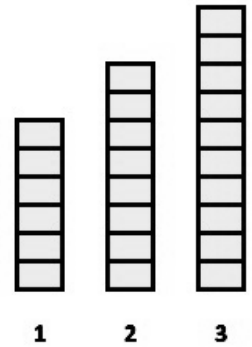# 8B Geometric Sequences

Name: _____ Per: _____

SHOW YOUR WORK. WORK IN PENCIL.

Due Date: January 28th / 29th

1. Gavin needs to get into shape to attract Lacey. He keeps track of the number of push-ups in the chart to the right if he starts with day 1.

   a. Fill in the four column table with the number of push-ups he does each day.

| n	Pattern	g(n)	Shorthand
1			
2			
3			
4			
5			

   b. Assuming the pattern continues, how many push-ups will he do on day 8? _____

   c. Is this pattern arithemetic? _____ Explain _____

   d. What is the slope? _____ What is the y-intercept? _____

   e. Write a recursive equation _____

   f. Write an explicit equation to show how many push-ups Gavin will do on day n. _____

2. His friend, Phillip decides to start by doing 1 push-up on the first day. The next day, he doubles the number of push-ups. He continues to double the number of push-ups each day.

   a. Fill in the four column table with the number of push-ups Phillip does.

n	Pattern	p(n)	Shorthand
1			
2			
3			
4			
5			
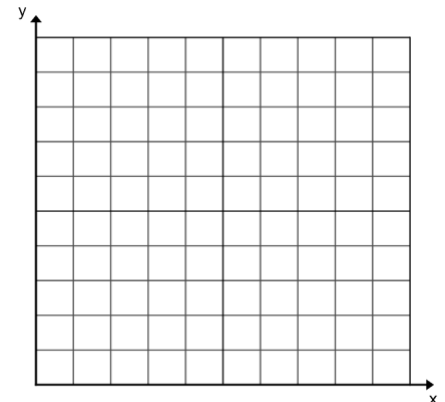
   b. What is the slope? _____ What is the y-intercept? _____

   c. Who will do more push-ups on day 4? _____

   d. How many push-ups will Phillip do on day 8? _____

   e. Is this pattern arithemetic? _____ Explain _____

   f. Graph (and label) the table for **both boys** on the grid to the right.

3. Use tables to **evaluate** *each function* when **x = {−1, 0, 1, 2 and 5}**.
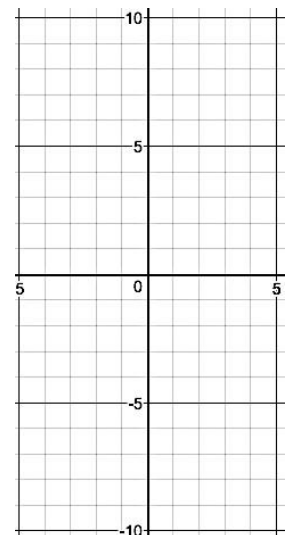
   a. $m(x) = 5^x$

x	m(x)
−1	
0	
1	
2	
5	

   b. $h(x) = -3^x$

x	h(x)
−1	

   c. $f(x) = 3^{x-1}$

x	f(x)

4. Sketch a graph and label the three functions from above on the grid to the right.

Complete the next two terms of each sequence. Circle is **Arithmetic, Geometric, or Neither**. If neither, explain why**. If Arithmetic or Geometric**, circle common difference OR ratio and state it plus write the equations. The first term that is given is $f(0)$.

5. $4, 14, 24, 34, 44,$ _____, _____, . . .

Arithmetic/Geometric/Neither

Common Difference/Ratio: _____

Recursive Equation: _____

Explicit Equation: _____

7. $-1, 6, -36, 216,$ _____, _____, . . .

Arithmetic/Geometric/Neither

Common Difference/Ratio: _____

Recursive Equation: _____

Explicit Equation: _____

6. $3, 15, 75, 375,$ _____, _____ . . .

Arithmetic/Geometric/Neither

Common Difference/Ratio: _____

Recursive Equation: _____

Explicit Equation: _____

8. $1, 4, 9, 16, 25, 36,$ _____, _____, . . .

Arithmetic/Geometric/Neither

Common Difference/Ratio: _____

Recursive Equation: _____

Explicit Equation: _____

9. Mr. Mann, a math teacher, has a 10% off late homework policy. Each day that an assignment is late a student receives 90% of the credit he or she would have received the day before.

a. Make a table to show the potential credit that can be earned. **Use a fraction to show the loss in credit.**

x	Pattern	y	Short Hand
0		100	
1		90	
2		81	
3			
4			

b. After how many days would your score for a late assignment drop below 50%? _____

c. When will your score reach 0? _____ Explain. _____

d. Write a recursive equation:

e. Write an explicit equation:

Finish each table. Circle "A" if Arithmetic or "G" if Geometric. Circle/list the common difference (d) OR common ratio (r). Write the recursive AND explicit equations in function notation.

10.

Term x	1st	2nd	3rd	4th	5th	6th	7th	8th
Value $f(x)$	3	8	13	18	23			

A or G   d OR r = _____ Recursive Equation: _____ Explicit Equation: _____

11.

Term x	0	1st	2nd	3rd	4th	5th	6th	7th
Value $f(x)$	$\frac{3}{2}$	3	6	12	24			

A or G   d OR r = _____ Recursive Equation: _____ Explicit Equation: _____