8C Arithmetic OR Geometric

Name: _____ Per: _____

SHOW YOUR WORK. WORK IN PENCIL

Due DATE: January 30th / 31st

Write the next 3 terms and circle if it is arithmetic, geometric, or neither. **If arithmetic or geometric,** answer the following questions. NOTE: **First given term is $f(0)$.**

1) 1, 4, 7, 10, 13, _____, _____, _____
   a. CIRCLE: Arithmetic/Geometric/Neither
   b. Common Difference/Common Ratio: _____
   c. Recursive Equation:_____
   d. Explicit Equation:_____
   e. Explicit Eq if first term is $f(1)$: _____

2) 4, 16, 36, 64, 100, _____, _____, _____
   CIRCLE: Arithmetic/Geometric/Neither
   Common Difference/Common Ratio: _____
   Recursive Equation:_____
   Explicit Equation:_____

3) 4, −12, 36, −108, 324, _____, _____, _____
   CIRCLE: Arithmetic/Geometric/Neither
   Common Difference/Common Ratio: _____
   Recursive Equation:_____
   Explicit Equation:_____
   Explicit Eq if first term is $f(1)$: _____

4) −4.25, −2.75, −1.25, 0.25, _____, _____, _____
   CIRCLE: Arithmetic/Geometric/Neither
   Common Difference/Common Ratio: _____
   Recursive Equation:_____
   Explicit Equation:_____
   Explicit Eq if first term is $f(1)$: _____

5) 0, 3, 8, 15, 24, _____, _____, _____
   CIRCLE: Arithmetic/Geometric/Neither
   Common Difference/Common Ratio: _____
   Recursive Equation:_____
   Explicit Equation:_____

6) 100, 50, 25, _____, _____, _____
   CIRCLE: Arithmetic/Geometric/Neither
   Common Difference/Common Ratio: _____
   Recursive Equation:_____
   Explicit Equation:_____
   Explicit Eq if first term is $f(1)$: _____

7) 9, 3, 1, $\frac{1}{3}$, $\frac{1}{9}$, _____, _____, _____
   CIRCLE: Arithmetic/Geometric/Neither
   Common Difference/Common Ratio: _____
   Recursive Equation:_____
   Explicit Equation:_____

8) Make a table for #7

n		$f(n)$	
0		9	
1			
2			
3			

Given an **explicit equation**, find $f(n)$ $when$ $n = 0, 1, 2, 3$

9. $f(n) = -2n + 5$
   a. $f(0) =$_____
   b. $f(1) =$_____
   c. $f(2) =$_____
   d. $f(3) =$_____

10. $f(n) = 2 \cdot 3^n$

n	$f(n)$
0	
1	
2	
3	

11. $f(n) = 4(-2)^n$

Given the **explicit equations, find each value** for the sequence. Tell whether it is **arithmetic or geometric** and write the **recursive** equation.

12. $f(n) = 5(-2)^n$
   a. Find $f(3) =$ _____ $f(4) =$_____
   b. Arithmetic or Geometric
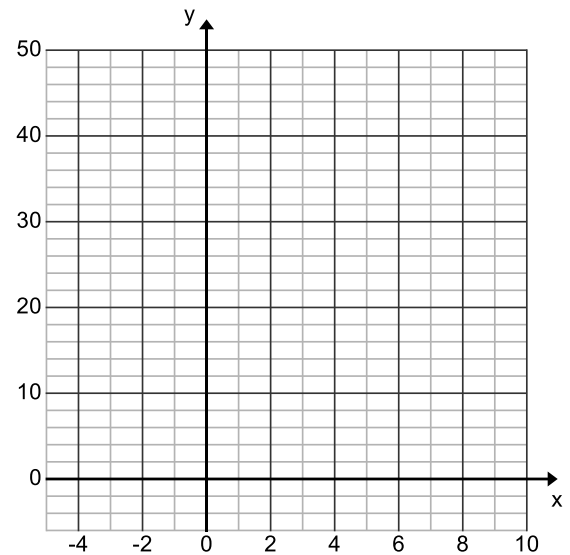   c. Write the recursive equation: _____

13. $f(n) = 5n + 20$
   a. Find $f(5) =$ _____ $f(6) =$ _____
   b. Arithmetic or Geometric
   c. Write the recursive equation: _____

14. Mr. and Mrs. Gloop want their son, Augustus, to do his homework each day. Augustus loves to eat candy, so his parents have decided to motivate him to do his homework by giving him candies for each day that the homework is complete. Mr. Gloop says that on the 1st day that Augustus turns in his homework, he will give him 10 candies. On day 2 he promises to give 20 candies, on the third day he will give 30 candies, and so on.

   a. Would this represent an arithmetic or geometric sequence? _____

   b. Write both equations that shows the number of candies that Augustus earns on any given day with his

      father's plan. Recursive: $F(x) =$ _____ Explicit: $F(x) =$ _____

   c. How many candies he would eat on day 30? $F(30) =$ _____

15. Augustus's mom is afraid that all that candy will make his weight problem worse, so his mom suggests that he will get only 2 candies on day 1, get 6 candies on day 2, 18 on day 3, and so on as he completes his homework.

   a. Is this an arithmetic or geometric sequence? _____

   b. Write both a recursive and an explicit equation of the amount of candy that Augustus would get each day he reaches his goal (of complete his homework) with the new plan.

     Recursive: $M(x)=$ _____

     Explicit: $M(x)=$ _____

   c. Use the explicit formula to predict the number of candies that he would earn on the 30th day. _____

   d. Which plan is better for Augustus to lose weight? _____
     Explain why _____

   e. Graph **BOTH** explicit equations from #14 and #15 to the right.

Complete each of the table and answer the following questions:

16.

x	g(x)
2	10
3	20
4	40
5	
10	

a. Write the Recursive:

_____

b. Write the Explicit:

_____

c. Linear/exponential/neither

17.

x	$h(x)$
1	16
2	64
3	256
4	
5	

a. Write the Recursive:

_____

b. Write the Explicit:

_____

c. Linear/exponential/neither

18.

x	f(x)
2	41
3	32
4	23
5	
10	

a. Write the Recursive:

_____

b. Write the Explicit:

_____

c. Linear/exponential/neither

19.

x	$k(x)$
0	15,625
1	3,125
2	625
3	125
4	

a. Write the Recursive:

_____

b. Write the Explicit:

_____

c. Linear/exponential/neither

20. Write the following inequality in **slope-intercept** form: $-2y + 7x - 2 < 3(x + 2)$

    a.   Solution Set: _____

    b.   Slope: _____, y-intercept: _____

    c.   Will the boundary line be Solid or Dotted? _____

    d.   Is the point $(3, -1)$ in the solution set? _____ Explain.