Name: _____ Period: _____ Date: _____

# Quadratic Functions Guided Notes

A **quadratic** function is of the form:

$$ax^2 + bx + c$$

Where, $a \neq 0$.

$ax^2$ → Quadratic term

$bx$ → Linear term

$c$ → Constant term

Consider the quadratic function $(x) = ax^2 + bx + c$, $a \neq 0$.

- **Axis of Symmetry** is the line that divides the graph of the quadratic function into two parts that are mirror images of each other.
  Mathematically, it is given as:

$$x = -\frac{b}{2a}$$

- **Vertex of the parabola** is the point which intersects the axis of symmetry of the graph of the quadratic function.
  Mathematically, its coordinates are given as:

$$\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$$

Name: _____ Period: _____ Date: _____

# Quadratic Functions Guided Notes

**Problem 1: Identify the axis of symmetry and the vertex of the graph of the quadratic equation $f(x) = 2x^2 + 8x - 4$.**

## Graphing quadratic Functions

If we can find the vertex and axis of symmetry, we can use them to graph the quadratic functions. Graphing can be done by following these steps:

- Find the equation of axis of symmetry.
- Find the vertex of the quadratic function.
- Graph the vertex and axis of symmetry.
- Find 2 or 3 points on the graph and plot them.
- Use the axis of symmetry to complete the graph.

**Problem 2: Graph the quadratic function $f(x) = 2x^2 - 4x + 2$.**