	Topic/Objective: AGS 2 Module 3.9	**Name:**
	Imaginary Numbers	**Period:**
		Date:

Essential Question: Describe the solutions to a quadratic that does not intersect the x-axis.

Questions:	**Notes:**

Big Idea #1: The set of **REAL** numbers contains all of the rational and irrational numbers.

Examples of **rational numbers**:

Examples of **irrational numbers**:

Solve using the quadratic formula: $y = x^2 - 6x + 13$

What do you notice about the solution?

A mathematician named Euler defined a new number: i = $\sqrt{-1}$. This is an **imaginary number**.

i = _____ i^2 = _____

Simplify:

1. $\sqrt{-25}$

2. $\sqrt{-64}$

3. $\sqrt{-50}$

4. $\sqrt{-8}$

5. $-3\sqrt{150}$

6. $\sqrt{24}$

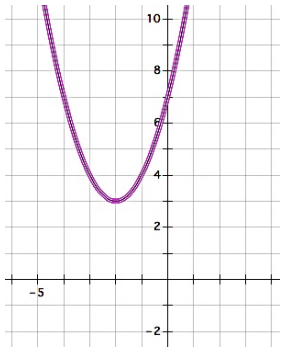
7. $\sqrt{-20}$

8. $\sqrt{-60}$

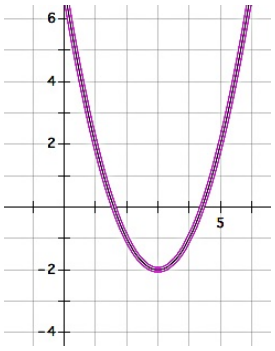
Big Idea #2: All **complex** numbers have a **real** and an **imaginary** part. They are written as $a \pm bi$.

Solve each of these by finding the x-intercepts.

9. $y = (x + 2)^2 + 3$



10. $y = (x - 3)^2 - 2$



Which one has an imaginary solution? How can you determine this from the graph?

	Solve: 11. $x^2 - 4x + 10 = 0$ 12. $-x^2 + 8x = 20$
Summary: Describe the solutions to a quadratic that does not intersect the x-axis.	