

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

## EOC Practice Problems

1. A certain population of bacteria has an average growth rate of 2%. The formula for the growth of the bacteria's population is  $A = P_0 (1.02)^t$  where  $P_0$  is the original population and  $t$  is the time in hours.

If you begin with 200 bacteria, about how many bacteria will there be after 100 hours?

- A. 7                      B. 272                      C. 1,449                      D. 20,000

2. Which function represents this sequence?

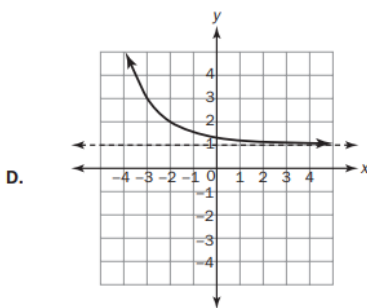
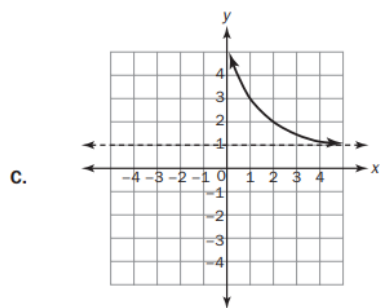
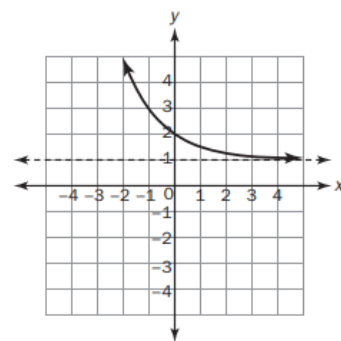
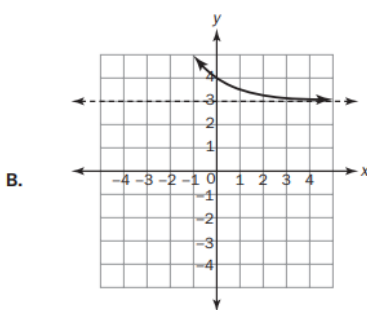
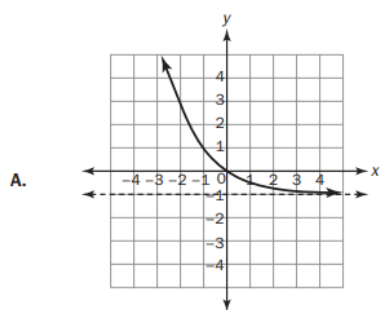
|       |   |    |    |     |     |     |
|-------|---|----|----|-----|-----|-----|
| $n$   | 1 | 2  | 3  | 4   | 5   | ... |
| $a_n$ | 6 | 18 | 54 | 162 | 486 | ... |

- A.  $f(n) = 3^{n-1}$                       B.  $f(n) = 6^{n-1}$                       C.  $f(n) = 3(6^{n-1})$                       D.  $f(n) = 6(3^{n-1})$

3. The points  $(0, 1)$ ,  $(1, 5)$ ,  $(2, 25)$ , and  $(3, 125)$  are on the graph of a function. Which equation represents that function?

- A.  $f(x) = 2^x$                       B.  $f(x) = 3^x$                       C.  $f(x) = 4^x$                       D.  $f(x) = 5^x$

