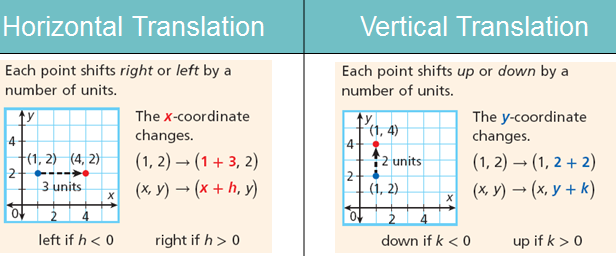
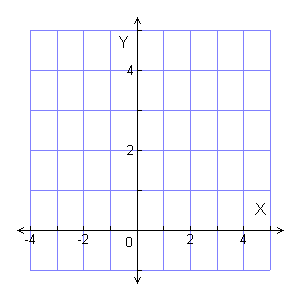
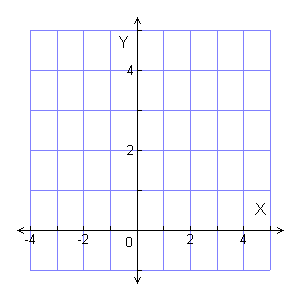
***2.5 Transformations***

A ***transformation*** is a change in the position, size, or shape of a figure.

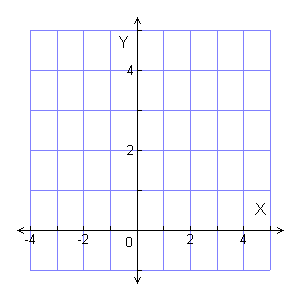
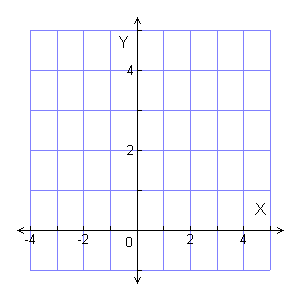
A ***translation***, or ***slide***, is a transformation that moves each point in a figure the same distance in the same direction.

Notice that when you translate ***left or right***, the ***x-coordinate*** changes(horizontal translation), and when you translate ***up or down***, the ***y-coordinate*** changes(vertical translation).

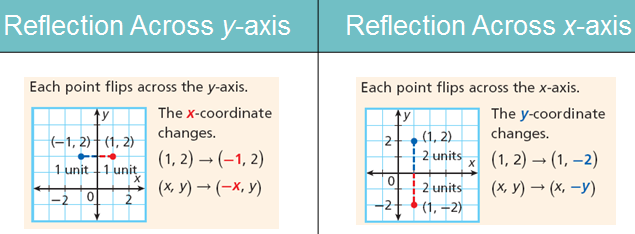


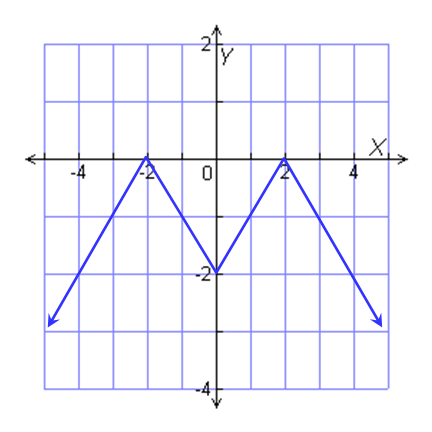
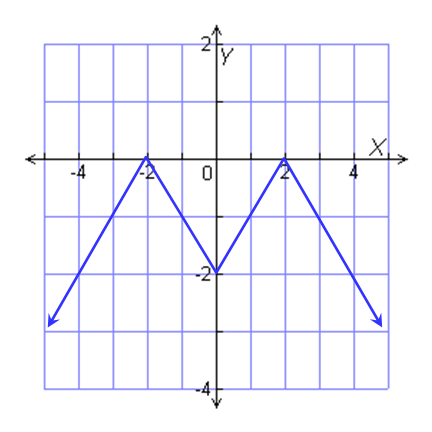
**Example 1:** 5 units right **Example 2:** 2 units left & 2 units down

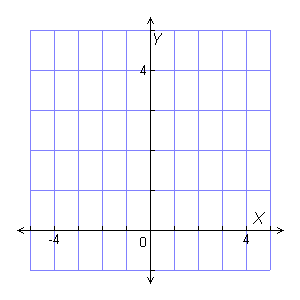
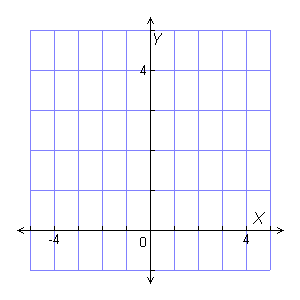
**Example 3:** 4 units right **Example 4:** 1 unit left & 2 units down



