Secondary 1 Honors ~ 5.5 Simple & Compound Interest

Name: _____ Period: _____

1. Natalie bought a $1000 computer with a financing option. She doesn't have to make any payments for 5 years, but the loan accrues **15%** interest on the original loan amount of $1000. (This is simple interest.)

a. How much interest will she have to pay for the first year on her loan? _____

b. How much money will she have to pay in interest the second year? _____

c. To the right, make a table to show how much money she will have to pay including interest and the original amount each year.

Year	Interest

d. Write an equation to calculate the amount due with interest for any year _____

e. How much will she have to pay total for the full 5 years? _____

f. Explain how you figured your answer for part e.

g. Write an equation that would calculate the total amount of money due for any size on any year of a simple loan. (This will be the general formula for simple interest equations.)

h. Explain each of the variables you used in your equation in part g: _____

i. Natalie's loan could be written as what kind of sequence? *Arithmetic* or *Geometric*

j. How do you know what kind of sequence it will be?

2. Miranda recognizes that Natalie will pay a lot in interest. She mentioned that she bought a computer at the same price and will pay it off in the same 5 years, but her interest rate is only **12.5%.** The difference is that her interest is **compounded annually**. (She will pay interest on the initial amount as well as the past interest.). Make a table to show how much she pays on her loan each year for 5 years.

Year	Interest

a. How much interest will she have to pay for the first year on her loan? _____

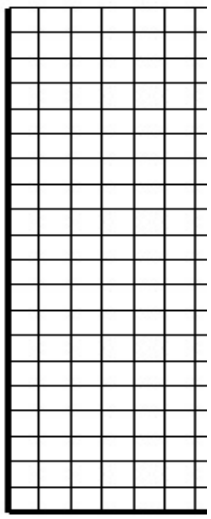
b. How much interest will she have to pay in the second year? _____

c. How much will Miranda pay total over the 5 years? _____

d. Write an equation to calculate the amount due with interest for any year _____

e. Define your variables in part d: _____

_____



3. Graph and label both equations that you wrote for Miranda and Natalie.

4. Whose payment plan is better? _____ How do you know? _____

_____

5. Nadia received $200 for her 10th birthday. She put it in a bank with a 7.5% interest compounded yearly. Assuming she doesn't deposit or withdrawn from it,

a. Write a recursive equation._____

b. Write an explicit equation to describe the amount of money in the bank._____

c. How much money will she have in the bank by her 21st birthday? _____

d. How much money will she have in the bank on her 50^{th} birthday? _____

6. Peter earned **$1500** and deposited the money that earned **5%** interest yearly.

If the growth is arithmetic,

a. Write a recursive equation that describes the amount of money in the bank. _____

b. Write an explicit equation that describes the amount of money in the bank._____

c. How much money would Peter have in 5 years? _____

If the growth is geometric,

d. Write a recursive equation that describes the amount of money in the bank. _____

e. Write an explicit equation that describes the amount of money in the bank._____

f. How much money would Peter have in 5 years? _____

g. Write the equation if his initial deposit was only $1000? _____

h. How much money would he have in 5 years if his initial deposit was only $1000? _____

i. Write the explicit equation if he put $1500 in an account that paid 5.25% yearly?_____

j. How much money would he have in 5 years with this higher interest rate? _____

k. At this rate, when will Peter have $20,000 in his account? _____

l. Find $f(20)$._____ What does that mean? _____

7. Using the points **(2, 5)** and **(3, 20).**

a. Complete the table for the **ARITHMETIC** sequence.

X	2	3	4	5
Y	5	20		

b. Write a recursive equation for the sequence. _____

c. Write an explicit equation for the Sequence. _____

d. Find $f(10)$ _____

e. Complete the table for the **GEOMETRIC** sequence.

X	2	3	4	5
Y	5	20		

f. Write a recursive equation for the sequence. _____

g. Write an explicit equation for the Sequence._____

h. Find $f(10)$ _____

8. If $f(x) = 3(0.85)^x$

a. Make a table.

b. Increasing or decreasing?

_____

c. Find the Initial amount or $f(0)$ ____

d. Common Ratio (Multiplier) _____

e. Find $f(5)$= _____

9. If $g(x) = 3(1.15)^x$

a. Make a table.

b. Increasing or decreasing?

_____

c. Find the Initial amount or $g(0)$ _____

d. Common Ratio (Multiplier) _____

e. Find $g(5)$= _____