WAMC Lesson Plan

Name(s): Ellen Garr
Lesson Title: Savings Accounts
Date: June 25, 2013
Text: Financial Algebra; Section 3-3 Savings Account   Lesson Length: 3 Days

Domain: Creating Equations

Big Idea (Cluster): Understanding how checking accounts work and how to keep an accurate record of account activity.

Common Core State Standards:
A-SSE Interpret the structure of expressions
Level 1 – Interpret expressions that represent a quantity in terms of its context
A-SSE Write expressions in equivalent forms to solve problems
Level 3 – Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression
F-BF Build a function that models a relationship between two quantities
Level 1 – Write a function that describes a relationship between two quantities.
Sublevel a – Determine an explicit expression, a recursive process, or steps for calculation from a context.
A-CED4 Create equations that describe numbers or relationships
Level 4 - Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Mathematical Practice(s):
1. Makes sense of problems and persevere in solving them
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure

Content Objectives:	Language Objectives:
Students will be able to compute simple interest using the simple interest formula.	

Vocabulary:	Connections Prior to Learning
• Interest • Interest rate • Principal • Simple interest • Minimum balance • Maturity	1. Basic equation solving skills. 2. Basic computation skills

Questions to Develop Mathematical Thinking:	Common Misconceptions:
• What is the difference between savings, money market, and certificate of deposit (CD) accounts? • How can interest rates be used to compare banks? • How can the simple interest formula be manipulated to find different types of information?	• All savings accounts and banks are equal. • Just put money into savings to make money.

Assessment (Formative and Summative):

• Formative – Time Machine Lab

• Summative – Simple Interest Formula Quiz

Materials:

• Student Worksheets for Million $ Mission • Student Worksheets for Manipulating the Simple Interest Formula • Student Worksheets for Time Machine Lab • Simple Interest Formula Quiz

Instruction Plan:

Launch: Now you know how to keep your spending monitored by balancing your checking account. How do you think you can use your money to make money? Listen to suggestions from the class or use questions to stimulate some wild thinking. To investigate this we are going to try a mathematics fantasy. Introduce the Million $ Mission by reading the introduction to the class. At the "Break in the Story" pass out the table and have the students begin on the first week as a class. Comment on the amount. Let the students continue to work, stopping after the second and third weeks to evaluate progress. Discuss after complete. But this was an actual job. Is it likely to find one like this? Let's look at some of the other ways we can make out money work for us. Let's start simple with a simple savings account.
Explore: Manipulating the Simple Interest Formula Introduce the simple interest formula I = prt as "I pretty". On board or overhead, define parts and do an example or two to demonstrate. Then pass out the Simple Interest Formula worksheet and have the students complete. This worksheet reviews equation manipulation and vocabulary. They may work in pairs if they wish. When class is finished, have them share with each other. Have students go through Example 1, page 132, which reviews the fraction, decimal and percent relationship. Do the Check your Understanding on page 132. Have students do problems #8, 15 -18
Lab: Have students do the Getting Rich with Time? Lab. Will need copies of student worksheets but no other set up. The purpose of this lab is show how slow the monetary growth is in a simple interest savings program. It will give them a good comparison to compounding as we move into that section.
When I observe students: During independent, partner, and group activities I walk around the classroom checking for understanding and on task behavior. Asking for questions and explanations gives me feedback on involvement and interest. Occasionally stop the class to allow students to share quality questions or discoveries.
Summarize: Simple Interest Quiz

Career Application(s):

Simple interest is a good tool to measure the value of other potential investment vehicles. In

order to compare different options one needs a base line whish each can be compared to.

21st Century Skills and Interdisciplinary Themes:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)
☐ Global Awareness ☐ Financial/Economic/Business/Entrepreneurial Literacy ☐ Civic Literacy
☐ Health/Safety Literacy ☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND 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

Name: _____ Date: _____

GETTING RICH WITH TIME?

You have just stepped into a time machine. Back you go to 1971. You step out of the machine into a time when rock and roll hits include *ABC* by Jackson Five, *My Din-A-Ling* by Chuck Berry and *I Shot the Sheriff* by Eric Clapton but you could only get it on vinyl records or reel-to-reel tapes. You wear bell-bottom pants, fringe vests and big hair. TV only has three channels but you get to watch great shows like *All in the Family, Happy Days* and *Charlie's Angels*. You can only watch movies in a movie theater and McDonalds is just getting started. There are great cars that use gallons of gas per mile but you don't get to pump your own gas. There are no cell phones or calculators and the first computers with 4kB to 48kB of memory were just appearing. Groovey Times!!

Your plan is to go back and make as much money as possible, put it in the bank and wait for it to grow. You can only stay for 2 weeks before you have to come back and since you are underage your career choices are limited.

You have gotten your first paycheck. You worked 71 hours at McDonalds but since it is a minimum wage job you were only paid $1.57 an hour.
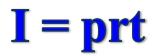
Calculate your pay check total:

Now what to do with it? Save it of course. This is the 70's and banks are paying 5 times the interest on savings accounts that they are today.

First compare banks changing the rates to like terms, then rank them highest rate to lowest:

Institution	Rate	Rank
Republic Savings & Loan	5.2%	
M & I Bank	5 3/8 %	
Home World Savings	5.225	
Seafirst Bank	5 ¼ %	
Banner Bank	5.025	

Using only the simple calculators, slide rule, mental math or your fingers & toes (this is the 70s after all) answer the following questions. Use your very best rate and the Simple Interest Formula.

$$I = prt$$

How much will you have after one year?

If you keep this money in the account for four (4) years how much will you have?

Remember, simple interest is only calculated on the original deposit amount. Can you develop a formula to simplify finding your balance over the years?

When you go to withdraw your savings upon your return to 2013, and the bank has kept the interest the same, how much will you have?

Your goal was to have a $1000.00 dollars, How much interest did you need to get there?

What can you conclude about your (this) plan?

What could you do differently (given the constraints) that would have made you more money?

Name: _____ Date: _____

Use the simple interest formula to find the missing entries in the following table. Round monetary amounts to the nearest cent, percents to the nearest hundredth of a percent, and time to the nearest month. Use 360 (not 365) days = 1 year.

PRINCIPAL ($)	RATE (%)	TIME	INTEREST ($)	BALANCE ($)
980.00	2.9	1 year	28.42	
2,900.00	3.05	18 Months		
4,500.00	4.5		400.00	
	4.5	4 year	400.00	
3,000.00		3 year	400.00	
750,000.00	5.3	120 days		
	2.15	24 months	515.00	

Use this area (and the back of the paper if you need more room) to
SHOW YOUR WORK!!

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PRINCIPAL ($)	RATE (%)	TIME	INTEREST ($)	BALANCE ($)
980.00	2.9	1 year	28.42	1,008.42
2,900.00	3.05	18 Months	152.50	3,052.25
4,500.00	4.5	2.47 years	400.00	4,900.00
2,222.22	4.5	4 year	400.00	2,622.22
3,000.00	5.28	3 year	400.00	3,475.00
750,000.00	5.3	120 days	13,236.75	763,236.75
11,976.74	2.15	24 months	515.00	12,491.74

Use this area (and the back of the paper if you need more room) to
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