

**Translation** – a transformation in which a figure is moved from one location to another on the coordinate plane without changing its size, shape, or orientation.

**Transformations involving  $y = a x^2 + c$**  the **bigger** the “a” is the faster the ends of the graph go up if “a” is positive or *down if “a” is negative*,  
the graph becomes **more narrow**;  
the **smaller** the “a” is the slower the ends of the graph go up if “a” is positive or *down if “a” is negative*,  
the graph becomes **wider**;  
the “c” makes the whole graph go up or down but does not change the size.