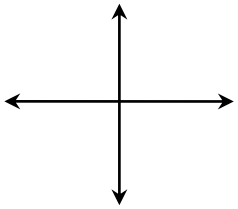
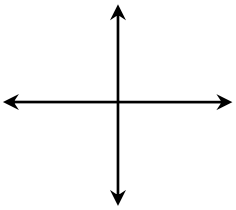
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
Standard Form	**Standard Form of a Quadratic Equation:**
Graph	**When graphed, a quadratic equation creates a U-shaped curve called a _____.**
Types of Parabolas	**Use your graphing calculator to sketch the following:** $y = x^2 + 2x - 5$  $y = -x^2 + 3x + 7$  ▪ **If 'a' is _____, then the parabola opens _____, like a smile. ☺** ▪ **If 'a' is _____, then the parabola opens _____, like a frown. ☹**
Axis of Symmetry	
	Formula for the axis of symmetry:
Vertex	
	▪ **When the vertex is the <u>lowest point</u>, it is called a _____.** ▪ **When the vertex is the <u>highest point</u>, it is called a _____.**
Examples	**Find the axis of symmetry and vertex, then sketch each parabola.**
1. $y = x^2 + 8x + 15$	**Axis of Symmetry: _____ Vertex: _____ Sketch:**

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2. $y = -x^2 + 10x - 23$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
3. $y = 3x^2 - 12x + 5$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
4. $y = 4x^2 + 8x - 1$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
5. $y = -x^2 - 4x - 2$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
6. $y = -3x^2 - 24x - 42$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
7. $y = -x^2 + 4x$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
8. $y = x^2 - 3$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**
9. $y = -2x^2 + 8$	**Axis of Symmetry:** _____ **Vertex:** _____ **Sketch:**

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Main Ideas/Questions	Notes/Examples	
Steps to Graph a **QUADRATIC EQUATION**	❶	Find the **axis of symmetry.**
	❷	Find the **vertex.**
	❸	Put the vertex in the middle row of the table. Fill in a table of values using your calculator.
	❹	Plot the points and connect them into a smooth parabola!

EXAMPLES

Directions: Graph each quadratic equation using a table. Identify the axis of symmetry, vertex, domain, and range.

1. $y = x^2$

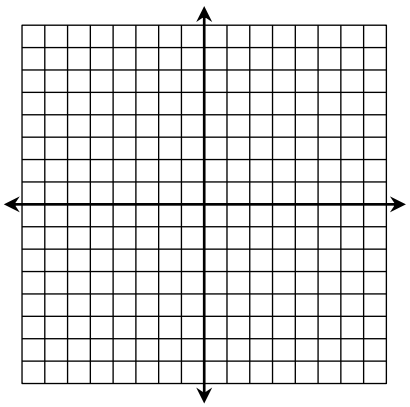
Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____

x	y



2. $y = x^2 + 2x - 1$

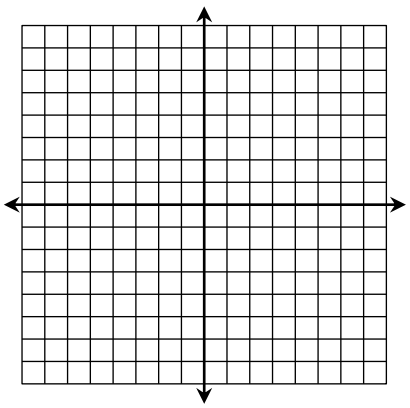
Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____

x	y



3. $y = -x^2 - 8x - 17$

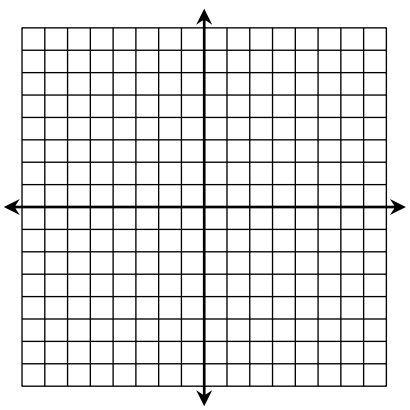
Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____

