

Algebra 1 8.6

Factor trinomials

Solve quadratic equations by factoring
quadratic

EWE

Factor

Zero product property

activity: x-factor

whiteboards

Example 3 *c* is Negative

Factor each polynomial.

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

$(x+5)(x-3)$

$$\begin{array}{r} x+5 \\ x-3 \\ \hline -3x \quad -15 \\ x^2 + 5x \end{array}$$

$x^2 + 2x - 15$

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

b. $x^2 - 7x - 18$

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

$$\begin{array}{r} -18 \\ -9 \quad 2 \\ \hline -7 \end{array}$$

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

~~$$(x-2)(x+9)$$~~

Guided Practice

3A. $y^2 + 13y - 48$

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

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

- 1 48
- 2 24
- 3 16
- 4 12
- 6 8

3B. $r^2 - 2r - 24$

$$(r+4)(r-6)$$

$\begin{array}{c} -24 \\ 4 \quad -6 \\ -2 \end{array}$

Zero product property:

$$(\quad) \cdot (\quad) = 0$$

$$\frac{20}{5 \cdot 4} \\ \frac{5}{9}$$

$$x^2 + 9x + 20 = 0$$

$$(x+5) \cdot (x+4) = 0$$

$$\downarrow \\ x+5=0 \\ \begin{array}{r} -5 \quad -5 \\ \hline \end{array}$$

$$\downarrow \\ x+4=0 \\ \begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$\underline{\hspace{1.5cm}} \\ x = -5$$

$$\underline{\hspace{1.5cm}} \\ x = -4$$

Solve

$$x^2 + 11x + 24 = 0$$

$$(x + 8)(x + 3) = 0$$

$$\begin{array}{r} \downarrow \\ x + 8 = 0 \\ \underline{-8 \quad -8} \end{array}$$

$$x = -8$$

$$\begin{array}{r} \downarrow \\ x + 3 = 0 \\ \underline{-3 \quad -3} \end{array}$$

$$x = -3$$

$$\begin{array}{r} 24 \\ 8 \quad 3 \\ \hline 11 \end{array}$$

$$x^2 - 8x + 12 = 0$$
$$(x-2)(x-6) = 0$$
$$\begin{array}{r} \downarrow \qquad \qquad \downarrow \\ x-2=0 \qquad x-6=0 \\ +2 \quad +2 \qquad +6 \quad +6 \\ \hline \end{array}$$
$$x=2 \qquad x=6$$

$$\begin{array}{r} \cancel{12} \\ -2 \quad \cancel{-6} \\ \hline -8 \end{array}$$
$$(\quad) (\quad)$$

$$14. \quad x^2 - 11x + 28 = 0$$

(Solve)