

Bell Ringer - Solve the equation by factoring.

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$$x^2 - 15x + 44 = 0$$

$$(x - 11)(x - 4) = 0$$

$$x = 11 \text{ and } 4$$

Factoring $ax^2 + bx + c$ when $a > 1$

Box Method - Factoring the GCF

- 1) Look to factor out a GCF from all terms whenever possible.
- 2) Multiply "a" and "c" terms and find the factors that sum to the "b" term
(exact same process as equations where $a=1$)
- 3) Create a "2x2 Box"
 - "a" term is in the upper left
 - "b" factors are in the upper right and lower left
 - "c" term is in the lower right
- 4) Factor out the GCF from each column and row; place the number/variable on the outside of the box using the +/- sign closest to the outside edge of the box
- 5) The numbers on the outside of the box is the factoring (parentheses)

Solve the equation by factoring $4x^2 + 12x - 27 = 0$.

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$$ac = 4(-27) = -108$$

• term factors $2x$
 18 and -6

9

$4x^2$	$-6x$
$18x$	-27

$$(2x - 3)(2x + 9) = 0$$

$$x = \frac{3}{2} \text{ and } -\frac{9}{2}$$

Solve the equation by factoring $8x^2 - 22x + 5 = 0$.

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$$ac = 8(5) = 40$$

• term factors
- 2 and -20

4x

2x

-5

$8x^2$	$-20x$
$-2x$	5

-1

$$(2x - 5)(4x - 1) = 0$$

$$x = \frac{5}{2} \text{ and } \frac{1}{4}$$

Solve the equation by factoring $6x^2 - 36x = -54$.

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Rewrite $6x^2 - 36x + 54 = 0$

Factor out 6

$$6(x^2 - 6x + 9)$$

Don't need the box
because $a=1$

$$6(x-3)(x-3) = 0$$

$$x = 3 \text{ only}$$

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vertical motion model

$$h = -16t^2 + vt + s$$

$$0 = -16t^2 + 16t + 96$$

Factor out
a -16

$$0 = -16(t^2 - t - 6)$$

$$0 = -16(t - 3)(t + 2)$$

$$t = 3 \text{ and } -2 \text{ but only } 3 \text{ works}$$

The diver will reach the water in 3 seconds.