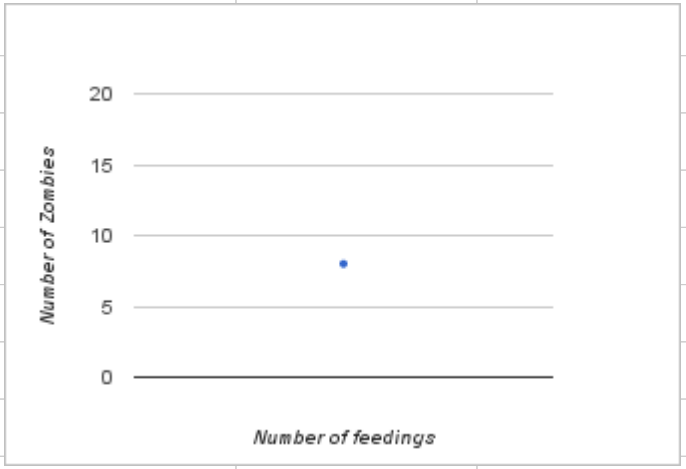
Name: Date:

1. Complete the following table with the class:

Feedings	Process	Zombies (Start with 1)
0	1*2^0	1
1		
2		
3	1*2^3	8
4		
5		
x		



Base	#NUM!
Coefficient	#NUM!

2. What is the function that models this zombie apocalypse?

3. What happens to the number of zombies after every feeding?

4. Suppose each Zombie infects 2 people every feeding, and you start with one infection. How many people do you think will be infected after 30 feedings?

5. Suppose that you started with 100 infected people, instead of just one. Complete the table for the number of zombies after x days:

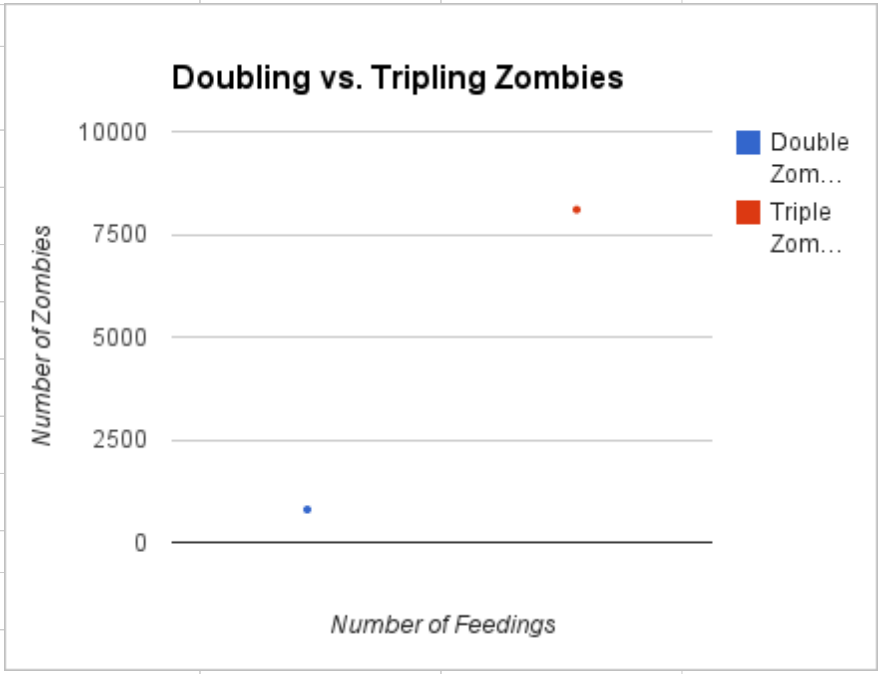
Feedings	Process	Zombies (Start with 100)
0	100 * 2^0	
1		
2		
3		800
4		
5	100*2^5	
x		

Base:	#NUM!
Coefficient:	#NUM!

6. For the function f(x) = 100 * 3^x, where x is the number of feedings and f(x) is the number of infected zombies, complete the following table and graph.

