9E Growth/Decay & Simple/Compound Name:_____ Per:_____

SHOW YOUR WORK AND WORK IN PENCIL

Determine the common ratio (multiplier) for each growth or decay rate.

1. 13% Decay _____
2. 3.5% Decay _____
3. 11% Growth _____
4. 97% Decay _____
5. .25% growth _____
6. 4.5% Decay _____
7. Explain your reasoning for your choice of multiplier in number 3._____
   _____
8. Explain your reasoning for your choice of multiplier in number 1._____
   _____

Many types of items depreciate in value with time like the value of your car or the value of the phone in your pocket. If you purchased the following items in **2005** for the price listed below and assuming **9% compound depreciation** per year, make a **4-column table** to show the value of the items for several years. Then write an explicit equation that would calculate the value for any year.

9. Cell phone: $250.00
10. Used car: $8000.00

Equation: _____ Equation: _____

11. How much would the phone from #9 be worth today (in 2016)? _____
12. How much would the car be worth today?_____
13. When will the cell phone be worth $0? _____. Explain: _____

Write equations to tell the value of these items if they depreciated by compound rate of 13.5%per year.

14. Cell phone: $250.00
15. Used car, $8000.00

Equation: _____ Equation: _____

16. Back in 2012 Robyn's mom bought her an iPhone 4 for $299.00. Now it's been four years and Robyn's phone is seriously out of date but her mom will only buy her a new phone if Robyn sells her old phone and uses the proceeds to go toward her new phone. Robyn decides to sell the phone.
    a. Write an equation to calculate a fair price to list it, assuming a compounded depreciation rate of 16.5% per year? _____
    b. How much will phone be worth in 2016 if Robyn keeps the phone? _____
17. What is the difference between **simple interest** and **compound interest**? _____
    _____
18. Anne takes out a $400.00 loan at a 20% annual interest rate with **simple interest.**
    a. How much interest will she pay each year? _____ (1.20, .20, or $20 are wrong answer.)
    b. Write an equation to find out much will Anne owe in ONLY interest after one year? _____
    c. Total balance after two years? _____
    d. Total balance after 3 years? _____

EC. If the principal amount (initial value) of a loan is $500.00 and the **simple interest** earned is $80.00 for 2 years. What is the interest rate?

EC. Interest earned is $200 for 2 years with at a simple interest of 10%. What is the principal amount?

19. Ben puts $1,000 into an account.
    a. Fill out the table showing how much he will earn with 8% **simple interest per year.**
    b. How much interest does he make **just in interest** the first year? _____
    c. Write the recursive equation: _____

    d. Write the explicit equation: _____

    e. What is his total money at $f(3)$. _____

x	Pattern	$f(x)$	S.H.
0			
1			
2			
3			
x			

20. Daniel deposits $1000 into a bank account
    a. Fill out the table showing how much he will earn with 8% **compound interest per year.**
    b. How much interest does he make **just in interest** the first year? _____
    c. Write the recursive equation: _____

    d. Write the explicit equation: _____

    e. What is his total money at $f(3)$. _____

x	Pattern	$f(x)$	S.H.
0			
1			
2			
3			
x			

21. Fill in the blanks in the following table.

n	0	1	2	3	4
Arithmetic	3	6			
Geometric	3	6			

    a. Common difference: _____
    b. Common ratio_____
    c. Write recursive equation for Arithmetic: _____
    d. Write the explicit equation for Arithmetic: _____
    e. Write recursive equation for Geometric: _____
    f. Write the explicit equation for Geometric: _____

22. A stock market account has grown according to the equation $m(y) = 5400(1.085)^{y-1}$ where y is the number of years the account has grown.
    a. How much money did the account have at the beginning? _____
    b. How much money was in the account after one year? _____
    c. What is the interest rate made for the account? _____