SIMPLE INTEREST

Simple Interest

Interest = Principal·Rate·Time
I= Prt
= Original Amount invested · Annual Interest Rate · Time in YEARS

Total Amount = Original Amount + Interest
A = P + I
= P + Prt
= P(1 + rt)

Example 1 $3000 is invested for 1 year at a rate of 5%. How much interest is earned? What is the total amount after 1 year?

What are we being asked to find? The Interest Amount.
Given: Rate = 5% per year = .05 per year
Original Amount Invested = $3000

Interest = $3000 · (.05/yr) · (1 yr) = $150
Total Amount = Original Amount + Interest = $3000 + $150

Example 2 To start a carpet-cleaning business, a couple borrows $5,500 to purchase equipment and supplies. If the loan has a 14% interest rate, how much must they repay at the end of the 90-day period?

What are we being asked to find? How much they repay.
Is that only the interest?
How much they repay = _____ + _____

Interest = Original Amount · Interest Rate · Time in Years

= _____ · _____ · _____

Compound Interest

This is when interest is earned on interest previously earned, not just on the original amount.

Total Amount Earned with Compound Interest

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

r = annual interest rate expressed in decimal form.

t = time in years

n = number of compoundings in one year.

If compounded annually, n = 1

If compunded semi - annually, n = 2

If compouneded monthly, m = 12

If compounded weekly, n = 52

If compunded daily n = 360

Name: _____ Grade: Math 4 Date: 4/8/2014

Instructions: Answer the following questions.

Question 1

Ryan deposited $2,000 in a saving account at the interest rate of 4% per year. How much simple interest will he earn in 5 years?

A. $800 **B.** $1,000

C. $450 **D.** $400

Question 2

Garcia borrowed $4,000 from his cousin Susan at the rate of 8% per annum. He repaid the amount after two years. How much did he repay?

A. $640 **B.** $6,640

C. $4,640 **D.** $3,360

Question 3

Tracy put $3,500 into an investment yielding 4.5% annual interest. She left the money in for 8 years. How much interest does she get in those 8 years?

A. $1,260 **B.** $4,760

C. $2,240 **D.** $1,860

Question 4

Anna invested $2,500 at an annual rate of 5%. How long will it take until Anna earns $1,125 in interest?

A. 5 years **B.** 8 years

C. 10 years **D.** 9 years

Question 5

Jerry invested $1500 in an account that paid him 8.25% simple interest, what will the balance of his account be after 6 years?

A. $742.50 **B.** $2242.50

C. $2150 **D.** $3256.55

Question 6

Mr. Peterson wrote a check of $7,820 to pay off a loan, which was given to him at a rate of 5% simple interest for 3 years. How much money did he borrow originally?

A. $5,400 **B.** $6,800

C. $3,240 **D.** $14,620

Question 7

If $3,840 is invested in an account at 5% annual simple interest, how long will it take the account balance to grow to $4,800?

A. 12 years **B.** 6 years

C. 5 years **D.** 8 years

Question 8

Principal (p) = 1500, Rate (r) = 7%, Time (t) = 8 years. Calculate the Interest.

A. $840 **B.** $1200

C. $2,340 **D.** $660

Question 9

Jack deposited $1400 in his bank account. After 3 years, the account is worth $1,694. Find the simple interest rate the account earned.

A. 5% **B.** 8%

C. 7.25% **D.** 7%

Question 10

Principal = 360, Interest = $17.55, Time = 9 months. Calculate the Interest Rate.

A. 6% **B.** 7.65%

C. 6.5% **D.** 5.5%

Answers: 1) D 2) C 3) A 4) D 5) B 6) C 7) A 8) C 9) D 10) C

Name _____ Date _____

Problem solving with compound interest

Working with Powers, Exponents, and Polynomials

To find compound interest over a course of several years, use the formula:

$A = P(1 + r)^t$, where A is the balance, P is the principal, r is the annual interest rate, and t is the number of years.

Find the balance after 5 years if $1000 is deposited into an account that pays 5% annual interest compounded yearly.

$A = P(1 + r)^t$	Use the compound interest formula.
$A = 1000(1 + 0.05)^5$	Substitute the given values for each variable.
$A = 1000(1.05)^5$	Use a calculator to solve.
$A = \$1,276.28$	Round balance to the nearest cent.

Thus, the balance after 5 years is $1,276.28.

Solve each problem for its unknown. Round to the nearest cent.

1. A principal of $150 is deposited in an account that pays 8% interest compounded yearly. Find the balance of the account after 3 years.

2. How much should you deposit into an account that pays 6% interest compounded yearly to have a balance of $900 after 5 years?

3. $1,500 is deposited into an account that pays 6.5% interest compounded yearly. What is the balance after 4 years?

4. How much do you need to deposit into your account that pays 7% interest compounded yearly to have a balance of $2,500 after 8 years?

5. John's bonus this quarter was for $1,250. If he put it into an account that pays 8% interest compounded yearly, what would his balance be after 3 years? Is this more or less than a balance after 5 years if he put it into an account that pays 5% interest compounded yearly? What is the difference?