Calculator Basics 4 Name_____

Exploring the general equation of a Parabola

The effect of the lead coefficient a on the graph of $f(x) = ax^2 + bx + c$

To produce a family of graphs for specific parabola by varying the values of the lead coefficient, use the LIST function to supply the values of a.

For example $f(x) = ax^2 + 3x - 2$

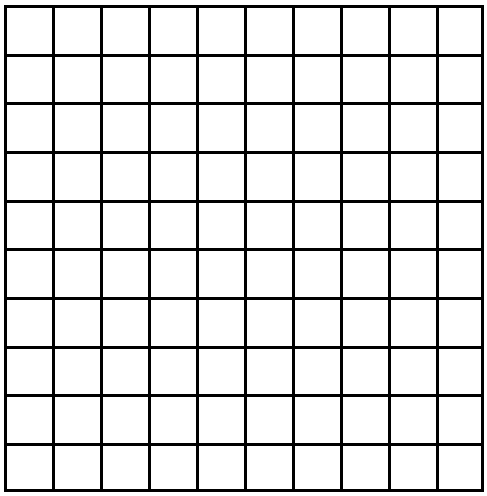
To explore the graphs of , try the following:

Enter $y_1 = \{1,2,3,4,5\}x^2 + 3x + -2$ in the graph editor

Graphing the above equation will produce five graphs, one for each value of the list. One graph for each a=1, a=2, and so on.

Exercise

Produce the graphs of $f(x) = ax^2 + 3x - 2$ For a=0.1, 0.4 ,0.6, 0.8, 1.5, 2.0, 3.0 on the same coordinate axes then describe the affect of the parameter a on the graph of the parabola.



For the effect of the parameters c, replace y_1 with,

$$y_1 = x^2 + 3x + \{1,2,3,-1,-2,-3\}$$

and for the effect of b replace y_1 with,

$$y_1 = x^2 + \{1,2,3,-1,-2,-3\}x + 1$$