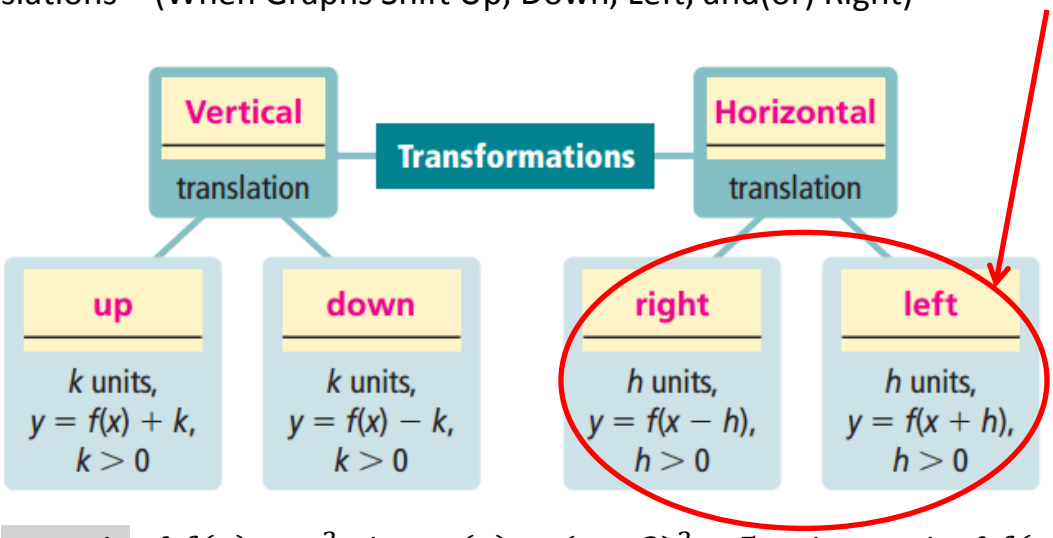
2-6 Function Notation Notes *Remember* $y = f(x)$*!!!*

Opposite Direction of What You Would Think

I. Translations - (When Graphs Shift Up, Down, Left, and(or) Right)



Example: If $f(x) = x^2$, then $g(x) = (x-2)^2 + 5$ is the graph of $f(x)$ shifted right 2 units and up 5 units.

II. Reflections -

Recall from Geometry: $(x, y) \rightarrow (x, -y)$ Reflection Across the *X*-Axis

so $(x, f(x)) \rightarrow (x, -f(x))$ is also a Reflection Across the *X*-Axis

Example: If $g(x) = (x-2)^2 + 5$ then $-g(x) = -(x-2)^2 - 5$ is a reflection across the *X*-Axis.

and

Recall from Geometry: $(x, y) \rightarrow (-x, y)$ Reflection Across the *Y*-Axis

so $(x, f(x)) \rightarrow (-x, f(x))$ is also a Reflection Across the *Y*-Axis

Example: If $g(x) = (x-2)^2 + 5$ then $g(-x) = (-x-2)^2 + 5$ is a reflection across the *Y*-Axis.

III. Dilations -

A stretch occurs when a function is multiplied by a number a such that $|a| > 1$.

A compression occurs when a function is multiplied by a number a such that $|a| < 1$.