x	y



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4. $y = -2x^2 + 4x + 1$

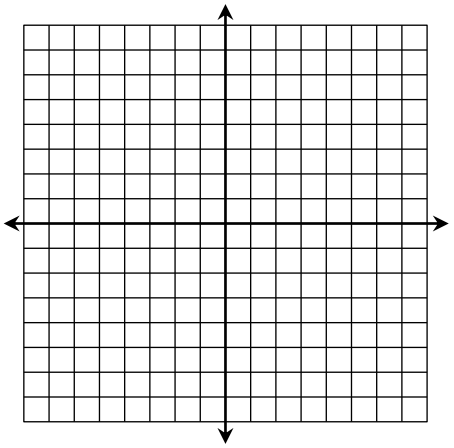
x	y

Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____



5. $y = x^2 - 6x + 11$

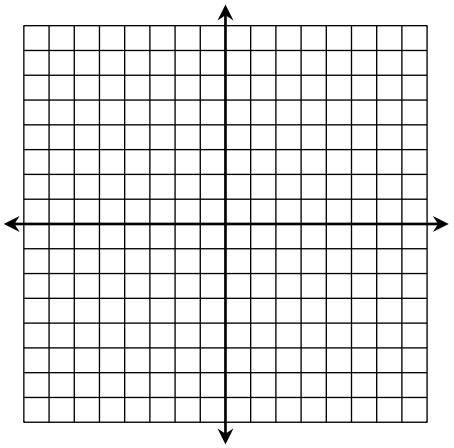
x	y

Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____



6. $y = -x^2 - 2$

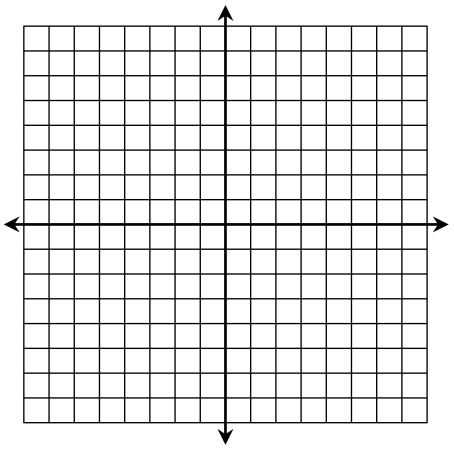
x	y

Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____



7. $y = 2x^2 + 8x$

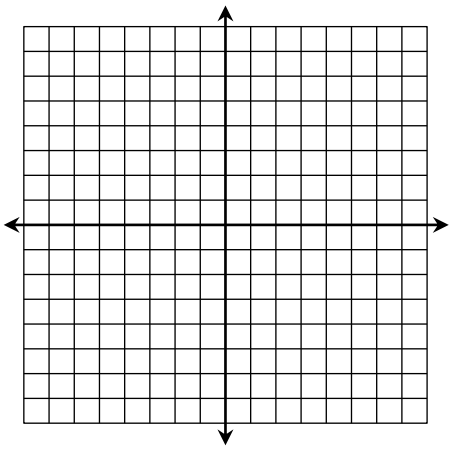
x	y

Axis of Symmetry: _____

Vertex: _____

Domain: _____

Range: _____



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Name:	Date:
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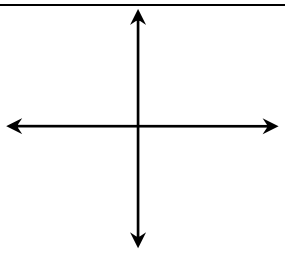
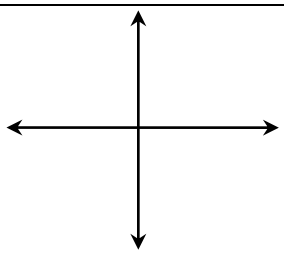
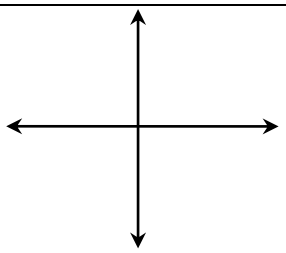
Main Ideas/Questions	Notes/Examples
QUADRATIC ROOTS	
also called...	_____, _____, _____

NUMBER OF SOLUTIONS

2 SOLUTIONS	1 SOLUTION	NO SOLUTION
		

EXAMPLES

Find the solutions of the following quadratic equations by graphing.

