

**WARM UP 3-3**

Decide if the following are linear, exponential, or neither. Circle your choice. Give at least two reasons why.

1. Linear  Exponential  Neither   
 WHY?  
 Straight line

2. Men's Height (in) compared to their Shoe Size  

Height (in)	53	58	62	67	70	74
Shoe Size	4	7	6	11	9	11

Linear  Exponential  Neither   
 WHY?  
 no pattern

3. Megan tells her two friends a secret on Monday. Then on Tuesday the two friends each tell two people. This pattern continues every day and the amount of people who know doubles everyday.  
 2, 4, 8, 16, 32  
Linear  Exponential  Neither   
 WHY?  
 increasing a lot quickly growth

4. Tennis Tournament  

Rounds	1	2	3	4	5
# of players left	64	32	16	8	4

Linear  Exponential  Neither   
 WHY?  
 decreasing quickly decay

**PREDICTION:**

1. What will happen to the graph of  $y = b(a)^x$  if  $0 < a < 1$ ? Why?



2. What will happen to the graph of  $y = b(a)^x$  if  $a = 1$ ? Why?

3. What will happen to the graph of  $y = b(a)^x$  if  $b = 0$ ? What if  $a = 0$ ? Why?

4. A population of mosquitos by the lake is to be exterminated. The starting population was estimated at 800,000. The number of mosquitos after  $x$  weeks is represented in the table below.

# of Weeks (x)	# of mosquitos
0	800,000
1	200,000
2	50,000
3	
4	
5	
6	

b. What is the initial value?  
 800,000

c. What is the common ratio?

$\div 4 = x \frac{1}{4}$   
 $\div \frac{1}{4} = x \frac{1}{4}$

d. What is the equation that represents this situation?

$y = 800000 \left(\frac{1}{4}\right)^x$   
 $y = 800,000 \cdot 4^{-x}$   
 $4^{-x} = \frac{1}{4^x}$

5. A Clothing store discounts items on a regular schedule. Each week, the price of an item is reduced. The prices for the black skinny jeans are in the table below. Week 0 is the starting price of the jeans.

Week	Price in dollars (\$)
0	100
1	60.00
2	36.00
3	21.60
4	
5	
6	

a. Finish filling out the table.

b. What is the common ratio?  
 $\frac{60}{100} = 0.6$   
 $\frac{36}{60} = 0.6$   
 $\frac{21.6}{36} = 0.6$   
 $\times \frac{3}{5} \div 1.6 \times 0.6 = \frac{3}{5}$

c. What is the initial value?  
 100

d. What is the equation that represents this situation?  
 $y = 100 \cdot \left(\frac{3}{5}\right)^x$   
 $y = 100(0.6)^x$

6. The same clothing store just got in a new fur boots. The retail price is \$300.00 and they need to make a list of the different prices each week. The boots reduces 80% each week.

Week	Price in dollars (\$)
0	300.00
1	
2	
3	
4	
5	
6	

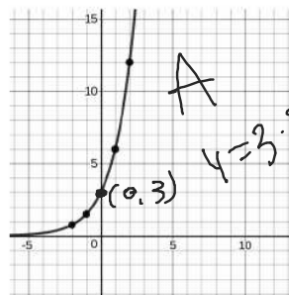
- b. What is the equation that represents this situation?

9. Match the following graphs and tables with their equations.

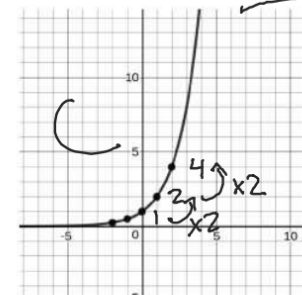
a.  $y = 3(2)^x = 6$   
 b.  $y = 8(.25)^x = 6$

c.  $y = 1(2)^x$   
 d.  $y = 8(5)^x$

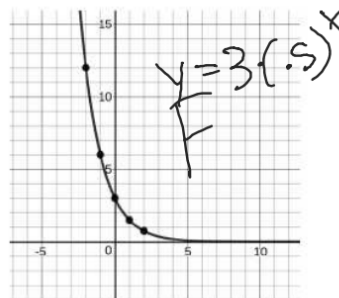
e.  $y = 1(3)^x$   
 f.  $y = 3(5)^x$



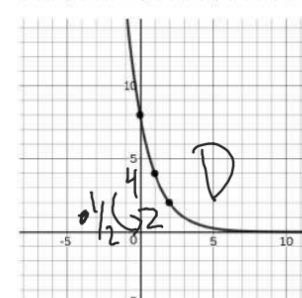
I.



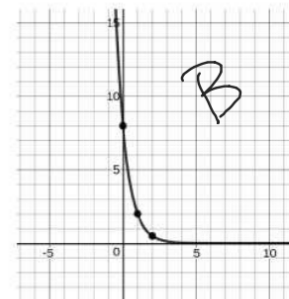
IV.



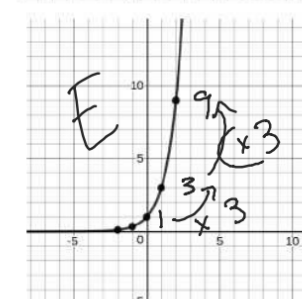
II.



V.



III.



VI.

IMPORTANT IDEAS:

