Algebra 2   4.3
Write quadratic equations in standard form
Solve quadratic equations by factoring*

EWE
FOIL method (FAIL)
factor by grouping
zero product property

factoring puzzles
whiteboards

Thurs. exit ticket:
Factor:

1. $\dfrac{35x^2 - 15x}{5x \qquad 5x}$ $5x(7x-3)$

2. $x^2 - 4x - 21$ $\dfrac{-21}{-7 \diagtimes 3}$ $(x-7)(x+3)$
   $ -4$

3   $x = 5 \quad x = -2$

$$x^2 - 3x - 10 = 0$$
$$(x-5)(x+2) = 0$$
$$x-5 = 0 \qquad x+2 = 0$$
$$x = 5 \qquad x = -2$$

3B. $81x^2 - 9x = 0$

$9x(9x - 1) = 0$

$9x = 0$

$\dfrac{9x}{9} = \dfrac{0}{9}$

$9x - 1 = 0$

$\dfrac{9x}{9} = \dfrac{1}{9}$

$x = 0$

$x = \dfrac{1}{9}$

3C. $6a^2 - 3a = 0$

$3a(2a - 1) = 0$

$\dfrac{3a}{3} = \dfrac{0}{3}$

$2a - 1 = 0$

$\dfrac{2a}{2} = \dfrac{1}{2}$

$a = 0$

$a = \dfrac{1}{2}$

Distrib. prop.?
x-factor
by grouping
special factors
(DOS, PST, etc.)

x-factor

Example 4 Factor Trinomials

Solve each equation.

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

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

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

$x+5 = 0$

$x = -5$

$x+4 = 0$

$x = -4$

4A. $x^2 - 11x + 30 = 0$

4B. $x^2 - 4x - 21 = 0$

factor by grouping: step up from x-factor

b. $6y^2 - 23y + 20 = 0$

$a \times c = \dfrac{120}{}$

$(6y^2 - 8y) + (-15y + 20) = 0$

$2y(3y - 4) - 5(3y - 4) = 0$

$(3y - 4)(2y - 5) = 0$

1	120
2	60
3	40
4	15
5	24
6	20
-8	-15
10	12

$3y - 4 = 0 \qquad 2y - 5 = 0$

$3y = 4 \qquad 2y = 5$

$y = \dfrac{4}{3} \qquad y = \dfrac{5}{2}$

$-8x + -15x$

1. $a \times c$
2. factor p.s.
3. factor pr
   $\rightarrow b$
4. replace b
5. factor
   1st 2; 2nd 2

4C. $15x^2 - 8x + 1 = 0$

$\dfrac{15}{1 \cdot 5}$

$-3 \cdot 5$ $-3x + -5x$

$(15x^2 \,{-3x}\,{-5x} + 1) = 0$

$3x(5x - 1) - 1(5x - 1) = 0$

$(5x - 1)(3x - 1) = 0$

$5x - 1 = 0$
$+1 \quad +1$
$\overline{}$
$5x = 1$
$x = \dfrac{1}{5}$

$3x - 1 = 0$
$+1 \quad +1$
$3x = 1$
$x = \dfrac{1}{3}$

What is the difference between "solve" and "factor"?

Factor each polynomial.

20. $40a^2 - 32a$

21. $51c^3 - 34c$

29. $15x^2 + 7x - 2$

30. $4x^2 + 29x + 30$

32. $\dfrac{8x^2z^2}{4z^2} - \dfrac{4xz^2}{4z^2} - \dfrac{12z^2}{4z^2}$ **33.** $9x^2 - 25$

$4z^2\left(2x^2 - x - 3 \right)$

$4z^2\left(\left(2x^2 + 2x\right) + \left(-3x - 3\right)\right)$

$-3x + 2x$

$4z^3\left(2x(x+1) - 3(x+1)\right)$

$4z^2(x+1)(2x-3)$

$\dfrac{-6}{6}$

$\boxed{+2 \; -3}$ \quad $2x + ^-3x$

$4z^2 = 0$ \qquad $x + 1 = 0$

$z = 0$ \qquad\qquad $x = -1$

$2x - 3 = 0$

WB4.3

ovts + 28 30