

(A) Lesson Objectives:

- a. Introduce Multiple Representations of Exponential Equations
- b. Apply Exponential Equations to Real World Applications
- c. Graph Exponential Equations

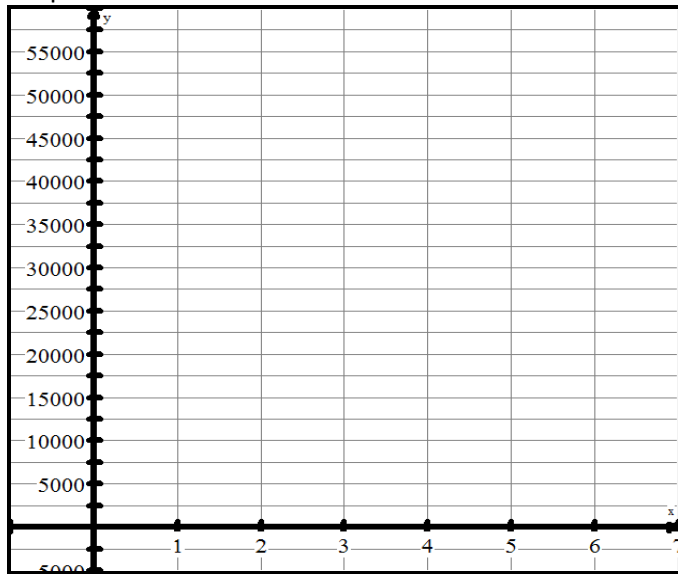
(B) Fast Five:

- a. For the equation $y = 2^x$:
 - i. EXPLAIN how to graph the equation **C**
 - ii. Complete a data table **K**
 - iii. Does the graph have a “slope” that we can calculate? Why/why not? **T**

(C) Explorations – Starting with a Verbal Description:

Mr Santowski has been given a new job contract. He will earn \$40,000 per year and get a 6% raise per year for the next 5 years.

Graph:



DEFINE YOUR VARIABLES, then complete the tables

Data Table:

x						
y						

(a) Write an equation for Mr. S’s salary.

(b) What does the y-intercept represent?

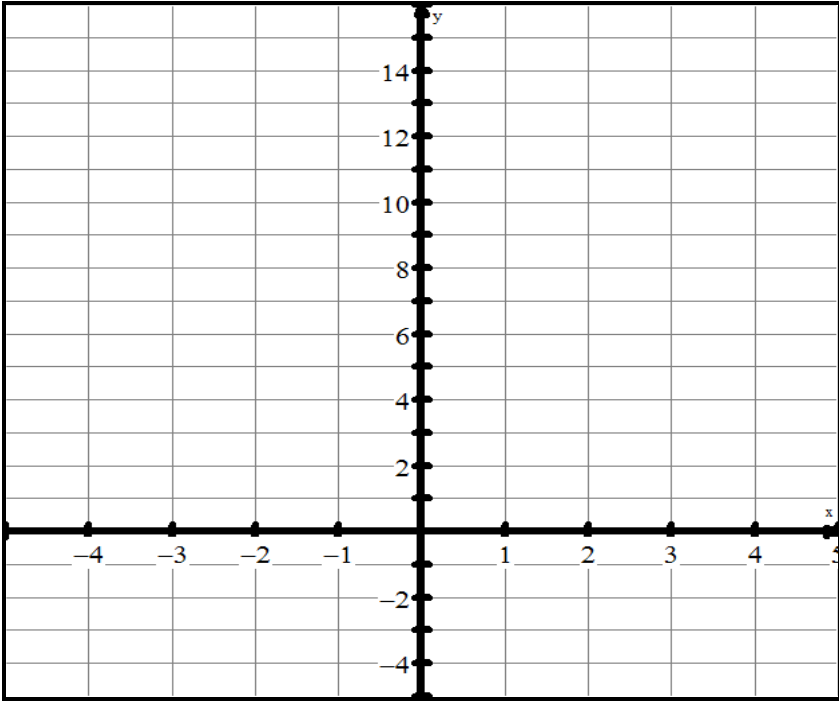
(c) I would like Mr. S’s salary to be modelled with a linear relation. HOW would you change the original info so that a linear model can be used?

(d) What would my salary be in 8 years?

(e) After how many years would my salary be \$70,000?

(f) What assumption are you making as you answer Qd,e?

