Unit #4 Saving and Investing

Content Area: **Math**
Course(s):
Time Period:
Length: **6 weeks**
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Saving and Investing

Learning Objectives

- Objective 1 - Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
- Objective 10 - Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.
- Objective 11 - Explain the difference between saving and investing.
- Objective 12 - Identify types of investments appropriate for different objectives such as liquidity, income, and growth.
- Objective 13 - Describe the importance of various sources of income in retirement, including Social Security, employer-sponsored retirement savings plans, and personal investments.
- Objective 2 - Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
- Objective 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.
- Objective 4 - For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.★
- Objective 5 - Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.★
- Objective 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.★

- Objective 7 - 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.
- Objective 8 - Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
- Objective 9 - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

Essential Skills

- Essential Skill 1 - Distinguish between situations that can be modeled with linear functions and with exponential functions.
- Essential Skill 10 - Relate the domain of a function its graph
- Essential Skill 11 - Relate the domain of a function to the quantitative relationship that it describes
- Essential Skill 12 - Calculate the average rate of change of a function from a graph or a function on an interval.
- Essential Skill 13 - Interpret the average rate of change.
- Essential Skill 14 - Estimate the average rate of change from a graph.
- Essential Skill 15 - Apply scales to graphs, origin of graph and data displays.
- Essential Skill 16 - Use units to make sense of solutions.
- Essential Skill 17 - Apply scales to multi-step problems and formulas.
- Essential Skill 18 - Interpret units in formulas.
- Essential Skill 19 - Choose units in formulas.
- Essential Skill 2 - Recognize situations where one quantity changes at a constant rate relative to another.
- Essential Skill 20 - Distinguish between situations that can be modeled with linear functions and with exponential functions.
- Essential Skill 21 - Recognize situations where one quantity changes at a constant rate relative to another.
- Essential Skill 22 - Create and solve equations.
- Essential Skill 23 - Create and solve inequalities.
- Essential Skill 24 - Represent solutions of equations, inequalities, and systems to real-world applications.
- Essential Skill 25 - Interpret solutions as viable based on the constraints of the application.
- Essential Skill 26 - Explain the difference between saving and investing.
- Essential Skill 27 - • Apply criteria for choosing a saving or investment instrument (e.g. market risk, inflation risk, interest rate risk, liquidity, and minimum amount needed for investment).
- Essential Skill 28 - Describe the advantages provided by employer-sponsored retirement savings plans including 401K and related plans.
- Essential Skill 29 - Describe why and how people save.
- Essential Skill 3 - Distinguish between situations that can be modeled with linear and exponential functions.

- Essential Skill 30 - Identify the opportunity costs of saving.
- Essential Skill 31 - Distinguish between simple and compound interest.
- Essential Skill 32 - Explain why a savings and investing plan changes as one proceeds through the life cycle.
- Essential Skill 33 - Explain how and why the stock market works.
- Essential Skill 34 - Identify the risk/return trade-offs for saving and investing.
- Essential Skill 35 - Analyze the power of compounding and the importance of starting early in implementing a plan for saving and investing.
- Essential Skill 36 - Develop financial goals for the future based on one's lifestyle expectations and career choices.
- Essential Skill 37 - Calculate and apply the Rule of '72.
- Essential Skill 38 - Examine the fundamental workings of the Social Security System and the system's effects on retirement planning.
- Essential Skill 4 - Recognize situations where a quantity grows or decays by a constant percent rate.
- Essential Skill 5 - Observe using graphs that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or a polynomial)
- Essential Skill 6 - Observe using tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or a polynomial
- Essential Skill 7 - Sketch a graph using the key features of a function.
- Essential Skill 8 - Interpret key features from a graph or a table of values.
- Essential Skill 9 - Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.

Standards

MATH.9-12.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.
MATH.9-12.A.CED.A.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
MATH.9-12.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.
MATH.9-12.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.
MATH.9-12.F.IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
MATH.9-12.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.
MATH.9-12.F.LE.A.1.b	Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
MATH.9-12.F.LE.A.1.c	Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.

MATH.9-12.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.
PFL.9.1.12.PB.1	Explain the difference between saving and investing.
PFL.9.1.12.RM.1	Describe the importance of various sources of income in retirement, including Social Security, employer-sponsored retirement savings plans, and personal investments.
PFL.9.1.12.RM.2	Identify types of investments appropriate for different objectives such as liquidity, income, and growth.

Instructional Tasks/Activities

- http://financeintheclassroom.org/teacher/standard3.shtml
- http://www.umsl.edu/~wpockets/Clubhouse/library/WillSavesForTheStars/01.htm
- https://www.practicalmoneyskills.com/teach/lesson_plans/grades_9_12

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Journal / Student Reflection
- Kahoot
- Other named in lesson
- Peer Review
- Performance
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Teacher Observation
- Test
- Verbal Assessment
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource

- Chromebook
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print

- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- https://www.ixl.com
- https://www.khanacademy.org/