

Name: \_\_\_\_\_  
 Algebra 2

Date: \_\_\_\_\_  
 Band: \_\_\_\_\_

**Functions Study Guide**

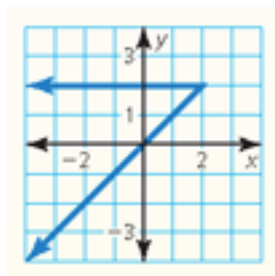
**0.1 Functions**

Determine whether the relation is a function. Explain.

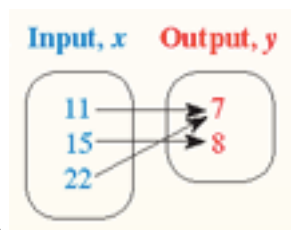
Input, $x$	2	5	7	9	14
Output, $y$	5	11	19	12	3

1.

2.  $(0,1), (5,6), (7,9)$



3.



4.

5. The function  $y = 10x + 100$  represents the amount  $y$  (in dollars) of money in your bank account after you babysit for  $x$  hours.

A. Identify the independent and dependent variables.

B. You babysit for 4 hours. Find the domain and range of the function.

**0.2 Function Notation**

6. Evaluate  $f(x) = 3x - 9$  when  $x = 2$ .

7. For  $f(x) = 4x$ , find the value of  $x$  for which  $f(x) = 12$ .

Evaluate the function when  $x = -3, 0,$  and  $5.$

8.  $f(x) = x + 8$

9.  $g(x) = 4 - 3x$

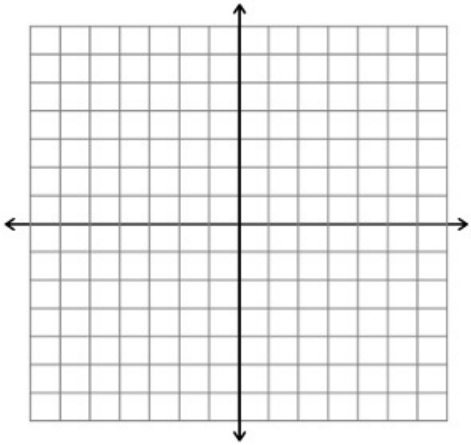
Find the value of  $x$  so that the function has the given value.

10.  $k(x) = 7x; k(x) = 49$

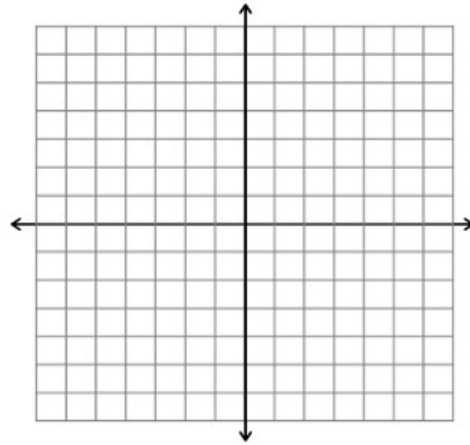
11.  $r(x) = -5x - 1; r(x) = 19$

Graph the linear function.

12.  $g(x) = -2x - 3$

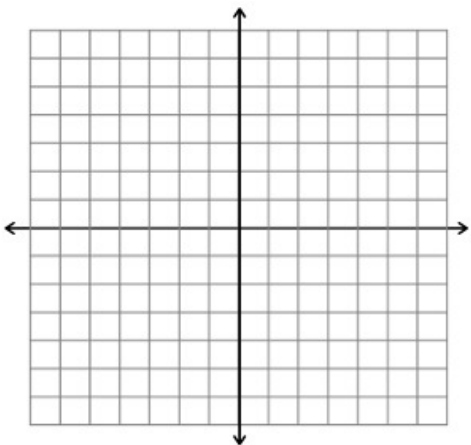


13.  $h(x) = \frac{2}{3}x + 4$



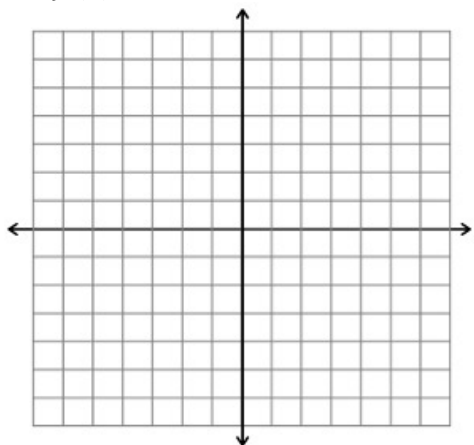
**1.1 Parent Functions and Transformations**

