

# 7-5 Study Guide and Intervention *(continued)*

## Exponential Functions

**Identify Exponential Behavior** It is sometimes useful to know if a set of data is exponential. One way to tell is to observe the shape of the graph. Another way is to observe the pattern in the set of data.

**Example :** Determine whether the set of data shown below displays exponential behavior. Write *yes* or *no*. Explain why or why not.

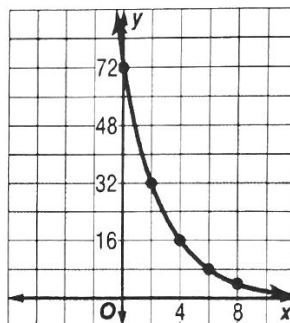
<b>x</b>	0	2	4	6	8	10
<b>y</b>	64	32	16	8	4	2

**Method 1:** Look for a Pattern

The domain values increase by regular intervals of 2, while the range values have a common factor of  $\frac{1}{2}$ .

Since the domain values increase by regular intervals and the range values have a common factor, the data are probably exponential.

**Method 2:** Graph the Data



The graph shows rapidly decreasing values of  $y$  as  $x$  increases. This is characteristic of exponential behavior.

### Exercises

Determine whether the set of data shown below displays exponential behavior. Write *yes* or *no*. Explain why or why not.

1.

<b>x</b>	0	1	2	3
<b>y</b>	5	10	15	20

2.

<b>x</b>	0	1	2	3
<b>y</b>	3	9	27	81

3.

<b>x</b>	-1	1	3	5
<b>y</b>	32	16	8	4

4.

<b>x</b>	-1	0	1	2	3
<b>y</b>	3	3	3	3	3

5.

<b>x</b>	-5	0	5	10
<b>y</b>	1	0.5	0.25	0.125

6.

<b>x</b>	0	1	2	3	4
<b>y</b>	$\frac{1}{3}$	$\frac{1}{9}$	$\frac{1}{27}$	$\frac{1}{81}$	$\frac{1}{243}$

Name: \_\_\_\_\_

Period: \_\_\_\_\_ Date: \_\_\_\_\_

## Lesson 3: Linear Versus Exponential Functions

### Problem Set

1. Look at the tables below. Which tables show a linear function and which show an exponential function? *why?*

Table 1

x	y
0	2
1	8
2	32
3	128
4	512

Table 2

x	y
0	20
1	17
2	14
3	11
4	8

Table 3

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

Type \_\_\_\_\_

Type \_\_\_\_\_

Type \_\_\_\_\_

2. Determine the function type: linear or exponential that can be used to model the data set *and explain why.*

Table 1

x	y
0	1
1	5
2	25
3	125
4	625

Table 2

x	y
0	300
1	150
2	75
3	37.5
4	18.75

Table 3

x	y
0	-6
1	2
2	10
3	18
4	26

Type \_\_\_\_\_

Type \_\_\_\_\_

Type \_\_\_\_\_