



PRACTICE/HOMEWORK

For questions 1-4 use finite differences to determine if each table represents an exponential function. Use real objects such as pennies or beans to create 4 stacks, one to represent the y -value for each x -value, and use the stacks to help you determine whether or not the data represents an exponential function.

1.

x	y
0	2
1	6
2	18
3	54

2.

x	y
0	3
1	4
2	7
3	12

3.

x	y
0	0
1	1
2	8
3	27

4.

x	y
0	3
1	6
2	12
3	24

For questions 5-8 identify if each table represents an exponential function or not. If the table represents an exponential function, identify the common ratio.

5.

x	y
1	2
2	4
3	6
4	8

Exponential Function?
Common Ratio:

6.

x	y
1	2
2	4
3	8
4	16

Exponential Function?
Common Ratio:

7.

x	y
1	3
2	4.5
3	6.75
4	10.125

Exponential Function?
Common Ratio:

8.

x	y
1	4
2	1
3	0.25
4	0.0625

Exponential Function?
Common Ratio:

For questions 9-12 use the situation below.



CRITICAL THINKING

A sheet of paper is 0.1 mm thick. When the paper is folded in half, the total thickness of the layers of paper is 0.2 mm. When the paper is folded in half again, the total thickness of the layers of paper is 0.4 mm.

9. Complete the table below to represent the situation.

NUMBER OF FOLDS x	TOTAL THICKNESS OF LAYERS y
0	0.1
1	0.2
2	
3	
4	

10. Does the situation represent a linear function or an exponential function? Justify your answer.
11. Which of the following represents the function that models this situation?
A. $y = x + 0.1$ C. $y = 0.1 \cdot 2^x$
B. $y = 2 \cdot 0.1^x$ D. $y = 2^x + 0.1$
12. Which of the following statements are true about the situation?
- $\Delta x = 1$
 - The situation is an example of exponential decay.
 - The function is increasing.
 - The common ratio is 2.
 - The y -intercept is $(0, 0.1)$.
 - The function is linear.
 - The function is decreasing.
 - $\Delta y = 0.1$
 - The common ratio is 0.2.
 - The situation is an example of exponential growth.

For questions 13-18 identify if each table represents an exponential function or not. If the table represents an exponential function, write the function relating the variables.

13.

x	y
0	0
1	4
2	32
3	108

Exponential Function?
Function:

14.

x	y
0	40
1	8
2	1.6
3	0.32

Exponential Function?
Function:

15.

x	y
0	50
1	25
2	12.5
3	6.25

Exponential Function?
Function:

17.

x	y
1	4500
2	6750
3	10,125
4	15,187.5

Exponential Function?
Function:

16.

x	y
1	300
2	150
3	100
4	75

Exponential Function?
Function:

18.

x	y
1	14
2	56
3	224
4	896

Exponential Function?
Function:

For questions 19-20 use the situation below.



CRITICAL THINKING

A sheet of paper has an area of 100 square inches. When the paper is cut in half, the area of one piece is 50 square inches. When that piece is cut in half, the area of one piece is 25 square inches.

NUMBER OF CUTS x	AREA OF ONE PIECE y
0	100
1	50
2	25

19. What would be the area of one piece after 5 cuts?
20. Write the function relating the variables.
21. Draw a diagram of the paper and how it is cut in half. Use the diagram to interpret the values of a and b in your exponential function. Communicate your mathematical reasoning and its implications using the diagram.