

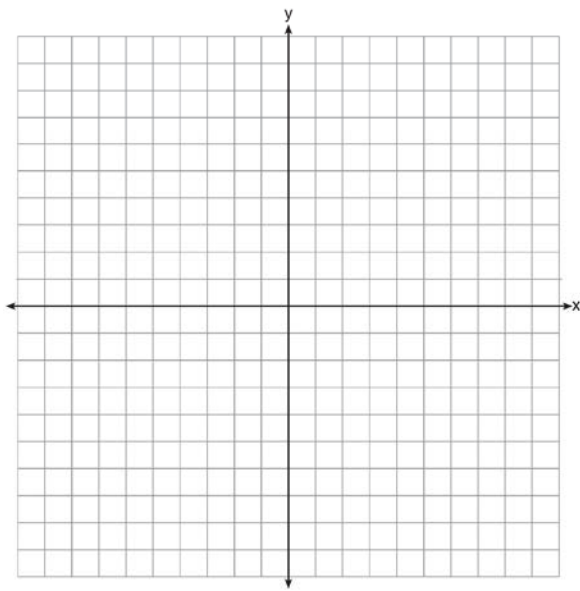
F.BF.B.3: Transformations with Functions 2

- 1 Describe the effect that each transformation below has on the function $f(x) = |x|$, where $a > 0$.

$$g(x) = |x - a|$$

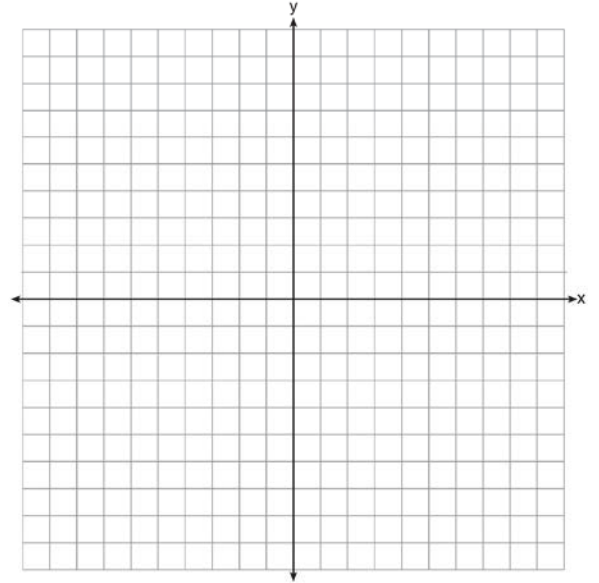
$$h(x) = |x| - a$$

- 2 Graph the function $y = |x - 3|$ on the set of axes below.



Explain how the graph of $y = |x - 3|$ has changed from the related graph $y = |x|$.

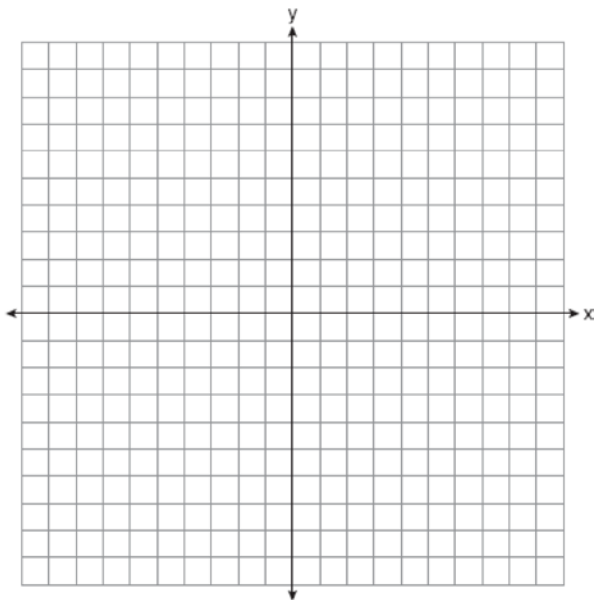
- 3 On the axes below, graph $f(x) = |3x|$.



