

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

activ: cubes

Use the Distributive Property to factor each polynomial.

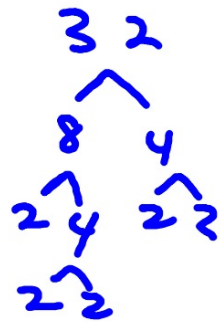
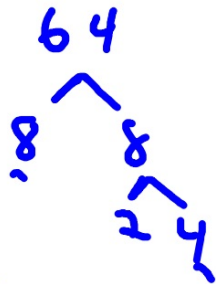
$$21xy - 18x^2$$

$$\cancel{3} \cdot 7 \cancel{x} y - 2 \cdot \cancel{3} \cdot 3 \cancel{x} x$$

$$3x(7y - 6x)$$

$$3x \cdot 7y + 3x \cdot -6x$$

$$21xy - 18x^2$$



$$\begin{matrix} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} & - & \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} & + & \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \cancel{2} \\ 222r & s & r & & s & s & s & & s & s & s & & s & s & s & & s & s & s & & s & s & s \end{matrix}$$

$$64r^3s - 32r^2s^3 + 8r^2s^2$$

$$8r^2s(8r - 4s^2 + s)$$

GCF
all (left over)

Use the Distributive Property to factor each polynomial.

15. $16t - 40y$
 $2222t \quad 2225y$

17. $2k^2 + 4k$
 $2kk \quad 22k = 2k(k+2)$

19. $4a^2b^2 + 2a^2b - 10ab^2$

16. $30v + 50x$
 $2 \cdot 3 \cdot 5v \quad 255x$

18. $5z^2 + 10z$

20. $5c^2v - 15c^2v^2 + 5c^2v^3$

Example 4
p. 478

Solve each equation. Check your solutions.

39. $3b(9b - 27) = 0$

41. $(8z + 4)(5z + 10) = 0$

$$\begin{array}{r} 8z + 4 = 0 \\ -4 \quad -4 \\ \hline 8z = -4 \\ \frac{8z}{8} = \frac{-4}{8} \\ z = -\frac{1}{2} \end{array} \qquad \begin{array}{r} 5z + 10 = 0 \\ -10 \quad -10 \\ \hline 5z = -10 \\ \frac{5z}{5} = \frac{-10}{5} \\ z = -2 \end{array}$$

$$2 \cdot (-1)(3 \cdot (-1) + 3) = 0$$
$$-2 \cdot 0 = 0$$

40. $2n(3n + 3) = 0$

42. $(7x + 3)(2x - 6) = 0$

$$\begin{array}{r} 7x + 3 = 0 \\ -3 \quad -3 \\ \hline 7x = -3 \\ \frac{7x}{7} = \frac{-3}{7} \end{array} \qquad \begin{array}{r} 2x - 6 = 0 \\ +6 \quad +6 \\ \hline 2x = 6 \\ \frac{2x}{2} = \frac{6}{2} \\ x = 3 \end{array}$$

$$2x^2 = 4x$$

$$\begin{array}{r} \cancel{2x^2} - \cancel{4x} \\ - 4x \\ \hline 2x^2 - 4x = 0 \end{array}$$

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

↓

$$\begin{array}{r} 2x = 0 \\ \hline 2 \\ \hline x = 0 \end{array}$$

↓

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

$$8b^2 - 40b = 0$$

$$2b : 2$$

$$4b(b - 5) = 0$$