Transformation of Graphs: Quick Notes

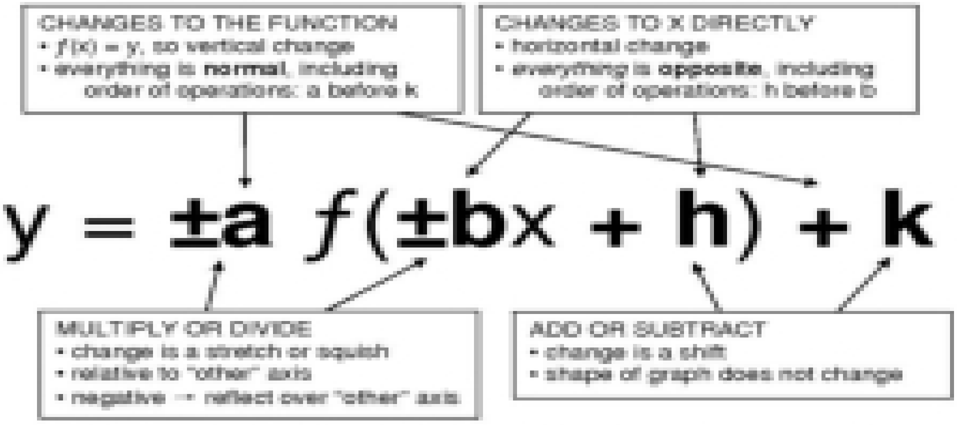
REMEMBER:

A function, $f(x)$, is a set of instructions relating inputs (x-values) to outputs (y-values). The instructions might take the form of an algebraic equation ($f(x) = 3x + 2$) or as a way of looking up y-values (as from a graph or a table of values).

TRANSFORMATIONS

We can see what a graph might look like based on a related **parent graph**, a graph we already have, or one that we know well. You've already covered parabolas and quadratics in detail. The parent graph for all quadratics is the parabola $f(x) = x^2$, and a graph of any quadratic function can be derived from the basic parabola.

All graphs can be transformed this way. The available options are:



Each number that's been introduced into the modified function is either inside the bracket with x, and so affects x before the function gets applied, or outside the bracket, and so affects y after the function has been applied.

The "other" axis helps you remember that a reflection in the horizontal direction uses the y-axis (not the x-axis!) as the mirror, and vice versa. A stretch in the horizontal direction keeps anything on the y-axis fixed and everything else gets changed relative to that axis. (Stretching by two makes all points twice as far from the axis, and so on.)

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