**9RH Sequence Review** Name: _____ Per: _____

SHOW YOUR WORK FOR FULL CREDIT. NO WORK, NO CREDIT. NO WORK IN PEN.

**Answer the following:**

1. Arithmetic sequence: $f(1) = 2$, common difference $d = 3$
   a. Find: $f(2) =$ _____ $f(3) =$ _____ $f(4) =$ _____ $f(8) =$ _____
   b. Recursive equation: _____ c. Explicit equation: _____

2. Geometric sequence: $f(1) = 2$, common ratio $r = 3$
   a. Find: $f(2) =$ _____ $f(3) =$ _____ $f(4) =$ _____ $f(8) =$ _____
   b. Recursive equation: _____ c. Explicit equation: _____

3. State similarities between the sequences from #1 and #2 _____

4. State differences between the sequences from #1 and #2 _____

5. **Fill in the table and answer the following questions**.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Arithmetic | 2 | | | 6750 | |
| Geometric | 2 | | | 6750 | |

Common Difference: _____

Common Ratio: _____

   a. Arith Recursive Eq: _____
   b. Arith Explicit Eq: _____
   c. Geo Recursive Eq: _____
   d. Geo Explicit Eq: _____

6. **Fill in the table and answer the following questions**.

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Arithmetic | 5 | | | 40 | |
| Geometric | 5 | | | 40 | |

Common Difference: _____

Common Ratio: _____

   a. Arith Recursive Eq: _____
   b. Arith Explicit Eq: _____
   c. Geo Recursive Eq: _____
   d. Geo Explicit Eq: _____

**Answer the following questions.**

7. $f(x) = 3(0.85)^x$
   Growth OR Decay? Multiplier_____
   Find $f(0)$= _____
   Recursive Eq_____
   What is the percent of growth/decay _____

8. $f(x) = 0.5(1.083)^{x-5}$
   Growth OR Decay? Multiplier_____
   Find $f(0)$= _____
   Recursive Eq_____
   What's the percent of growth/decay _____

9. Tell which tables show growth that is **linear, exponential, quadratic, or none**. **IF** linear or exponential, find the **recursive and explicit equations**.

a.

| x | $f$(x) |
|---|---|
| 2 | 4 |
| 3 | 9 |
| 4 | 14 |
| 5 | 19 |

Linear? Exp.? Other?
Recursive: _____
Explicit:_____

b.

| x | $g$(x) |
|---|---|
| 5 | 75 |
| 6 | 108 |
| 7 | 147 |
| 8 | 192 |

Linear? Exp? Other?
Recursive: _____
Explicit:_____

c.

| x | $f$(x) |
|---|---|
| 3 | 16 |
| 4 | 22 |
| 5 | 25 |
| 6 | 30 |

Linear? Exp? Other?
Recursive: _____
Explicit:_____

d.

| x | $f$(x) |
|---|---|
| 15 | 3 |
| 16 | 12 |
| 17 | 48 |
| 18 | 192 |

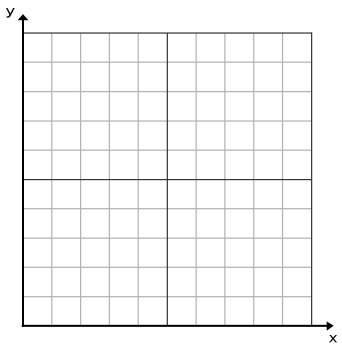
Linear? Exp? Other?
Recursive: _____
Explicit:_____

**Fill in the blanks based on the information given.**

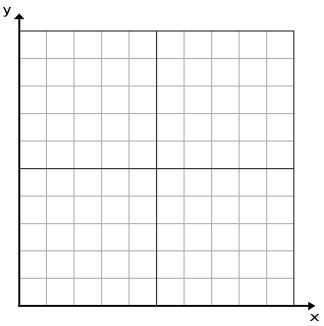
10. The $400 from your job gets deposited into a bank with **simple interest** at 10% annual interest.
    a. Equation: _____
    b. What type of sequence? _____
    c. How much interest will the bank pay in year 4? _____
    d. Make a table for $f(0)$, $f(1)$, $f(2)$ and $f(3)$

| | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| | | | | |

    e. Graph the above table on the grid to the right.
    f. What is the account balance after 10 years? _____




11. Strapped for cash, you decide to take out a loan for $2,000 to go to Hawaii. You go to the local Check N Go with a yearly interest rate of **520% that compounds** once per year.
    a. Write an equation to represent the interest. _____
    b. How much will you owe on a loan after one year? _____
    c. What about after three years? _____
    d. How would the equation change if the loan compounded monthly?
    e. Weekly? _____




    f. What is the difference in actual (nominal) interest rate and effective interest rate?

12. In 2013, you bought a used car for $15,000. The car's value depreciates by 8% a year.
    a. What is the initial amount? _____ b. Common ratio (multiplier)? _____
    c. Write an equation to model the situation. _____
    d. What will the car be worth this year? _____
    e. When will the car be worth $0? _____ Explain:_____
    _____
    f. Graph the equation to the right.

13. A bacteria has an original population of 6,000 and has a growth rate of 24% each day.
    a. Represent this growth/decay with an equation for *d* days. _____
    b. What will the population be after 2 days? _____
    c. Use your equation and find *d(10):*_____
    d. What does *d(10)* represent in context of the story? _____
    e. Write the equation if the bacteria had a growth rate of 1% per hour? _____
    f. Use your equation and find *h(10):*____

14. Given the following **graph**, make a table for the function. Write the explicit and recursive equation.

Explicit Equation:

Recursive Equation:

| $x$ | $f(x)$ |
|---|---|
| 0 | |
| 1 | |
| 2 | |