14-1

## Essential Question: How do we solve guadratic equations?

**Do Now:** Compare and contrast the equations below.

a) x<sup>2</sup> + 1 = 10 b) x + 1 = 9

Think about this to help you...

- Are the equations equivalent?
- Would you solve the equations in the same way?
- Do the equations have the same number of solutions?

Quadratic Equation: \_\_\_\_\_

Let's look at another quadratic equation. How would you solve  $x^2 - 6x + 8 = 0$ ?



Examples:

1)  $x^2 - 8x = -16$  2)  $x^2 + 5x = 36$  3)  $x^2 - 16 = 0$ 

4)  $4x^2 - x = 0$  5)  $3x^2 - 6x - 45 = 0$  6)  $5x^2 - 125 = 0$ 

Solving Quadratic Equations by Factoring

1) Rewrite the equation in the form of  $ax^2 + bx + c = 0$ 

2) Factor

3) Set each factor equal to zero and solve (zero product property)

4) Check solution set with the original equation

7) x(x-2) = 35

8)  $x^2 + 5x - 12 = 8x - 2$ 



Quadratic Equations can be solved by \_\_\_\_\_\_ and using the \_\_\_\_\_\_ property. If the product of two quantities equals zero, at least one of the quantities must equal zero.

## One more question...

The solution set of the equation  $x^2 - 4x - 12 = 0$  is

- (1) {-6,2} (3) {-2,6}
- $(2) \{-4,3\} \qquad (4) \{-3,4\}$

Solve the following quadratic equations.

1. 
$$x^2 - 3x + 2 = 0$$
  
2.  $z^2 - 5z + 4 = 0$   
3.  $x^2 - 8x + 16 = 0$ 

4. 
$$c^2 + 6c = -5$$
 5.  $10m^2 + 10m = 0$  6.  $m^2 - 64 = 0$ 

7.	$3x^2 - 12 = 0$	8. $2x^2 + 20x = -18$	9.	<b>5</b> x <sup>2</sup> -	60x = 140