Math 7 Test **Name:** _____
SOL 7.12--- Functions and Relations

Use the table of values to the right to answer questions 1-5.

x	*y*
-2	-5
-1	-4
0	-3
1	-2
2	-1

1. List the set of ordered pairs.

   _____

2. List the set of independent variables. _____

3. List the values that are the range. _____

4. State whether this table represents a relation or a function and explain why.

   _____

   _____

5. Write a rule for this table of values. _____

Use the table of values to the right to answer questions 6-9.

x	*y*
2	0
3	1
3	4
5	2
4	3

6. List the set of ordered pairs.

   _____

7. List the set of dependent variables. _____

8. List the values of the domain. _____

9. State whether this table represents a relation or a function and explain why.

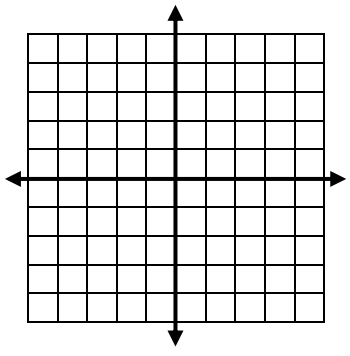
   _____

   _____

Complete the following function tables for each equation and graph the solution.

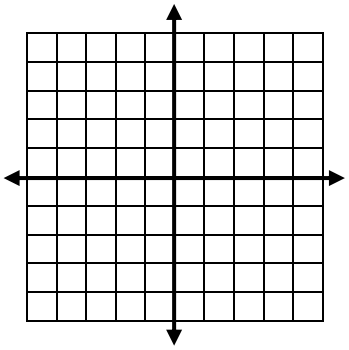
10. $y = -2x + 3$

x	$-2x + 3$	***y***	**(*x* , *y*)**
-1			
0			
1			

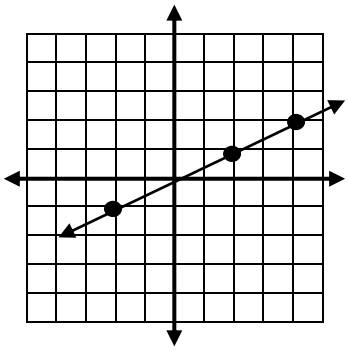


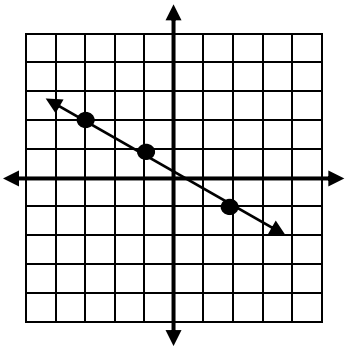
11. $y = \frac{1}{2}x + 1$

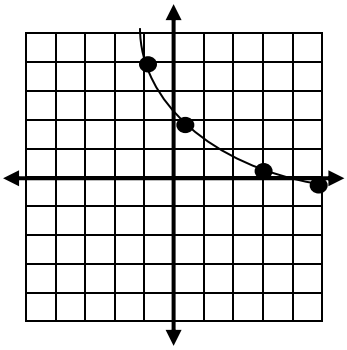
x	$\frac{1}{2}x + 1$	y	(x, y)
2			
0			
-4			

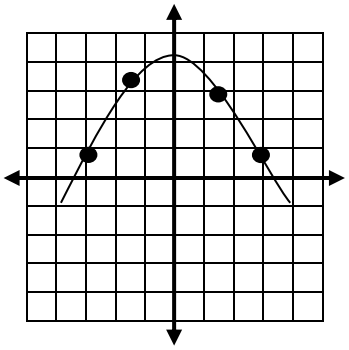


12. Identify the graph which corresponds to the equation $y = \frac{1}{2}x$. Circle the letter of the correct answer.

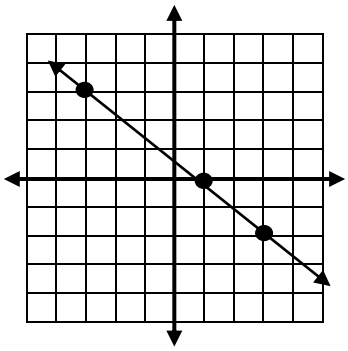
A. 

