LESSON 5.4

Simple Interest

Vocab:

Interest: earn money by leaving money in the bank.

Simple Interest: (the starting amount of money)(% earned annually)(time (years))

Principal: what you start with

Annual Interest Rate: % earned in a year

$$\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time or } I = prt$$

$$\text{Amount} = \text{Principal} + \text{Interest, or } A = P + I$$

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EXAMPLE 1

Joyce Tyler deposits $9,000 in an account that pays an annual 5.5% interest rate. Determine the simple interest and the amount in the account for **(a)** 3 years, **(b)** 3 months, and **(c)** 3 days.

a) $P = 9000$, $r = 0.055$, $t = 3$ → $(9000)(0.055)(3) = \$1485$

$9000 + 1485 = \$10{,}485$

b) $(9000)(0.055)(\frac{3}{12}) = \$123.75$

$\$9123.75$

c) $(9000)(0.055)(\frac{3}{365}) = \$4.07$

$\$9004.07$

Determine the interest and the amount for the indicated time. Check your answers in the back of the book.

1. Principal: \$4,000 at 6% for **(a)** 4 years, **(b)** 4 months, and **(c)** 4 days.

a) $(4000)(0.06)(4)$

b) $(4000)(0.06)(4/12)$

c) $(4000)(0.06)(4/365)$

Determine the interest and the amount for the indicated time. Check your answers in the back of the book.

2. Principal: \$6,580 at 6.5% for **(a)** 10 years, **(b)** 10 months, and **(c)** 10 days.

LESSON 5.4

EXAMPLE 2 Algebra

Martin Ellis earned $150.00 in simple interest in 8 months at an annual interest rate of 6%. How much money did he invest?

$I = Prt$

$150 = P(0.06)\left(\frac{8}{12}\right)$

$\frac{150}{0.04} = \frac{0.04P}{0.04}$

$P = \$3750$

LESSON 5.4

Complete the problems. Check your answers in the back of the book.

3. Brenna O'Connor earned $120 in simple interest in 9 months at an annual interest rate of 8%. How much money did she invest?

$I = Prt$

$120 = P(0.08)(9/12)$

$\frac{120}{0.06} = \frac{P(0.06)}{0.06}$

$P = \$2000$

LESSON 5.4

Complete the problems. Check your answers in the back of the book.

4. What annual simple interest rate must Hosea Sokolski earn to have $80,000 increase to $90,000 in two years?

$I = Prt$ $A = P + I$

$90000 = 80000 + I$

$I = 10000$

$10000 = (80000)(r)(2)$

$\frac{10000}{160000} = \frac{160000r}{160000}$

$0.0625 = r$

$r = 6.25\%$

Compound Interest

Vocab:

Compound Interest: interest earned on other interest

Amount = Principal + Interest
Compound Interest = Amount – Original Principal

LESSON 5.5

EXAMPLE

Jamal Washington deposited $1,000 in a savings account that earns 6% interest compounded quarterly. He made no other deposits or withdrawals. What was the amount in the account at the end of one year? How much is the compound interest?

Original Principal					$1,000.00
Interest for First Quarter	$1,000.00 × 6% × $\frac{1}{4}$ =		=	+	
Amount at End of First Quarter					
Interest for Second Quarter			=	+	
Amount at End of Second Quarter					
Interest for Third Quarter			=	+	
Amount at End of Third Quarter					
Interest for Fourth Quarter			=	+	
Amount at End of Fourth Quarter					

LESSON 5.5

Complete the problems. Check your answers in the back of the book.

1. Liz Reynolds deposited $2,000 into a savings account that pays 8% compounded quarterly. Complete the table to compute the amount in the account after 1 year.

Original Principal					$2,000
Interest for First Quarter	$2,000 × 8% × $\frac{1}{4}$ =	$40	=	+	$ 40
Amount at End of First Quarter	2,000 + 40 =				a. $2040
Interest for Second Quarter	2,040 × 8 × $\frac{1}{4}$ =	b. $40.80	=	+	c. $40.80
Amount at End of Second Quarter					d. $2080.80
Interest for Third Quarter	(2080.80)(0.08)($\frac{1}{4}$)	e. $41.62	=	+	f. $41.62
Amount at End of Third Quarter					g. $2122.42
Interest for Fourth Quarter	(2122.42)(0.08)($\frac{1}{4}$)	h. $42.45	=	+	i. $42.45
Amount at End of Fourth Quarter					j. $2164.87

2. Calculate the compound interest.

$164.87

LESSON 5.5

Complete the problems. Check your answers in the back of the book.

	Principal	Annual Interest Rate	Interest Period	First Period Interest	Amount	Second Period Interest	Amount
3.	$ 900.00	6%	Quarterly	$13.50	$913.50	a. $	b. $

$\$927.20$

$(913.50)(0.06)\left(\frac{1}{4}\right) = \$13.70$

913.50
$+ \ 13.70$
$\$927.20$