4. The function  $f(x)$  is graphed below. Which graph shows  $f(x) + 2$ ?



5. Which function shows the function  $f(x) = 3^x$  being translated 5 units to the left?

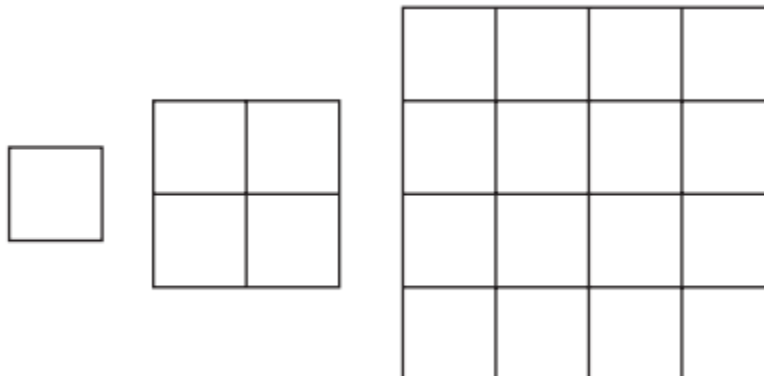
A.  $f(x) = 3^x - 5$

B.  $f(x) = 3^{(x+5)}$

C.  $f(x) = 3^{(x-5)}$

D.  $f(x) = 3^x + 5$

6. Consider this pattern.



Which function represents the sequence that represents the pattern?

A.  $f(n) = 4^{n-1}$

B.  $f(n) = 4^{(a_n-1)}$

C.  $f(n) = (a_n)(4^{n-1})$

D.  $f(n) = (a_n)^4$

7. Which function is modeled in this table?

A.  $f(x) = 1000(0.80)^x$

B.  $f(x) = 1000(0.20)^x$

C.  $f(x) = 1000(0.80)^{x-1}$

D.  $f(x) = 1000(0.20)^{x-1}$

| $x$ | $f(x)$ |
|-----|--------|
| 1   | 1000   |
| 2   | 800    |
| 3   | 640    |
| 4   | 512    |

8. Which explicit formula describes the pattern in this table?

A.  $C = 6d$

B.  $C = d + 6$

C.  $C = 6^d$

D.  $C = d^6$

| $d$ | $C$ |
|-----|-----|
| 0   | 1   |
| 1   | 6   |
| 2   | 36  |
| 3   | 216 |

9. If  $f(12) = 100(0.50)^{12}$ , which expression gives  $f(x)$ ?

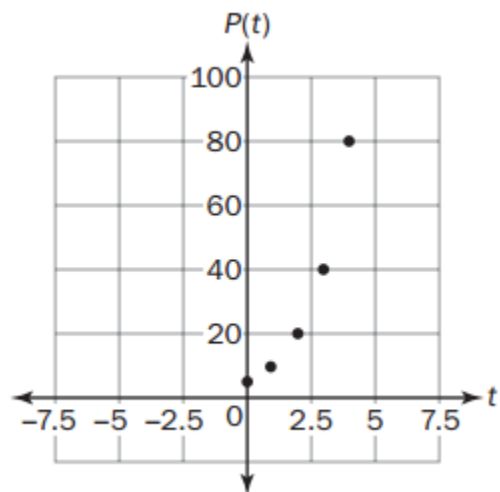
A.  $f(x) = 0.50^x$

B.  $f(x) = 100^x$

C.  $f(x) = 100(x)^{12}$

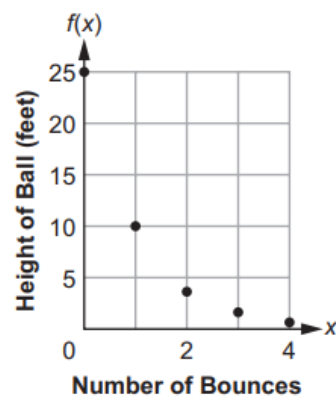
D.  $f(x) = 100(0.50)^x$

10. A population of squirrels doubles every year. Initially, there were 5 squirrels. A biologist studying the squirrels created a function to model their population growth:  $P(t) = 5(2)^t$  where  $t$  is the time in years. The graph of the function is shown.



What is the range of the function?

- A. Any real number  
B. Any whole number greater than 0  
C. Any whole number greater than 5  
D. Any whole number greater than or equal to 5
11. The function graphed on this coordinate grid shows  $f(x)$ , the height of a dropped ball, in feet, after its  $x$ th bounce.



On which bounce was the height of the ball 10 feet?

- A. Bounce 1  
B. Bounce 2  
C. Bounce 3  
D. Bounce 4
12. Look at the graph.

Which equation represents this graph?

- A.  $y = 2^{(x+1)} - 2$   
B.  $y = 2^{(x-1)} + 2$   
C.  $y = 2^{(x+2)} - 1$   
D.  $y = 2^{(x-2)} + 1$

