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

Factor by finding the Greatest Common Factor:

Ex: $12x + 42y$ What do both terms have in common that you can divide by?
Look for the **greatest** factor they have in common.

When you factor by using the GCF you are essentially:

Which means you could check your answer by:

Ex: $4x^4 + 24x^3$ **Ex:** $14m + 35n$ **Ex:** $8x + 12y$

Ex: $14y^2 + 21y$ **Ex:** $6x^2y + 9xy^2$ **Ex:** $4t^2 - 2t$

Solve by factoring first:

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

Ex: $a^2 + 5a = 0$ **Ex:** $3s^2 - 9s = 0$

Solve by factoring:

Ex: $6n^2 = 15n$ **Ex:** $4x^2 = 2x$ **Ex:** $4s^2 = 14s$

Vertical Motion Model:

$h =$ $t =$

$v =$ $s =$

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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?