WAMC Lesson Plan

Name(s): Chris Shepard
Lesson Title: 3-4 Simple Interest Lesson
Date :June 25, 2014
Text: Financial Algebra
Lesson Length:55min

Domain:
- A-SSE Seeing structure in expressions
- N-RN The real number system
- A-CED Creating equations
- F-IF Interpreting Functions

Big Idea
- Interpret functions that arise in applications in terms of the context
- Create equations that describe numbers or relationships
- Interpret the structure of expressions

Common Core State Standards:
- Extend the properties of exponents to rational numbers
- Interpret the structure of expressions
- Write expressions in equivalent forms to solve problems
- Create equations that describe numbers or relationships
- Interpret functions that arise in applications in terms of the context
- Analyze functions using different representations

Mathematical Practice(s): Algebra in relation to the Simple interest formula

Content Objectives:
- Calculate Simple interest
- Calculate Rate
- Calculate Time
- Develop algebraic equations

Language Objectives:
- Make sure students with poor vocabulary understand the terms.
- Record vocabulary with google voice for students to listen and respond to.
- Describe, analyze, interpret are important words for ESL students to know.

Vocabulary:
- Rate
- Time
- Simple Interest
- Compound Interest
- Quarterly
- Semiannual

Daily

Connections Prior to Learning
- Writing algebraic expressions
- Solving for a given variable

Questions to Develop Mathematical Thinking:

In the old days a man who saved money was a miser; nowadays he's a wonder.

How might these word apply to what you have learned in this lesson?

Common Misconceptions:

Rounding to the nearest Cent in not important in the long run. Its just a cent.

Assessment (Formative and Summative): Formative

- Simple Interest work sheet attached

Materials:

- Calculator for each student
- Overhead projector and pens
- "Simply Interest" activity sheet
- "Simply Interest" activity sheet answer key

Instruction Plan:

Launch: Introduce vocabulary and variables for simple interest formula. (10 minutes)

- Simple Interest (I) — amount of money paid or earned for the use of money
- Principal (p) — the amount of money borrowed or invested
- Rate (r) — the annual interest rate written as a decimal
- Time (t) — the amount of time in years (If time is given in months, it must be written as a fraction. For example, 6 months would be 6/12 years or 0.5 years.)

Explore: Demonstrate several examples to help students gain an understanding of how to solve simple interest problems. (20 minutes)

1. Joe deposits $200 in an account at his bank. The interest rate is 6%. How much interest will he earn in three (3) years?
   - I = prt
   - I = (200)(.06)(3)
   - I = $36.00. Joe will earn $36 in interest.
2. Joe borrows $900 to fix his car. The bank charges 7% interest for two years. Find the total amount Joe will owe the bank.
   - I = prt
   - I = (900)(.07)(2)
   - I = $126. Now add the $126 interest to the original amount borrowed by Joe (principal amount = $900) for a total of $1026 owed to the bank.
3. Jill needs to borrow $500 for only nine months. The bank charges 5½% interest. How much will Jill owe the bank?
   - I = prt
   - I = (500)(.055)(.75)
   - I = $20.625 (Money must always be rounded to the hundredth place)
   - I = $20.63 Now add the $20.63 to the $500 borrowed. The amount Jill owes to the bank is $520.63.

When I observe students:

- Make sure that they are converting percent's
- Students should be rounding to the nearest cent after calculations.

Questions to Develop Mathematical Thinking as you observe:

- Think about how much money it takes your family to get by in a year. Housing, car, fuel, Utilities, Ect. . How much money would you have to invest to get a return that your family could live off if you calculated the interest quarterly at 2% with the simple interest formula.

Answers: answers will vary

Summarize:

- Analyze computational strategies.
- Describe the effect of operations on size.
- Estimate the results of computations.
- Judge the reasonableness of solutions.

Career Application(s):

- **Loan officer**: Usually works at a bank dealing with customers who are interested in borrowing money for cars, homes, home improvements, etc. Needs to know how to calculate interest in order to inform the customer how much money will need to be paid back to the bank each month to satisfy the loan.
- **Credit card company employee**: Needs to know how to calculate interest so when customers buy something with the credit card, they can charge the customer that amount above the cost of the purchase. Most credit card companies have computer programs that will calculate this for them, but knowledge of this calculation helps when speaking to customers.
- **Car salesman**: Needs to know how to calculate interest in case a customer asks for clarification on his or her bills. Even though most computer programmers calculate this automatically, the salesman needs to know how this amount is calculated so that he can answer any questions the customer will have.

21st Century Skills and Interdisciplinary Themes:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)

☐ Global Awareness x 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

Simple Interest

Problem

1. Janine opens a savings account with a deposit of $720. The account pays 2.96%, compounded daily. What is the first days's interest. round your answer to the nearest cent and in this form $.23 or $.02

2. Tim deposits $4,000 in a certificate of deposit that pays $5\frac{5}{8}$% simple interst. What is his balance after one year? Round your answer to the nearest cent and in this form $.23 or $.02 or $54.00

3. Interest Rate: 7% each year
   Starting Balance: $194
   Time Passed: 13 years
   How much interest has accrued if we are using simple interest? answer to the nearest dollar
   What is the new total balance? answer to the nearest dollar

4. Interest Rate: 2% each year
   Starting Balance: $135
   Time Passed: 11 years
   How much interest has accrued if we are using simple interest? answer to the nearest dollar
   What is the new total balance? answer to the nearest dollar

5. What's the Interest on $890.00 at 12.5% for 261 Days? Answer to the nearest cent like $3.45

Simple Interest
Answer Section

PROBLEM

1. ANS:
   $.06

   PTS: 1
2. ANS:
   $225.00

   PTS: 1
3. ANS:
   $177
   $371

   PTS: 1
4. ANS:
   $30
   $165

   PTS: 1
5. ANS:
   $79.55

   PTS: 1

"Simply Interest" activity sheet
Answer Key

The following clients have opened savings accounts with the Allegacy Federal Credit Union. Use the simple interest formula I = prt to calculate the interest earned by each client. Calculate the interest to the nearest cent, and write your answers in the chart below.

Client Name	Principal	Interest Rate	Time	Interest Earned
Alice Apple	$600	4.00%	2 years	$48.00
Bill Black	$640	3.25%	2 years	$41.60
Carl Crow	$855	6.75%	3¼ years	$187.57
Don Davis	$4,500	4.20%	1¾ years	$330.75
Earl East	$450	6.20%	3 years	$83.70
Fred Fish	$825	4.30%	2½ years	$88.69
Ginger Green	$1,640	8.25%	2 years	$270.60
Hazel Hat	$565	16.00%	8 months	$60.27

The following clients have taken out loans with the Allegacy Federal Credit Union. Use the simple interest formula I = prt to calculate the interest paid by each client. Calculate the interest to the nearest center, and write your answers in the chart below.

Client Name	Principal	Interest Rate	Time	Interest Paid
Iman Ink	900	9.0%	4 years	$324.00
Jack Jones	$1,250	7.6%	5 years	$475.00
Kim Knot	$550	22.0%	1 year	$121.00
Laura Lane	$2,750	3.65%	4½ years	$451.69
Matt Mouse	$380	5.50%	4 years	$83.60
Nancy Nose	$265	5.20%	3 years	$41.34
Oscar Owens	$3,270	7.50%	2½ years	$613.13
Paula Prince	$2,245	5.40%	6 months	$60.62

Name: _____
Date: _____

"Simply Interest" activity sheet

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