

Algebra 1      8.6

Factor trinomials

Solve quadratic equations by factoring  
quadratic

EWE

Factor

Zero product property

activity: ICE ws

**Example 3** *c* is Negative

~~Factor~~ **Solve:**  
for each polynomial.

a.  $x^2 + 2x - 15 = 0$

~~$\begin{array}{r} -15 \\ 5 \times -3 \\ \hline 2 \end{array}$~~

$$\begin{array}{l} (x+5) \cdot (x-3) = 0 \\ \downarrow \qquad \downarrow \\ x+5=0 \qquad x-3=0 \\ \begin{array}{r} -5 \quad -5 \\ \hline x = -5 \end{array} \qquad \begin{array}{r} +3 \quad +3 \\ \hline x = 3 \end{array} \end{array}$$

$$b. x^2 - 7x - 18 = 0 \quad \begin{array}{r} \cancel{18} \\ -9 \quad \cancel{2} \\ \hline -7 \end{array}$$

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

$\downarrow$	$\downarrow$
$x-9=0$	$x+2=0$
$+9 \quad +9$	$-2 \quad -2$
<hr/>	<hr/>
$x=9$	$x=-2$

$$\begin{array}{r} -48 \\ -3 \quad 16 \\ 13 \end{array}$$

$$\begin{array}{r} 1 \quad 48 \\ 2 \quad 24 \\ (3 \quad 16) \\ 4 \quad 12 \\ 6 \quad 8 \end{array}$$

**Guided Practice**

3A.  $y^2 + 13y - 48$  ~~\_\_\_\_\_~~

$$(y-3)(y+16)$$

$$3B. \boxed{r^2 - 2r - 24 = 0}$$

$$x^2 = 2x + 24$$

$$-x^2 - x^2$$

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$$0 = -x^2 + 2x + 24 !!$$

$$x^2 = 2x + 24$$
$$-2x \quad -2x \quad -24$$

$$\implies x^2 - 2x - 24 = 0$$

~~1~~ ~~-4~~ ~~-3~~ Zero product property:

$$x^2 = 3x + 4$$
$$\begin{array}{r} -3x \\ -4 \end{array}$$

$$x^2 - 3x - 4 = 0$$

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$$(x+1) \cdot (x-4) = 0$$
$$\begin{array}{l} \downarrow \\ x+1=0 \\ -1 \quad -1 \\ x=-1 \end{array} \quad \begin{array}{l} x-4=0 \\ +4 \quad +4 \\ x=4 \end{array}$$

