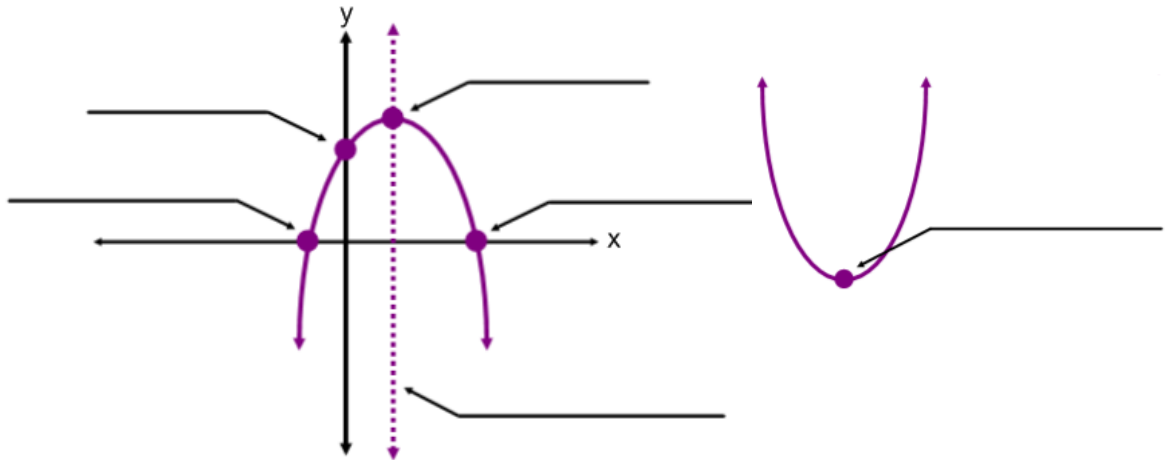Name_____

INTRO TO QUADRATIC FUNCTIONS

A **quadratic function** is a function that can be written in the form $y = ax^2 + bx + c$.

While linear functions form a straight line, **quadratic functions** form a "U" shaped graph known as a **parabola**. Using the word bank, label the parts of the parabolas below.
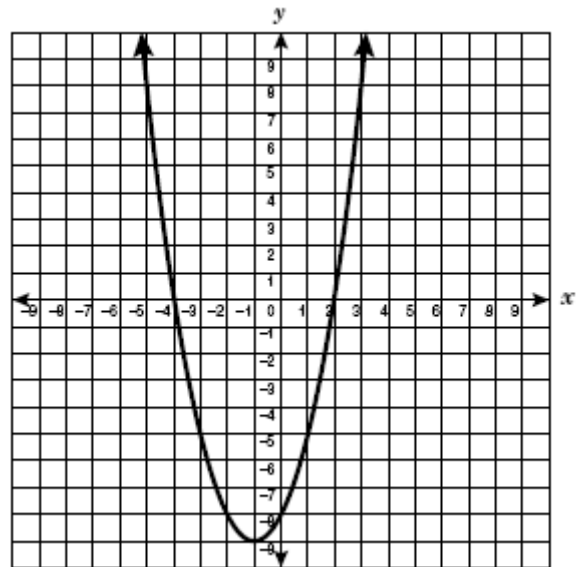
Word Bank:

Vertex (Maximum)
Vertex (Minimum)
Axis of Symmetry
x-intercept
y-intercept

Note: The vertex is a minimum when a > 0 and a maximum when a < 0.

1. The quadratic function $f(x) = x^2 + 2x - 8$ is graphed below. Answer the following.

a) Vertex: _____

b) Is the vertex a max or a min? _____

c) Axis of symmetry: _____

d) y-intercept: _____

e) x-intercepts: _____

f) Domain: _____   Range: _____

g) For what values of x does f(x) = -5? _____

2. Part of the function $g(x) = -5x^2 + 40x + 45$ is graphed. Answer the following.

a) What is the maximum point? _____

b) What is the line of symmetry? _____

c) What is the y-intercept? _____

d) What are the x-intercepts? _____

e) Domain: _____   Range: _____

f) What is the best estimate of the largest value
   of x for which this function equals 80?
   _____
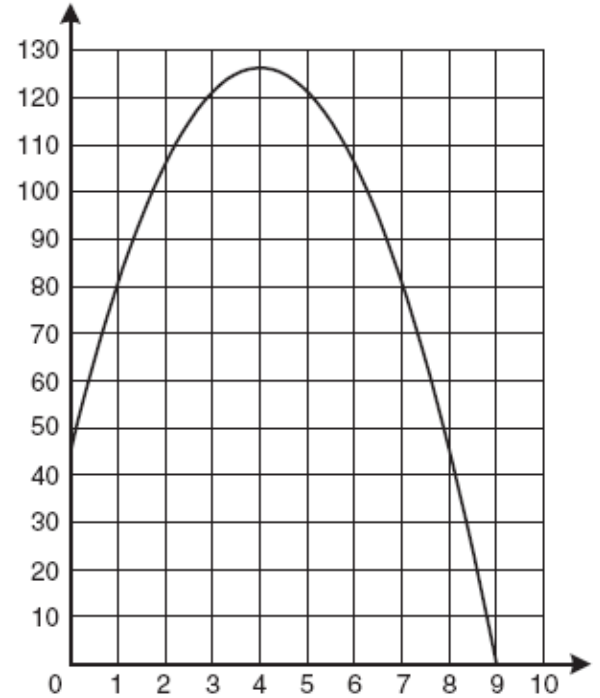
The simplest quadratic function is the **quadratic parent function** with the equation $y = x^2$.

3. Make a table and graph the quadratic parent function.

x	y

a) Vertex: _____

b) x-intercept: _____

c) y-intercept: _____

d) Axis of symmetry: _____

e) Domain: _____

f) Range: _____