

Algebra 1 8.5

Use the distributive property to factor polynomials

Solve quadratic equations by factoring

quadratic

factor

distributive property

greatest common factor (GCF)

zero product property

whiteboards

$$2x^3+8x^2+12x$$

-

Factor by grouping:

$$\rightarrow \left(\frac{x^2}{x} + \frac{2x}{x} \right) + \left(\frac{x}{1} + \frac{2}{1} \right)$$

$$x(x+2) + 1(x+2)$$

$$(x+2)(x+1)$$

$$\left(\frac{6y^2}{2y} - \frac{4y}{2y} \right) + 1(3y-2)$$

$$2y(3y-2) + 1(3y-2)$$

$$(3y-2)(2y+1)$$

matching activity

 **KeyConcept** Zero Product Property

Words If the product of two factors is 0, then at least one of the factors must be 0.

Symbols For any real numbers a and b , if $ab = 0$, then $a = 0$, $b = 0$, or both a and b equal zero.

Example 4 Solve Equations

Solve each equation. Check your solutions.

a. $(2d + 6)(3d - 15) = 0$

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

$$\begin{array}{r} 2d + 6 = 0 \\ -6 \quad -6 \end{array}$$

$$\hline \begin{array}{r} 2d = -6 \\ 2 \quad 2 \end{array}$$

$$d = -3$$

$$\begin{array}{r} 3d - 15 = 0 \\ +15 \quad +15 \end{array}$$

$$\hline \begin{array}{r} 3d = 15 \\ 3 \quad 3 \end{array}$$

$$d = 5$$

Guided Practice

4A $(3n)(n + 2) = 0$

$$\frac{3n}{3} = \frac{0}{3}$$

$$n = 0$$

$$\begin{array}{r} n + 2 = 0 \\ -2 \quad -2 \\ \hline n = -2 \end{array}$$

must=0 to factor

$$4B. 8b^2 - 40b = 0$$

$$\frac{\cancel{8}b\cancel{b}}{\cancel{8}b} - \frac{5 \cdot \cancel{8}\cancel{b}}{\cancel{8}b} = 0$$
$$(8b)(b - 5) = 0$$

$$\frac{8b}{8} = \frac{0}{8}$$

$$b = 0$$

$$b - 5 = 0$$
$$+5 \quad +5$$

$$b = 5$$

$$\begin{aligned} \text{b. } c^2 &= 3c \\ -3c & \quad -3c \end{aligned}$$

Must = 0 to factor

$$\frac{c^2}{2} - \frac{3c}{2} = 0$$

$$\begin{array}{ccc} c & (c - 3) & = 0 \\ \downarrow & \downarrow & \\ c = 0 & \begin{array}{l} c - 3 = 0 \\ +3 \quad +3 \\ c = 3 \end{array} & \end{array}$$

HW for Wed.

P 497

1-4 9, 10

15-20 43-44

4C. $x^2 = -10x$