14. Graph  $g(x) = (x - 2)^2 + 1$  and its parent function. Then describe the transformation.

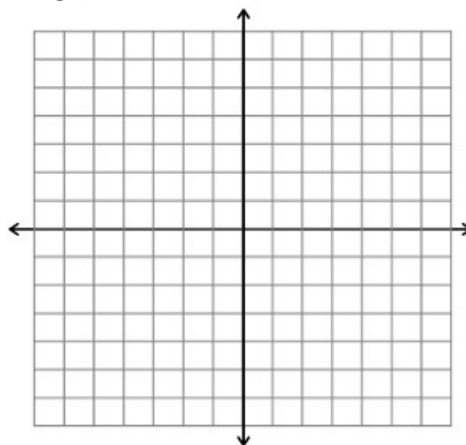


Graph the function and its parent function. Then describe the transformation.

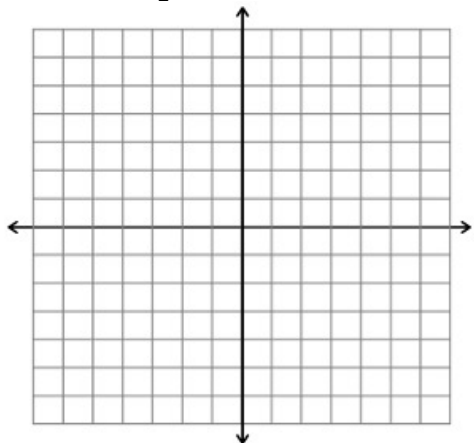
15.  $f(x) = x + 3$



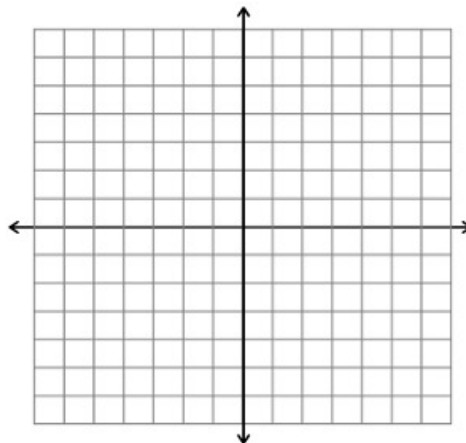
16.  $g(x) = |x| - 1$



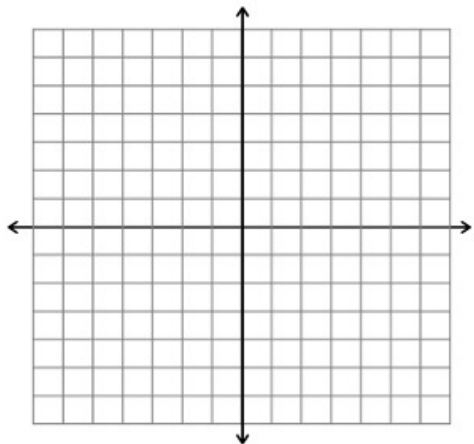
17.  $h(x) = \frac{1}{2}x^2$



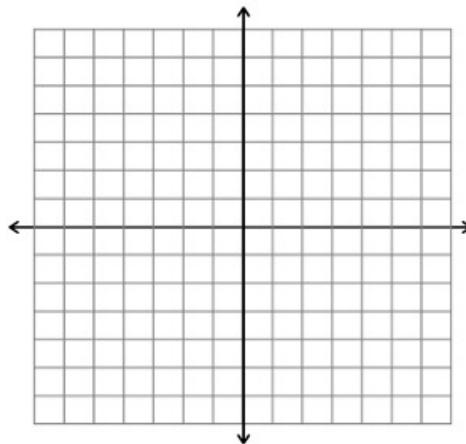
18.  $h(x) = 4$



19.  $f(x) = -|x| - 3$



20.  $g(x) = -3(x + 3)^2$



**1.2 Transformations of Linear and Absolute Value Functions**

**21.** Let the graph of  $g$  be a translation 2 units to the right followed by a reflection in the  $y$ -axis of the graph of  $f(x) = |x|$ . Write a rule for  $g$ .

**Write a function  $g$  whose graph represents the indicated transformation of the graph of  $f$ . Use a graphing calculator to check your answer.**

**22.**  $f(x) = |x|$ ; reflection in the  $x$ -axis followed by a translation 4 units to the left

**23.**  $f(x) = |x|$ ; vertical shrink by a factor of  $\frac{1}{2}$  followed by a translation 2 units up

**24.**  $f(x) = x$ ; translation 3 units down followed by a reflection in the  $y$ -axis