Feedings	Process	Triple Zombies
0		
1		
2		
3		
4		8100
5	100*3^5	
x		

Base:	#NUM!
Coefficient	#NUM!



How does the number of zombies change during each feeding in the above table and graph?

7. Your base and coefficient for #1 was:

Base	#NUM!
Coefficient	#NUM!

Your base and coefficient for #4 was:

Base:	#NUM!
Coefficient:	#NUM!

Write functions which model the number of zombies in #1 AND #5.

What is the difference between the two functions? In your answer, you should refer to what changed about the base and coefficient.

8. Your base and coefficient for #5 was:

Base	#NUM!
Coefficient	#NUM!

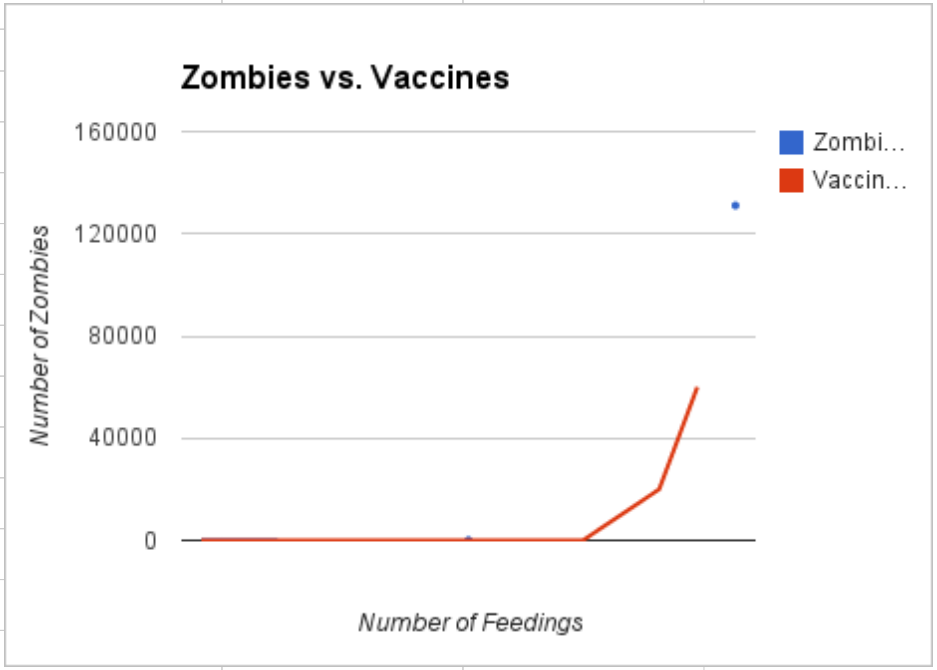
Your base and coefficient for #6 was:

Base:	#NUM!
Coefficient:	#NUM!

What was the difference between #5 AND #6? In your answer, you should refer to what changed about the zombie infections.

9. Good news! On day 10 of the zombie apolcalyse, a vaccine is discovered. The number of vaccines produced are in the table below. Complete the table (EVERYTHING that's pink)

Feedings	Zombies	Vaccines
0	1	0
1	2	0
2	4	0
3		0
4		0
5		0
6		0
7	128	0
8		0
9		0
10		0
11		10000
12		20000
13		
14		
15		
16		60000
17	131072	
18		



10. On what feeding will the number of zombies overcome the number of vaccines?

Is it possible to produce vaccines (at a constant rate) fast enough to deal with the zombies? What does that tell you about the difference between exponential and linear functions?

11. Compare and contrast linear and exponential functions. Under each, list what you know about each type of function.

Features of:

Linear	Exponential	Both

12. In #3, you predicted there would be this many zombies after 30 feedings:

Prediction:

Make a new prediction for how many zombies there will be after 30 feedings, supposing you start with 1 and they double each time.

How did your prediction change? (In your answer, indicate how the rate of growth for an exponential function is different than the rate of a linear function.)