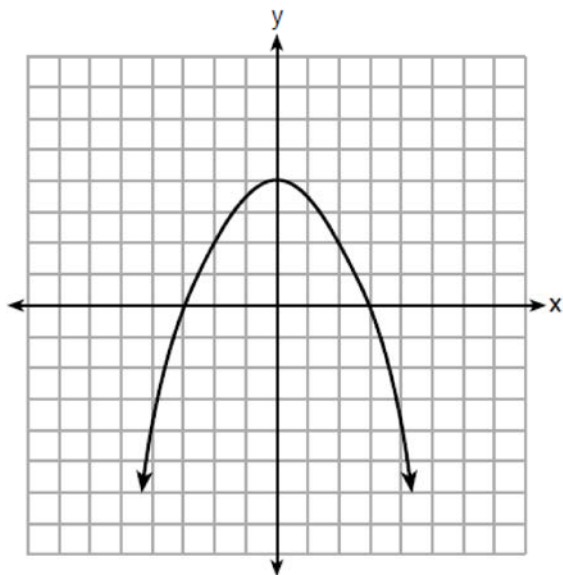
If $g(x) = f(x) - 2$, how is the graph of $f(x)$ translated to form the graph of $g(x)$? If $h(x) = f(x - 4)$, how is the graph of $f(x)$ translated to form the graph of $h(x)$?

- 4 Describe the transformations performed on the graph of $f(x) = x^2$ to obtain the graph of $g(x)$ when $g(x) = (x - 3)^2 - 4$.
- 5 A student is given the functions $f(x) = (x + 1)^2$ and $g(x) = (x + 3)^2$. Describe the transformation that maps $f(x)$ onto $g(x)$.

- 6 The vertex of the parabola represented by $f(x) = x^2 - 4x + 3$ has coordinates $(2, -1)$. Find the coordinates of the vertex of the parabola defined by $g(x) = f(x - 2)$. Explain how you arrived at your answer. [The use of the set of axes below is optional.]



- 7 The graph of the function $p(x)$ is represented below. On the same set of axes, sketch the function $p(x + 2)$.



F.BF.B.3: Transformations with Functions 2

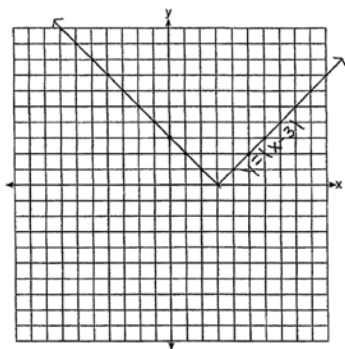
Answer Section

1 ANS:

$g(x)$ is $f(x)$ shifted right by a , $h(x)$ is $f(x)$ shifted down by a .

REF: 061732ai

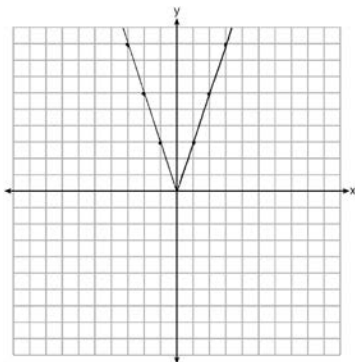
2 ANS:



The graph has shifted three units to the right.

REF: 061525ai

3 ANS:



2 down. 4 right.

REF: 081433ai

4 ANS:

3 right and 4 down.

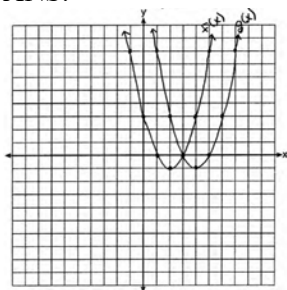
REF: 062226ai

5 ANS:

translate 2 left

REF: 082230ai

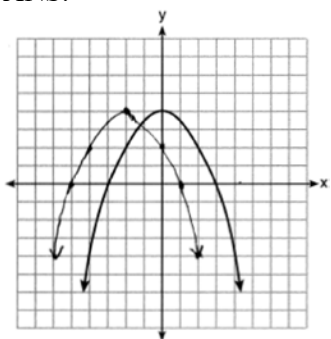
6 ANS:



(4, -1). $f(x - 2)$ is a horizontal shift two units to the right.

REF: 061428ai

7 ANS:



REF: 061828ai