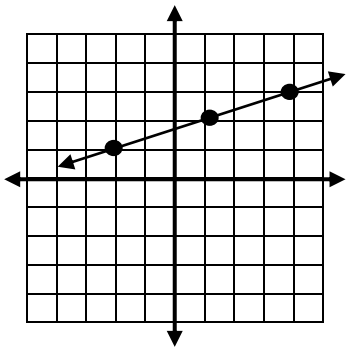
B. 

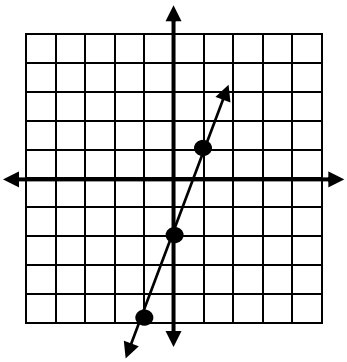
C. 

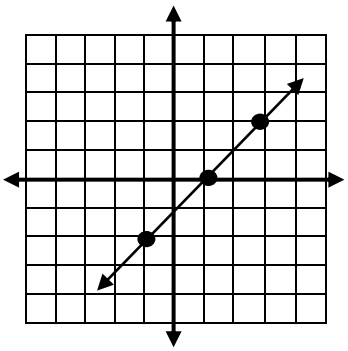
D. 

13. Identify the graph which corresponds to the equation $y = 3x - 2$. Circle the letter of the correct answer.

A. 

B. 

C. 

D. 

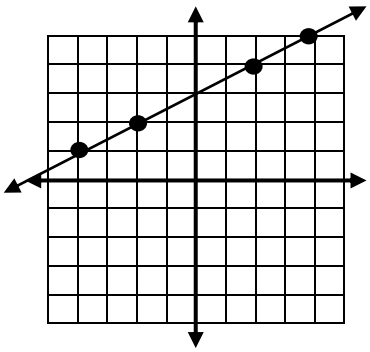
14. Which equation is represented by the graph at the right. Circle the letter of the correct answer.

A. $y = \frac{1}{2}x + 3$

B. $y = 2x + 3$

C. $x = \frac{1}{2}y + 3$

D. $y = x + 3$



15. Which table contains only values that satisfy $y = x$. Circle the letter of the correct answer.

A.

x	-2	-1	0	2
y	-2	-1	0	2

B.

x	-3	-2	-1	3
y	9	4	1	9

C.

x	4	0	1	9
y	2	0	1	3

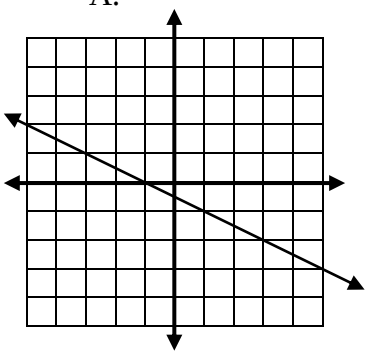
D.

x	0	1	2	-1
y	3	3	3	0

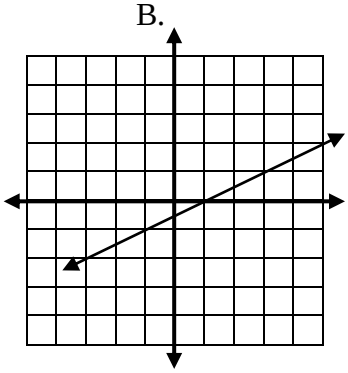
16. Which graph shows a line that contains the points in the table of ordered pairs at the right. Circle the letter of the correct answer.

x	***y***
2	5
0	1
-2	-3

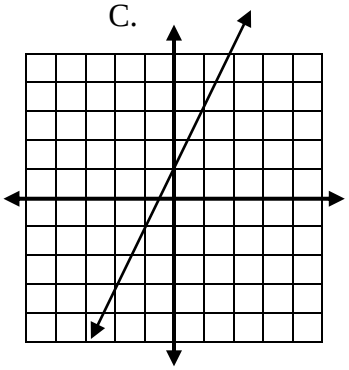
A.



B.



C.



17. Which function is true for all values in the table. Circle the letter of the correct answer.

A. $y = 3x + 4$

B. $y = -3x - 4$

C. $y = x + 4$

D. $y = 2x + 4$

x	***y***
0	4
2	8
3	10
4	12

18. **Use the figures below to answer questions A and B**.

a) Write a rule **in words** relating the figure number, ***x***, to the number of dots, ***y***.

_____

b) Describe the figures below as representing a **relation** or **function** and explain why.

