze the consequences of financial decisions?
- 2. How do individuals meet their short- and long-term goals?

Relevance and Application:

- 1. Personal financial decisions are based on responsible evaluation of the consequences.
- 2. Purchase decisions are based on such things as quality, price, and personal goals. For example, you decide whether to spend money on candy or the movies.

Nature of Economics:

- 1. Financially responsible individuals use good decision-making tools in planning their spending and saving.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency

Grade Level Expectation: Second Grade

Concepts and skills students master:

2. Formulate, represent, and use algorithms to add and subtract two-digit whole numbers with flexibility, accuracy, and efficiency

Evidence Outcomes

Students can:

- a. Demonstrate fluency with basic addition and subtraction facts to sums of 20
- b. Find the value of a collection of coins and choose coins to have a given value
- c. Create stories and models, including linear and difference, to illustrate addition and subtraction
- d. Select and use appropriate methods to estimate sums and differences or calculate them mentally depending on the context and numbers involved
- e. **Apply addition and subtraction concepts to financial decision-making (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. What are the ways numbers can be broken apart and put back together?
2. What strategies are used to estimate the answer?
3. What could be a result of not using pennies (taking them out of circulation)?

Relevance and Application:

1. Addition is used to find the total number of objects such as total number of animals in a zoo, total number of students in first and second grade.
2. Subtraction is used to solve problems such as how many objects are left in a set after taking some away, or how much longer one line is than another.
3. The ability to estimate helps to judge whether answers are reasonable such as results on a calculator, or an answer given by someone else seems feasible.
4. The understanding of the value of a collection of coins helps to determine how many coins are used for a purchase or checking that the amount of change is correct.

Nature of Mathematics:

1. Mathematicians use visual models to understand addition and subtraction.

Content Area: Mathematics

Standard: 3. Data Analysis, Statistics, and Probability

Prepared Graduates:

- Recognize and make sense of the many ways that variability, chance, and randomness appear in a variety of contexts

Grade Level Expectation: Second Grade

Concepts and skills students master:

2. Mathematical models are used to describe the likelihood of an outcome or event

Evidence Outcomes

Students can:

- a. Collect data using chance devices, such as spinners and describe outcomes as likely or unlikely
- b. **Apply the concepts of likely or not likely to decisions from daily life (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. How can you tell how likely an event is?
2. How do we communicate the likelihood of an event?
3. What does it mean to be lucky or unlucky?

Relevance and Application:

1. People use the ideas of “likely” and “unlikely” to understand risks found in everyday life such as the chance of injury while crossing the street, losing your gloves, or the chance of tickets to a show being sold out.

Nature of Mathematics:

1. Resiliency depends on the ability to understand and deal with uncertainty in life.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: First Grade**Concepts and skills students master:**

2. Identify short-term financial goals (PFL)

Evidence Outcomes**Students can:**

- Define a short-term financial goal
- Identify examples of short-term financial goals
- Discuss sources of income needed to meet short-term goals such as but not limited to gifts, borrowing, allowances, and income

21st Century Skills and Readiness Competencies**Inquiry Questions:**

- How does an individual earn money to meet a goal?
- Why do people donate to charity?
- How does an individual know a good short-term goal?
- Why is personal financial goal setting important?

Relevance and Application:

- Short-term financial goals can be met through planning. For example, an individual divides income between current expenses, saving for the future, and philanthropic donations.
- Individuals and organizations track their progress toward meeting short-term financial goals. For example, the food bank creates a chart tracking how much food has been donated toward reaching its goal.

Nature of Economics:

- Financially responsible individuals create goals and work toward meeting them.
- Financially responsible individuals understand the cost and the accountability associated with borrowing.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Understand the structure and properties of our number system. At their most basic level numbers are abstract symbols that represent real-world quantities

Grade Level Expectation: First Grade

Concepts and skills students master:

1. The whole number system describes place value relationships from ones to 100 and forms the foundation for efficient algorithms

Evidence Outcomes

Students can:

- a. Count, read, and write numbers to 100
- b. Estimate quantities less than 100
- c. Represent quantities using tens units and ones units
- d. Locate numbers up to 100 on a number display
- e. **Compare two sets of objects, including pennies, up to at least 25 using language such as "three more or three fewer" (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. Can numbers always be related to tens?
2. Why not always count by one?
3. Why was a place value system developed?
4. How does a position of a digit affect its value?
5. How can I tell if I've made a good guess (estimate)?
6. How big is 100?

Relevance and Application:

1. Estimation allows people to think about how many objects are in a set without counting.
2. Locating numbers on a number line helps to see the relative size of numbers.
3. The comparison of numbers helps to communicate and to make sense of the world. (For example, if someone has two more dollars than another, gets four more points than another, or takes out three fewer forks than needed.

Nature of Mathematics:

1. Mathematics involves visualization and representation of ideas.
2. Numbers are used to count and order both real and imaginary objects.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Apply transformation to numbers, shapes, functional representations, and data

Grade Level Expectation: First Grade

Concepts and skills students master:

2. Adding and subtracting involve composing and decomposing using a variety of strategies

Evidence Outcomes

Students can:

- Use addition when putting sets together and subtraction for breaking sets apart or describing the difference between sets
- Use number relationships such as doubles, one more or one less, and the relationship between composing and decomposing to solve addition and subtraction problems
- Identify coins and find the value of a collection of two coins(PFL)**
- Demonstrate fluency with basic addition and related subtraction facts through sums to 10

21st Century Skills and Readiness Competencies

Inquiry Questions:

- What is addition and how is it used?
- What is subtraction and how is it used?
- How are addition and subtraction related?

