NAME DATE PERIOD

Lesson 7: Logs Go Viral

Ready, Set, Go

Ready

Fill in the table for each of the given functions.

1.

x	$y = x^1$
-3	
-2	
-1	
0	
1	
2	
3	

NAME DATE PERIOD

2.

x	$y = x^2$
-3	
-2	
-1	
0	
1	
2	
3	

3.

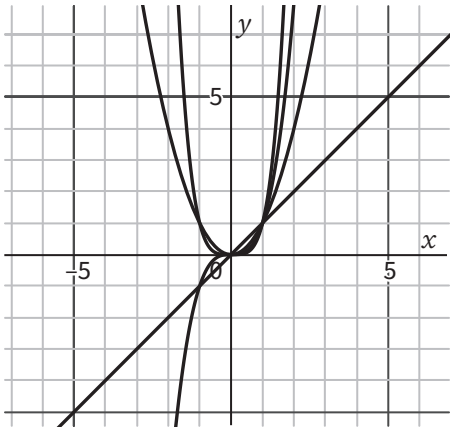
x	$y = x^3$
-3	
-2	
-1	
0	
1	
2	
3	

NAME DATE PERIOD

4.

x	$y = x^4$
-3	
-2	
-1	
0	
1	
2	
3	

5. Using the functions from the first four problems, label each graph with the function that describes it.



6. Identify the point(s) that all of the functions from problems 1–5 share. Explain why this is logical.

7. Which of the graphs from problems 1–5 have a line of symmetry at $x = 0$?

NAME DATE PERIOD

Set

8. A certain bacteria population is known to double every 15 minutes. An experiment is being conducted in a microbiology lab. Suppose there are initially 7 bacteria in a Petri dish.

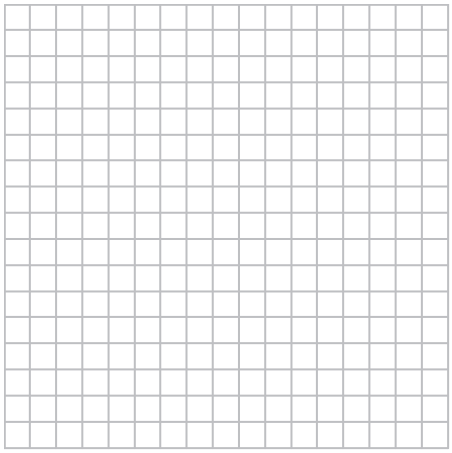
Make a table, graph, and an equation that will predict the number of bacteria in t hours.

a. Complete the table that will predict the number of bacteria in t hours.

Time in Hours	Number of Bacteria

b. Make a graph that will predict the number of bacteria in t hours.

Label the scale on both the x- and y-axes. Make sure you can fit at least 3 points on your graph.



c. Write an equation that will predict the number of bacteria in t hours.

9. **a.** Between what times, to the nearest $\frac{1}{4}$ of an hour, will the number of bacteria exceed $10{,}000$?

NAME DATE PERIOD

b. Between what times, to the nearest $\frac{1}{4}$ of an hour, will the number of bacteria exceed $1{,}000{,}000$?

10. Predict the number of bacteria after a 24-hour period. (Write your answer in scientific notation.)

11. Write a logarithmic equation that would allow you to find the time t when there are 700 bacteria.

12. Calculate the time when there are 700 bacteria. (Round your answer to three decimals.)

Go

Use the properties of logarithms and the given values to find the value of the indicated logarithm.

Do not use a calculator to evaluate the logarithms.

13. Given:

$\log 12 \approx 1.1$
$\log 8 \approx 0.9$
$\log 7 \approx 0.8$

Find $\log \frac{2}{3}$

14. Given:

$\log 12 \approx 1.1$
$\log 8 \approx 0.9$
$\log 7 \approx 0.8$

Find $\log \frac{1}{7}$

NAME DATE PERIOD

15. Given:

$\log 12 \approx 1.1$
$\log 8 \approx 0.9$
$\log 7 \approx 0.8$

Find $\log \frac{7}{8}$

16. Given:

$\log 12 \approx 1.1$
$\log 8 \approx 0.9$
$\log 7 \approx 0.8$

Find $\log \frac{3}{14}$

17. Given:

$\log_8 6 \approx 0.86$
$\log_8 9 \approx 1.06$
$\log_8 7 \approx 0.94$

Find $\log_8 729$

18. Given:

$\log_8 6 = A$
$\log_8 9 = B$
$\log_8 7 = C$

Find $\log_8 729$

19. Given:

NAME DATE PERIOD

$\log_8 6 \approx 0.86$
$\log_8 9 \approx 1.06$
$\log_8 7 \approx 0.94$

Find $\log_8 \frac{2}{3}$

20. Given:

$\log_8 6 = A$
$\log_8 9 = B$
$\log_8 7 = C$

Find $\log_8 \frac{14}{3}$