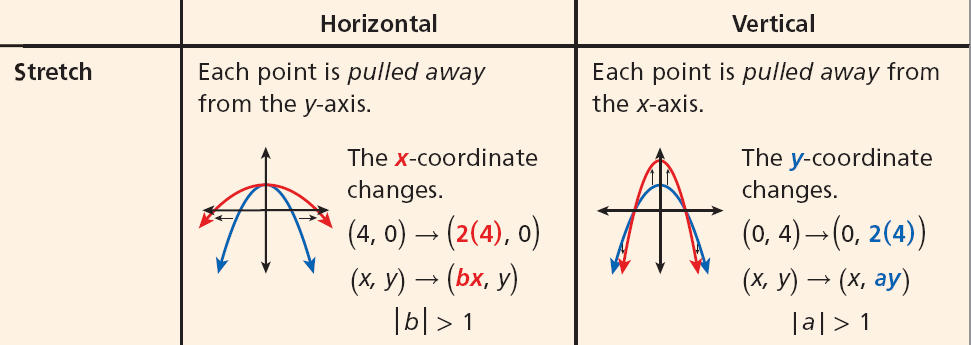
A ***reflection*** is a transformation that flips a figure across a line called ***the line of reflection***. Each reflected point is the same distance from the line of reflection, but on the opposite side of the line.

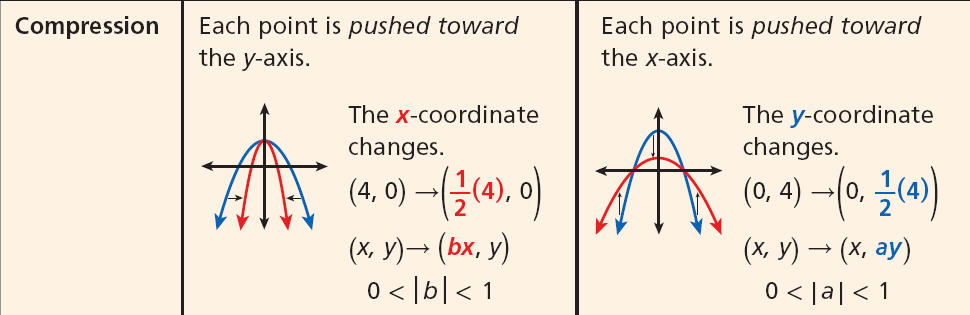


**Example 5:** translation 2 units up **Example 6:** reflection across x-axis

**Example 7:** translation 3 units right **Example 8:** reflection across x-axis

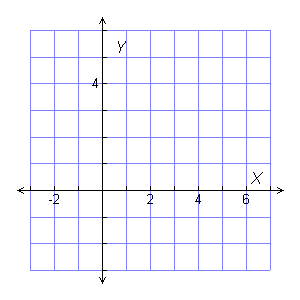
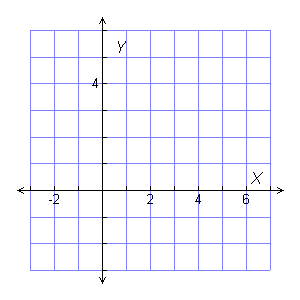
Imagine grasping two points on the graph of a function that lie on opposite sides of the y-axis. If you ***pull the points away from the y-axis***, you would create a ***horizontal stretch*** of the graph. If you ***push*** ***the points towards the y-axis***, you would create a ***horizontal compression.***





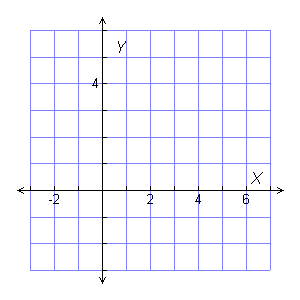
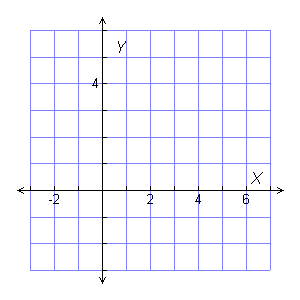
**Example 9:** horizontal stretch **Example 10:** vertical stretch by

by a factor of 3 a factor of 2



**Example 11:** reflection across y-axis **Example 12:** vertical compression

followed by translation 3 units up. By a factor of ½ followed by a

 translation right 2 units.