

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

$$3a^2b - 6ab^3 + 12a^4b$$

$$\cancel{3} \cancel{a} \cancel{a} \cancel{b} \quad 2 \cdot \cancel{3} \cancel{a} \cancel{b} \cancel{b} \cancel{b} \quad 2 \cdot \cancel{2} \cdot \cancel{3} \cancel{a} \cancel{a} \cancel{a} \cancel{a} \cancel{b}$$

$$3ba(a - 2b^2 + 4a^3)$$

$$(a-2)\left(\frac{1}{2}x+3\right)=0$$

$$\downarrow$$
$$a-2=0$$

$$a=2$$

$$\downarrow$$
$$\frac{1}{2}x+3=0$$
$$\quad \quad \quad -3 \quad -3$$

---

$$\frac{2}{1} \cdot \frac{1}{2}x = -3 \cdot \frac{2}{1}$$
$$x = -6$$

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.

### Guided Practice

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

↓

↓

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

$$n = 0$$

$$\frac{n+2}{-2} = \frac{0}{-2}$$

$$n = -2$$



Must =0 to factor

$$\text{b. } c^2 = 3c$$

$$-3c \quad -3c$$

---

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

$$c(c-3) = 0$$

$$\downarrow$$
$$c=0$$

$$\downarrow$$
$$c-3=0$$
$$+3 \quad +3$$

---

$$c=3$$

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

---

$$-10x -10x$$

$$\frac{x^2}{x} = \frac{-10x}{x} = 0$$

$$x(x + 10) = 0$$

