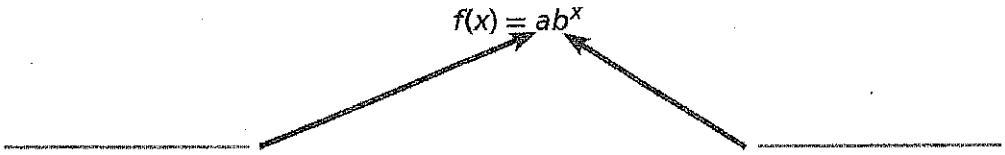
Name _____

6-2 Reteach to Build Understanding

Exponential Functions

1. Label the parts of the exponential function shown.



2. Fill in the blanks with numbers or equations to describe the function represented by the table.

x	$f(x)$
0	5
1	10
2	20
3	40
4	80

$10 \div 5 =$ ____
$20 \div 10 =$ ____
$40 \div 20 =$ ____
$80 \div 40 =$ ____

The initial amount is _____.

The constant ratio is _____.

In $f(x) = ab^x$, substitute _____ for a and _____ for b.

The function represented by the table is _____.

3. Describe and correct the error that Isabella made when writing an exponential function.

x	$f(x)$
0	2
1	6
2	18
3	54
4	162
5	486

$6 \div 2 = 3$
$18 \div 6 = 3$
$54 \div 18 = 3$
$162 \div 54 = 3$
$486 \div 162 = 3$

starting value $= 2$

constant ratio $= 3$

$f(x) = 2x^3$

6-2 Lesson Practice

Exponential Functions

1. Determine which function(s) are exponential. Select all that apply.

A

x	0	1	2	3	4
y	0	1	4	9	16

B

x	0	1	2	3	4
y	$\frac{1}{3}$	1	3	9	27

C

x	0	1	2	3	4
y	5	$\frac{5}{2}$	$\frac{5}{4}$	$\frac{5}{8}$	$\frac{5}{16}$

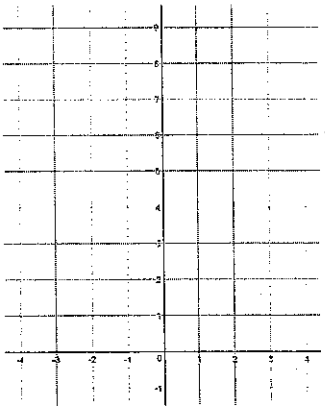
D

x	0	1	2	3	4
y	4.5	4	3.5	3	2.5

2. What are the key features of $f(x) = 8^x$?

y-intercept: _____ asymptote: _____ range: _____

3. Graph $f(x) = 3^x$.



4. What is the rule that defines the function represented by the table?

x	0	1	2	3	4
y	40	10	$\frac{5}{2}$	$\frac{5}{8}$	$\frac{5}{32}$

A $f(x) = \frac{1}{4}(40)^x$

B $f(x) = \frac{1}{2}(40)^x$

C $f(x) = 40\left(\frac{1}{4}\right)^x$

D $f(x) = 4\left(\frac{1}{3}\right)^x$

5. An exponential function repeatedly multiplies an initial amount by the same positive number called the _____.

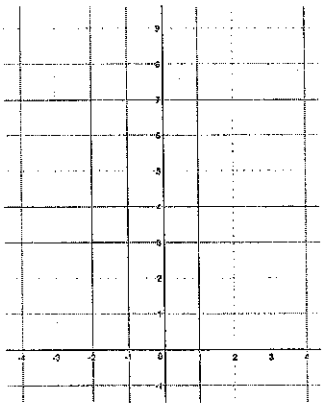
Name _____

6-2 Additional Practice

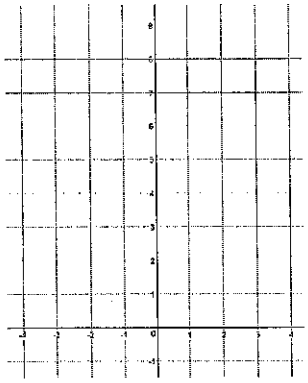
Exponential Functions

Graph each exponential function.

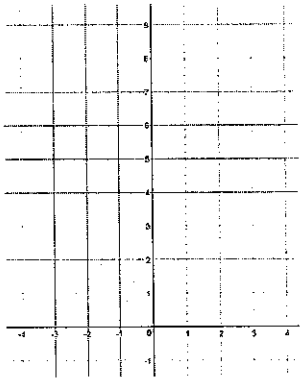
1. $f(x) = 3^x$



2. $f(x) = 8\left(\frac{1}{4}\right)^x$

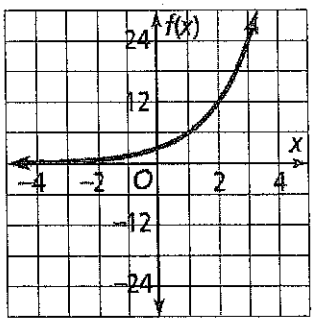


3. $f(x) = 4 \cdot 1.5^x$



Write an equation for each exponential function.

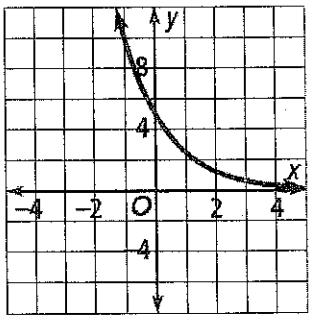
4.



5.

x	y
0	5
1	10
2	20
3	40

6.



7. Explain the key features of the exponential function $y = a \cdot b^x$, including the asymptote, key points on the graph, domain, and range. Sketch the graph of $y = a \cdot b^x$ twice: once for b> 1 and once for 0 < b < 1

8. The function $f(x) = 5{,}000 \cdot 1.05^x$ models an investment of $5,000 earning 5% annually. Identify and interpret the values of a and b. What is the balance of the investment after 15 years, assuming no further deposits or withdrawals?

Name _____

6-2 Mathematical Literacy and Vocabulary

Exponential Functions

Choose the concept from the list to complete each sentence. Each term may be used more than once.

asymptote	constant ratio	exponential	linear

1. The positive number that is repeatedly multiplied by the initial amount in an exponential function is the _____.
2. The line that the graph of an exponential function approaches is the _____.
3. A pattern of growth with a constant value added is _____.
4. A pattern of growth with a constant multiplier is _____.
5. For the graph of $y = 5^x$, the line $y = 0$ is the _____.
6. The equation $y = 5^x$ is a(n) _____ function.
7. The equation $y = 5x + 2$ is a(n) _____ function.
8. In the function $y = 5^x$, 5 is the _____.

Circle the constant ratio and underline the initial amount.

9. $2\left(\frac{1}{2}\right)^x$
10. $3(1.5^x)$

Multiple Choice

11. Which of the following is *not* an exponential function?

    A $y = 5^x$

    B $y = 5x - 1$

    C $y = 5^{x-1}$

    D $y = 3.5^x$

12. Write the equation of the exponential function that models the data:

    {(-1, 2), (0, 4), (1, 8), (2, 16)}