


Concept: Quadratic Functions

Name: _____

PART A: COMPUTER COMPONENT


Instructions: In  follow the **Content Menu** path:

Graphing > Quadratic Functions

 Work through all Sub Lessons of the following Lessons **in order**:

- *Introductory Examples*
- *Definitions*
- *The Role of a*
- *The Role of c*
- *Completing the Square With Tiles*
- *Completing the Square The Pattern*
- *Completing the Square Examples*
- *Complete the Square to find the Role of B*

NOTE: You will not be finishing the entire section before stopping to complete some **OFF COMPUTER EXERCISES**.

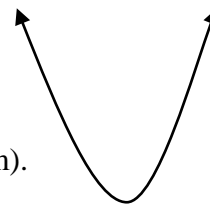
 As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

When you reach the end of the lesson *Complete the Square to find the Role of B* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

NOTES

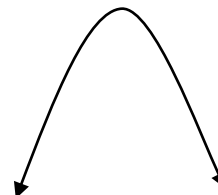
1. The sketch at the right is called a _____.
 Mark the vertex on the sketch.

The vertex here is a _____ (maximum or minimum).
 Draw the axis of symmetry on the sketch.



2. The sketch at the right is called a _____.
 Mark the vertex on the sketch.

The vertex here is a _____ (maximum or minimum).
 Draw the axis of symmetry on the sketch.



3. Parabola (*Make notes concerning concave up, concave down, vertex, axis of symmetry.*)

4. Quadratic Functions

The general Quadratic Function is $y = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$

A Quadratic Function must always have an $\underline{\hspace{2cm}}$ term.

5. The role of a:

- If a is positive, the parabola is $\underline{\hspace{2cm}}$
- If a is positive and a increases, the parabola gets $\underline{\hspace{2cm}}$
- If a is negative, the parabola is $\underline{\hspace{2cm}}$
- If a is negative and a decreases, the parabola gets $\underline{\hspace{2cm}}$

6. The role of c:

- In $y = ax^2 + c$: If c increases, the parabola shifts $\underline{\hspace{2cm}}$
 If c decreases, the parabola shifts $\underline{\hspace{2cm}}$

7. The role of b:

- IN GENERAL, for $y = ax^2 + bx + c$... the vertex is $\underline{\hspace{2cm}}$
(use letters for this.)

To find y , we $\underline{\hspace{2cm}}$ back into the equation $y = ax^2 + bx + c$.

PART A : OFF COMPUTER EXERCISES

1. Identify a, b and c in the following quadratic functions.

Function	a	b	c
$y = x^2 + 4x + 5$			
$y = 2x^2 + 6$			
$y = -3x^2 + 7x$			
$y = 5x^2 + x$			

2. Summarize (in the chart below) how each of the changes would affect the original graph.

Original graph	Change to...	Did it affect a, b or c?	How does the original graph change? (i.e. it got narrower, it moved up etc)
$y = x^2$	$y = 2x^2$		
$y = x^2$	$y = x^2 + 5$		
$y = x^2$	$y = x^2 - 4$		
$y = x^2 + 1$	$y = 3x^2 + 1$		

 3. Find the vertex (ie: what you did in the *Role of b* lesson) for the following:

$$\begin{aligned}
 \text{(a) } & x^2 + 4x - 2 \\
 & = [x^2 + 4x] - 2 \\
 & = [x^2 + 4x + \quad - \quad] - 2 \\
 & =
 \end{aligned}$$

$$\begin{aligned}
 \text{(b) } & x^2 - 6x + 14 \\
 & = [x^2 - 6x] + 14 \\
 & = [x^2 - 6x + \quad - \quad] + 14 \\
 & =
 \end{aligned}$$

4. Other than $y = 2x^2 - 3x + 1$, *do any other parabolas contain the points $(-1, 6)$, $(0, 1)$ and $(1, 0)$?*