## 9.4: Solve Polynomial Equations in Factored Form

Goals: \*Understand and find "roots" of polynomial equations \*Factor polynomials by finding the GCF \*Solve polynomial equations by factoring

Roots:

**Zero-product property:** 

Solve using the zero-product property:

**Ex:** (x+2)(x+4) = 0

Solve:

**Ex:** (x-5)(x-1) = 0

**Ex:** (x+3)(x-5) = 0

**Ex:** (2x + 1)(3x - 4) = 0

**Ex:** 4x(3x-2)(5x+4) = 0

## Factor:

## **Factor by finding the Greatest Common Factor:**

<b>Ex:</b> $12x + 42y$		What do both terms have in common that you can divide by? Look for the <b>greatest</b> factor they have in common.		
	(+)	When you factor by using the GCF you are essentially:		
		Which means you could check your answer	by:	
Ex:	$4x^4 + 24x^3$	<b>Ex:</b> 14 <i>m</i> + 35 <i>n</i>	<b>Ex:</b> 8 <i>x</i> + 12 <i>y</i>	
Ex:	$14y^2 + 21y$	<b>Ex:</b> $6x^2y + 9xy^2$	<b>Ex:</b> $4t^2 - 2t$	

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Ex:	$2x^2$	+8x	= 0
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**Ex:**  $3x^2 + 18x = 0$ 

**Ex:**  $a^2 + 5a = 0$ 

**Ex:**  $3s^2 - 9s = 0$ 

**Ex:**  $6n^2 = 15n$ 

## **<u>Vertical Motion Model</u>**:



**Ex:** A startled armadillo jumps straight into the air with an initial velocity of 14 ft/s. After how many seconds does it land back on the ground?

**Ex:** A dolphin jumped out of the water with an initial velocity of 32 ft/s. How many seconds does it take for the dolphin to re-enter the water?

**Ex:** Two rectangular rooms in a building's floor plan have different dimensions but the same area. The dimensions (in meters) are shown. What is the value of w?

