## GRAPHING QUADRATIC EQUATIONS

In this worksheet, you will learn how about different characteristics of the graph of a quadratic equation. The concepts of vertex, how the graph opens and intercepts for quadratic equations are introduced. Graphing quadratic equations by using a table of ordered pairs is also covered. Using a table of ordered pairs for graphing a quadratic equation is similar to graphing lines.

So far, you have only graphed linear equations usually in the form y = mx + b. An example of a linear equation is y = 3x − 2. The most basic way to graph a linear equation is by constructing a table of ordered pairs. Two points are needed to graph a line. Choose any value for x, substitute this value for x into the equation y = 3x − 2 and solve for y. You have found an ordered pair that 'satisfies' the equation so this ordered pair will lie on the graph of this equation. Repeat this process to find a second point which lies on the graph of y = 3x − 2.
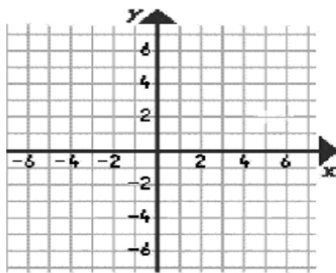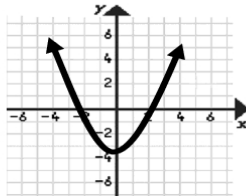

Complete the table below and graph y = 3x − 2 on the coordinate plane to the side. (Remember you can choose any value you want for x, substitute this value into the equation and then solve for y. This process gives you one ordered pair. You will need two ordered pairs to graph this equation.)
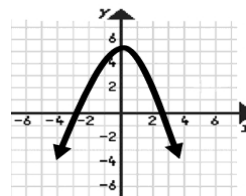
X	Y

Graphing quadratic equations is more involved than graphing lines but the process still uses an x-y table to produce points which lie on the graph. The term "quadratic" comes from the Latin "quadranum" which means "squared." So a quadratic equation is an equation with a squared term. More precisely, all quadratic equations can be written in the form $y = Ax^2 + Bx + C$ where A, B, and C are real numbers and A ≠ 0 (since $0x^2$ would eliminate the squared term).

All quadratic equations have the same general shape. Think of a satellite dish and take a cross section of that dish. The shape is called a parabola. The quadratic equations that you will be sketching will either open up or down. Whether they open up or down (shown below) will depend on the sign of A in the quadratic equation (the coefficient of the x^2 term).

A is positive

A is negative