Solutions:

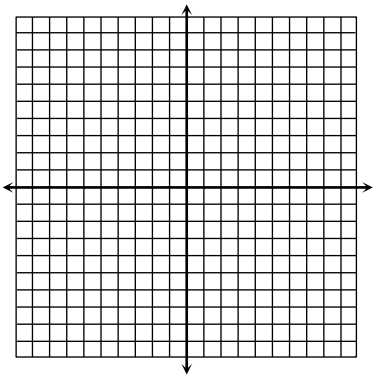
1. _____

2. _____

3. _____

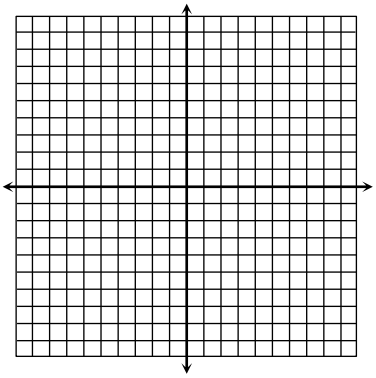
1. $y = x^2 + 4x - 5$

x	y



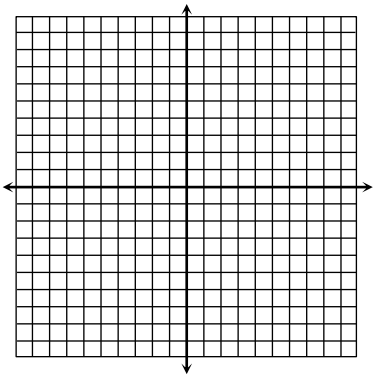
2. $y = x^2 - 2x + 1$

x	y



3. $y = -x^2 + 2x - 3$

x	y



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Solutions:

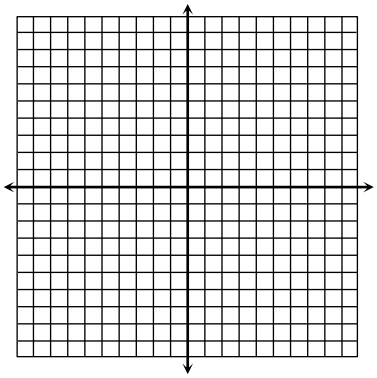
4. _____

5. _____

6. _____

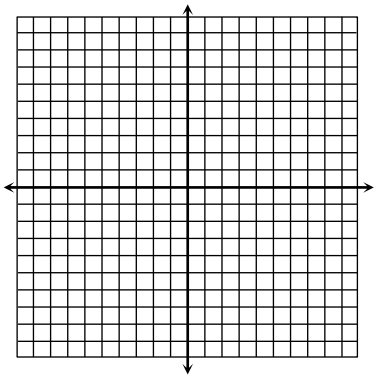
4. $y = x^2 - 10x + 16$

x	y



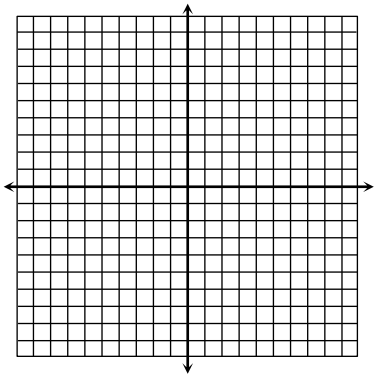
5. $y = -x^2 + 9$

x	y



6. $y = -3x^2 + 6x$

x	y



THE DISCRIMINANT

Formula:

- **If d > 0, then there are _____ solutions.**
- **If d = 0, then there are _____ solutions.**
- **If d < 0, then there are _____ solutions.**

EXAMPLES

Use the discriminant to determine the number of solutions.

7. $y = x^2 + 5x + 4$

- ❑ 2 solutions
- ❑ 1 solution
- ❑ 0 solutions

8. $y = x^2 - 3x + 10$

- ❑ 2 solutions
- ❑ 1 solution
- ❑ 0 solutions

9. $y = x^2 + 10x + 25$

- ❑ 2 solutions
- ❑ 1 solution
- ❑ 0 solutions

10. $y = 2x^2 - 4x - 3$

- ❑ 2 solutions
- ❑ 1 solution
- ❑ 0 solutions

11. $y = 4x^2 - 12x + 9$

- ❑ 2 solutions
- ❑ 1 solution
- ❑ 0 solutions

12. $y = -3x^2 + 5x - 8$

- ❑ 2 solutions
- ❑ 1 solution
- ❑ 0 solutions

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