Relevance and Application:

- Addition and subtraction are used to model real-world situations such as computing saving or spending, finding the number of days until a special day, or determining an amount needed to earn a reward.
- Fluency with addition and subtraction facts helps to quickly find answers to important questions.

Nature of Mathematics:

- Mathematicians use addition and subtraction to take numbers apart and put them back together in order to understand number relationships.

Content Area: Social Studies

Standard: 3. Economics

Prepared Graduates:

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Kindergarten

Concepts and skills students master:

2. Discuss how purchases can be made to meet wants and needs (PFL)

Evidence Outcomes

Students can:

- a. Identify the difference between personal wants and needs
- b. Give examples of the difference between spending income on something you want versus something you need

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. What are wants and needs?
2. How do people balance between wants and needs?
3. What is the difference between a want and a need?
4. How can money help people to meet their wants and needs?

Relevance and Application:

1. Individuals make choices about purchasing to serve wants and needs. For example, parents pay bills prior to purchasing movie tickets or toys.

Nature of Economics:

1. Financially responsible individuals differentiate between needs and wants.

Content Area: Mathematics

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Apply transformation to numbers, shapes, functional representations, and data

Grade Level Expectation: Kindergarten

Concepts and skills students master:

2. Adding and subtracting to 10 involves composing and decomposing using a variety of strategies and representations

Evidence Outcomes

Students can:

- a. Use objects including coins, and drawings to model addition and subtraction problems to 10 (PFL)**
- b. Identify numbers one more or one less than a given number up to 10
- c. Determine if more than or less than is needed to change one quantity to another

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. What happens when two quantities are combined?
2. What happens when a set of objects is separated into different sets?

Relevance and Application:

1. People combine quantities to find a total such as number of boys and girls in a classroom or coins for a purchase.
2. People use subtraction to find what is left over such as coins left after a purchase, number of toys left after giving some away.

Nature of Mathematics:

1. Mathematicians create models of problems that reveal relationships and meaning.
2. Mathematics involves the creative use of imagination.

Content Area: Mathematics**Standard: 4. Shape, Dimension, and Geometric Relationships****Prepared Graduates:**

- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error

Grade Level Expectation: Kindergarten**Concepts and skills students master:**

2. Measurement is used to compare and order objects

Evidence Outcomes**Students can:**

- a. Recognize and compare attributes of length, height, weight, capacity of objects
- b. Use estimates of measurements from everyday experiences
- c. **Order several objects by length, height, weight, capacity, or price (PFL)**

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. How can you tell when one thing is bigger than another?
2. How is height different from length?
3. How is weight different from capacity?

Relevance and Application:

1. Measurement helps to understand and describe the world such as in cooking, playing, or pretending.
2. People compare objects to communicate and collaborate with others. For example we describe items like the long ski, the heavy book, the expensive toy.

Nature of Mathematics:

1. A system of measurement provides a common language that everyone can use to communicate about objects.

Content Area: Social Studies**Standard: 3. Economics****Prepared Graduates:**

- Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Grade Level Expectation: Preschool**Concepts and skills students master:**

2. Recognize money and identify its purpose (PFL)

Evidence Outcomes**Students can:**

- a. Recognize coins and currency as money
- b. Identify how money is used as a medium of exchange
- c. Discuss why we need money

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. Why do people use money?
2. What are the different forms of money?

Relevance and Application:

1. Recognition of units of money aids in making purchases. For example, a parent pays for an item using correct change.
2. Knowledge of coins and currency ensures accurate transactions. For example, you can check that a cashier gave you the right amount of change.
3. Money is a medium of exchange.

Nature of Economics:

1. Financially responsible individuals use money wisely.

Content Area: Mathematics**Standard: 1. Number Sense, Properties, and Operations****Prepared Graduates:**

- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error

Grade Level Expectation: Preschool**Concepts and skills students master:**

1. Quantities can be represented and counted

Evidence Outcomes**Students can:**

- a. Count and represent objects including coins to 10 (PFL)
- b. Match a quantity with a numeral

21st Century Skills and Readiness Competencies**Inquiry Questions:**

1. What do numbers tell us?
2. Is there a biggest number?

Relevance and Application:

1. Counting helps people to determine how many such as how big a family is, how many pets there are, how much money is in a wallet.
2. People sort things to make sense of sets of things such as sorting pencils, toys, or clothes.

Nature of Mathematics:

1. Numbers are used to count and order both real and imaginary objects.

Content Area: Mathematics

Standard: 4. Shape, Dimension, and Geometric Relationships

Prepared Graduates:

- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error

Grade Level Expectation: Preschool

Concepts and skills students master:

2. Measurement is used to compare objects

Evidence Outcomes

Students can:

- a. Describe the order of common events
- b. Group objects according to their size using standard and non-standard forms (height, weight, length, or color brightness) of measurement
- c. **Sort coins by physical attributes such as color or size (PFL)**

21st Century Skills and Readiness Competencies

Inquiry Questions:

1. How do we know how big something is?
2. How do we describe when things happened?

Applying Mathematics in Society and Using Technology:

1. Understanding the order of events allows people to tell a story or communicate about the events of the day.
2. Measurements helps people communicate about the world. For example, we describe items like big and small cars, short and long lines, or heavy and light boxes.

Nature of Mathematics:

1. Mathematics involves pattern seeking. Mathematicians look for patterns and regularity. The search for patterns can produce rewarding shortcuts and mathematical insights.

Colorado Department of Education
Office of Standards and Assessments
201 East Colfax Ave. • Denver, CO 80203 • 303-866-6929
www.cde.state.co.us