_____

Figure 1

Figure 2

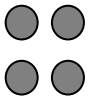


Figure 3

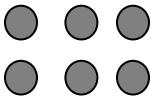
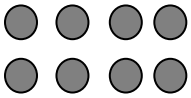
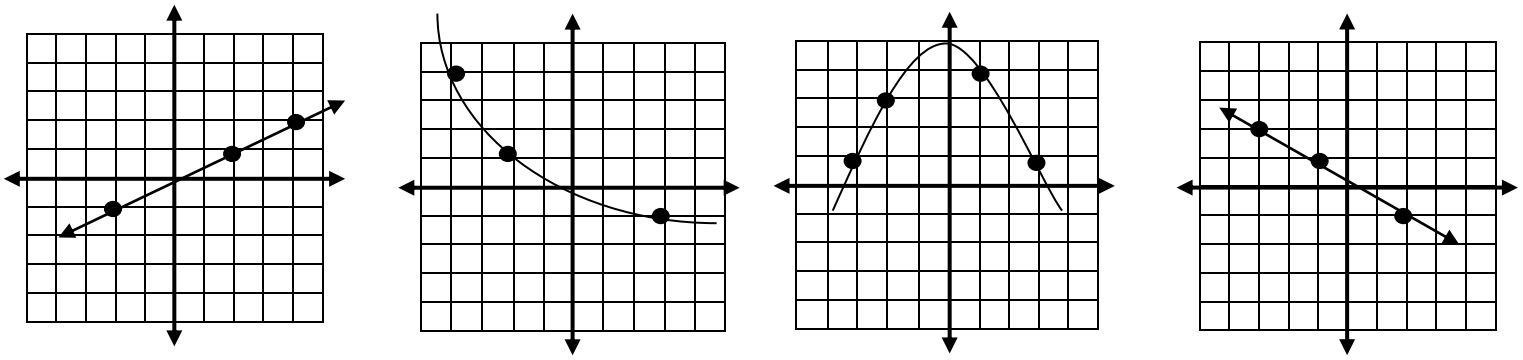


Figure 4



19. Circle the letter(s) for all the graph**s** that represent linear functions.

A. B. C. D.



20. For each situation below, write an equation (using *x* as your independent variable and *y* as your dependent variable) that describes the function. Fill in and complete the function table for the given values for each situation.

a) An MP3 player has 280 songs already uploaded. Each month 12 songs are added. How many songs, ***y***, are on the player after ***x*** months?

Equation: _____

x (months)	_____ (function)	***y*** (songs)
2		
3		
4		
10		

b) You are saving money to purchase a new cell phone. Your parents have agreed to pay you $2 for each household job that you complete each week and give you an additional $5 for the week. How much money, ***y***, will you earn for completing ***x*** jobs?

Equation: _____

x (jobs)	_____ (function)	***y*** (money)
4		
6		
8		
10		

Math SOL 7.12—Functions & Relations
Answer Key

1. {(-2, -5); (-1, -4); (0, -3); (1, -2); (2, -1)}
2. {-2, -1, 0, 1, 2}
3. {-5, -4, -3, -2, -1}
4. Function; answers may vary
5. $y = x - 3$
6. {(2, 0); (3, 1); (3, 4); (5, 2); (4, 3)}
7. {0, 1, 4, 2, 3}
8. {2, 3, 5, 4}
9. Relation; answers may vary
10. -2 (-1) + 3 = 5; 5; (-1, 5); see graph
    -2(0) + 3 = 3; 3; (0, 3); see graph
    -2(1) + 3 = 1; 1; (1, 1); see graph
11. $\frac{1}{2}$ (2) + 1 = 2; 2; (2, 2); see graph

    $\frac{1}{2}$ (0) + 1 = 1; 1; (0, 1); see graph

    $\frac{1}{2}$ (-4) + 1 = (-1); (-1); (-4, -1); see graph

12. A
13. C
14. A
15. A
16. C
17. D
18. A) answers may vary
    B) function; answer may vary
19. A & D
20. function: $y = 280 + 12x$
    y = 280 + 12 x 2; 304
    y = 280 + 12 x 3; 316
    y = 280 + 12 x 4; 328
    y = 280 + 12 x 10; 400

    function: $y = 2x + 5$
    y = 2 x 4 + 5; 13
    y = 2 x 6 + 5; 17
    y = 2 x 8 + 5; 21
    y = 2 x 10 + 5; 25