Unit 8: Financial Applications

Day 2: Simple Interest

Today we will....

1. Use the simple interest formula to solve problems for the principal, interest, rate and time.

MCF3MI: **Unit 8: Financial Applications** **Day 2: Simple Interest**

Warm up:

1. Change 7% to a decimal

0.07

2. Calculate 5.4% of $400

$= 0.054 \times 400$
$= \$21.60$

3. Write 3 weeks as a fraction of a year.

$\frac{3}{52}$

4. A coat originally costs $95.99. It is on a 30% off sale rack.
   a) What is the sale price of the coat?
   b) With taxes, how much will you have to pay for it?

a) discount $= 95.99 \times 0.30$
$= 28.80$
New price $= 95.99 - 28.80$
$= \$67.19$

OR
$= 95.99 \times 0.7$
$= \$67.19$

b) 67.19×1.13
$= \$75.93$

Some Definitions:

Simple Interest: Interest earned/paid only on the original amount

Principal: Original amount invested.

Term: How long money was borrowed/invested.

Amount: Final Amount invested/borrowed (includes interest)

Simple Interest: **To calculate the amount of interest earned on an investment or owing on a loan, for a given amount of time (in years), use the formula:**

$I = Prt$

I = interest P = Principal r = Rate (as a decimal) t = time (in years)

Example 1: Sasha invested $3 200 in a two-year Canada Savings Bond that earns 6.25% simple interest annually. How much interest will she earn over the term of the Bond? What will the investment be worth at the end of the term?

$I = Prt$
$= (3200)(0.0625)(2)$
$= 400$

∴ She earned $400 in interest.

Example 2: Kevin had a credit card balance of $2 465.00 that was 28 days overdue. The penalty is calculated in simple interest at 24.7% per annum.

a) How much interest does Kevin have to pay?

b) Why is paying interest on an outstanding credit card balance referred to as "the cost of borrowing money"?

$I = Prt$

$= (2465)(0.247)\left(\frac{28}{365}\right)$

$= 46.71$

Total Amount:	**To calculate the total amount of an investment or owing on a loan, including interest, for a given amount of time (in years), use the formula:**
	$A = P(1+rt)$

Example 3: Eighteen months ago, Brenda borrowed money from her parents to buy a car. She repaid them $5 680 which included 7% simple interest per annum. How much was the car?

1.5 years

5680 → A

P ←

$A = P(1+rt)$

$5680 = P(1+0.07(1.5))$

$\frac{5680}{1.105} = \frac{P(1.105)}{1.105}$

$5140.27 = P$

∴ the car cost $5140.27.

Example 4: Xander knows that he will be getting a gift of $1 500 from his Grandmother in 18 months. He wants to buy a TV now, so he borrows $1 350 from his mother and tells her that he will give her the $ 1 500 when he gets it. What rate of interest is Xander paying to his mom?

simple

$A = P(1+rt)$

$\frac{1500}{1350} = \frac{1350(1+r(1.5))}{1350}$

$1.11 = 1+1.5r$

$1.11 - 1 = 1.5r$

$\frac{0.11}{1.5} = \frac{1.5r}{1.5}$

$0.074 = r$

∴ he is paying 7.4% simple int.

Homework: p. 459 – 461 #1, 2, 4, 6-9