(C) Explorations – Starting with a data table

<p>Data Table:</p> <table border="1" data-bbox="94 289 777 422"><tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>1.333</td><td>2</td><td>3</td><td>4.5</td><td>6.75</td><td>10.125</td></tr></table>	x	-1	0	1	2	3	4	y	1.333	2	3	4.5	6.75	10.125	Verbal Description of number pattern:
x	-1	0	1	2	3	4									
y	1.333	2	3	4.5	6.75	10.125									
<p>Graph:</p> 	Equation: Y-intercept:														
<p>Questions:</p> <ol style="list-style-type: none">Write an equation that will help you to determine the value of y if $x = 2.5$. Explain how you solved this equation.Write an equation that will help you to determine the value of y if $x = -3$. Explain how you solved this equation.Write an equation that will help you to determine the value of x if $y = 5$. Explain how you solved this equation.Write an equation that will help you to determine the value of x if $y = 30$. Explain how you solved this equation.															

(C) Explorations: Starting with a Graph

Data Table:

x										
y										

Verbal Description of Number/Data patterns

Graph:



Equation:

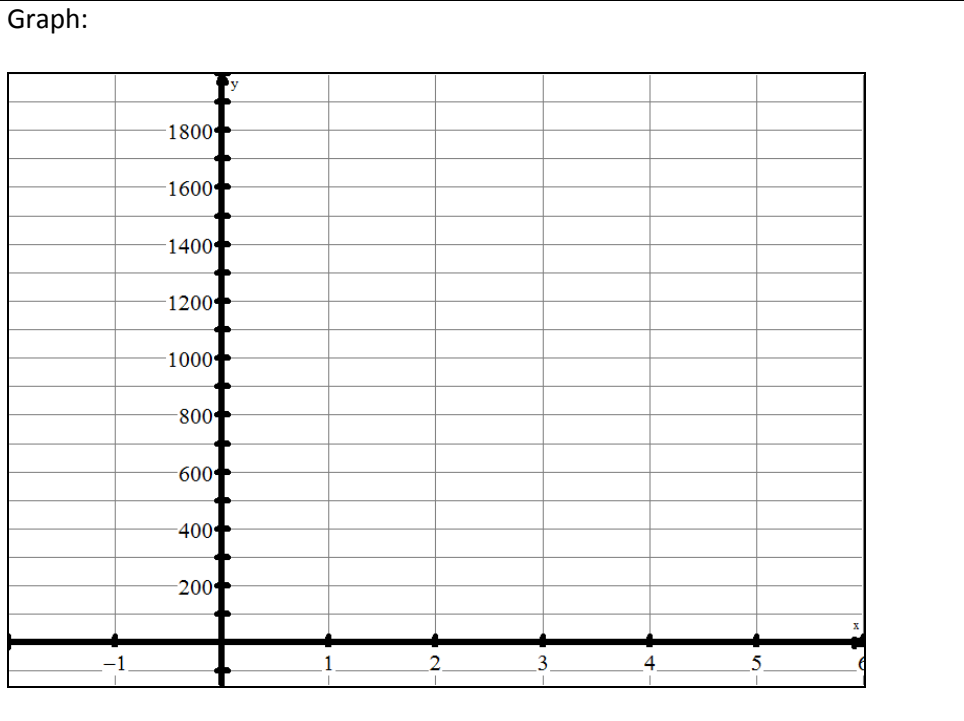
Y-intercept:

Questions:

- Write an equation that will help you to determine the value of y if $x = 2.5$. Explain how you solved this equation.
- Write an equation that will help you to determine the value of y if $x = -3$. Explain how you solved this equation.
- Write an equation that will help you to determine the value of x if $y = 5$. Explain how you solved this equation.
- Write an equation that will help you to determine the value of x if $y = 30$. Explain how you solved this equation.

(c) Explorations: Starting with an Equation

Equation #1 → $P = 100(2)^t$.	Equation #2 → $P = 1800(2/3)^t$.																																								
Data Table #1: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>t</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	t										P										Data Table #2: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>t</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>P</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	t										P									
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Equation #1 might represent:

Y-intercept #1 might represent:

Equation #2 might represent:

Y-intercept #2 might represent:

- Questions: Some exponential equations are used to model EXPONENTIAL GROWTH, while other equations are used to model EXPONENTIAL DECAY.
- a. From these exercises in the lesson, explain what EXPONENTIAL GROWTH might mean.
 - b. From these exercises in the lesson, explain how an EQUATION shows EXPONENTIAL GROWTH is occurring.
 - c. From these exercises in the lesson, explain how a DATA TABLE shows EXPONENTIAL GROWTH is occurring.
 - d. From these exercises in the lesson, explain how a GRAPH shows EXPONENTIAL GROWTH is occurring.
 - e. From these exercises in the lesson, explain what EXPONENTIAL DECAY might mean.
 - f. From these exercises in the lesson, explain how an EQUATION shows EXPONENTIAL DECAY is occurring.
 - g. From these exercises in the lesson, explain how a DATA TABLE shows EXPONENTIAL DECAY is occurring.
 - h. From these exercises in the lesson, explain how a GRAPH shows EXPONENTIAL DECAY is occurring.