



Topic/Objective: AGS 2 Module 3.5

Name: Key

Period:

Date:

**Essential Question:** How do you solve a quadratic equation using the quadratic formula?

Questions:

Notes:

Remember that the standard form of a quadratic equation is:

$$y = ax^2 + bx + c$$

The solution(s) for a quadratic equation is called the root(s), the zero(s), or the solution(s) – it is also known as the x-intercept(s).

Solve:

$$1. \sqrt{x^2} = \sqrt{25}$$

$$x = \pm 5$$

$$2. \sqrt{x^2} = \sqrt{100}$$

$$x = \pm 10$$

$$3. \sqrt{x^2} = \sqrt{12}$$

$$x = \pm \sqrt{12}$$

$$x = \pm 2\sqrt{3}$$

$$4. \sqrt{x^2} = \sqrt{32}$$

$$x = \pm \sqrt{32}$$

$$x = \pm 4\sqrt{2}$$

$$5. x^2 + 14 = 50$$

$$-14 \quad -14$$

$$\sqrt{x^2} = \sqrt{36}$$

$$x = \pm 6$$

$$6. x^2 - 14 = 10$$

$$+14 \quad +14$$

$$\sqrt{x^2} = \sqrt{24}$$

$$x = \pm \sqrt{24}$$

$$x = \pm 2\sqrt{6}$$

\*\*\*Notice how there are 2 solutions for all of the above.

When using the **quadratic formula**, you start by finding the value for

a =

b =

c =

You plug these values into:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve:

7.  $x^2 + 9x + 14$

a = 1  
b = 9  
c = 14

$$x = \frac{-(9) \pm \sqrt{(9)^2 - 4(1)(14)}}{2(1)}$$

$$x = \frac{-9 \pm \sqrt{81 - 56}}{2} = \frac{-9 \pm \sqrt{25}}{2}$$

$$x = \frac{-9 \pm 5}{2} \quad \begin{array}{l} \nearrow = \frac{-9+5}{2} = \frac{-4}{2} = (-2) \\ \searrow = \frac{-9-5}{2} = \frac{-14}{2} = (-7) \end{array}$$

8.  $x^2 - 2x - 15$

a = 1  
b = -2  
c = -15

$$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-15)}}{2(1)}$$

$$x = \frac{2 \pm \sqrt{4 + 60}}{2} = \frac{2 \pm \sqrt{64}}{2}$$

$$x = \frac{2 \pm 8}{2} \quad \begin{array}{l} \nearrow = \frac{2+8}{2} = \frac{10}{2} = (5) \\ \searrow = \frac{2-8}{2} = \frac{-6}{2} = (-3) \end{array}$$

Summary: How do you solve a quadratic equation using the quadratic formula?