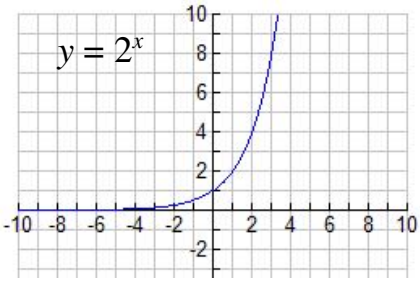
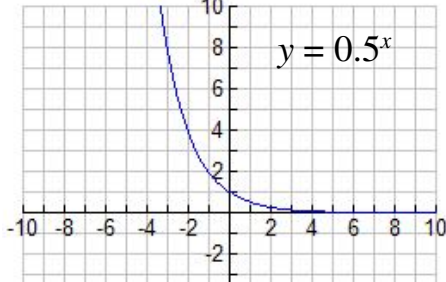


Exponential Relationships

The generalization for an exponential relation is _____, where b represents the _____.

Compare the two types of exponential relationships in the chart below.

Exponential Growth	Exponential Decay
	
<p>When b is greater than 1, the relation is _____</p> <p>because the graph moves up to the right.</p> <p>(The graph increases slowly and then more rapidly.)</p>	<p>When b is between 0 and 1, the relation is _____</p> <p>because the graph moves down to the right.</p> <p>(The graph decreases rapidly and then more rapidly.)</p>
<p>The value of b is considered the growth factor.</p>	<p>The value of b is considered the decay factor.</p>
<p><i>What will the x-intercept be?</i></p> <p>To find the x-intercept, let $y = \underline{\hspace{1cm}}$ and solve:</p>	
<p><i>What will the y-intercept be?</i></p> <p>To find the y-intercept, let $x = \underline{\hspace{1cm}}$ and solve:</p>	

Example 1

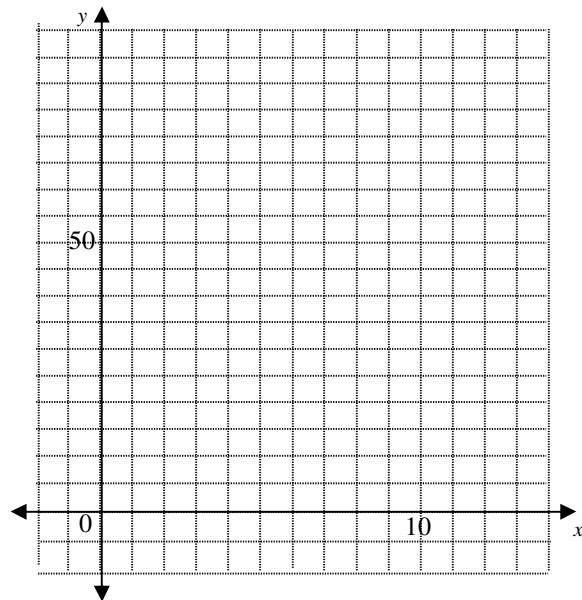
Use the table of values to answer the questions below.

x	y	1 st ratios
0	1	
1	3	
2	9	
3	27	
4	81	

a. Is the relationship is exponential? Give a reason for your answer.

b. State the equation for the relationship.

c. Graph the relationship.



Example 2

A small garden centre propagates tulip bulbs. The gardener begins with 100 bulbs. Each bulb produces several new bulbs. Three of these are kept for the next round. Write an equation to represent the number of new bulbs.

Round	Number of New Bulbs
0	
1	
2	
3	
n	

1. Start with the initial number of bulbs: ____
2. Multiply by the growth factor for each round: ____
3. Do you notice a pattern? Will it help you to create an equation for the situation?

The generalization for exponential growth and decay is _____.

- $a =$ _____
- $b =$ the _____ (common ratio)
- $y =$ the value after x periods of exponential growth/decay



So equation for this question is: _____

Example 3

Suppose you have _____ in the bank and you deposit it into a savings account that pays _____ interest per year.

a) Find the equation that models this exponential growth

b) Find the amount of money you will have after 3 years.