

Algebra 1

8.6

Factor trinomials

Solve quadratic equations by factoring
quadratic

EWE

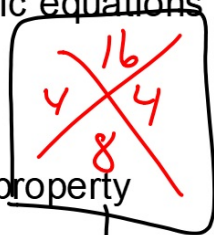
Factor

Zero product property

activity: x-factor

ICE ws

1, 16
2, 8
4, 4



$$x^2 + 8x + 16$$

$$(x+4)(x+4)$$
$$(x+4)^2$$

Example 1 b and c are Positive

Factor $x^2 + 9x + 20$.

$$\begin{array}{c} 20 \\ 5 \times 4 \\ 9 \end{array} \quad (x+5)(x+4)$$

$$1 \ 20$$

$$2 \ 10$$

$$4 \ 5$$

Factor each polynomial.

1A. $d^2 + 11d + 24$

Solve $\begin{matrix} 1, 9 \\ 3, 3 \end{matrix}$

rewrite in standard form first

1B. $9 + 10t + t^2 = 0$

$$t^2 + 10t + 9 = 0$$

$$(t+9) \cdot (t+1) = 0$$

$$\begin{array}{l} \downarrow \\ t+9=0 \\ -9 \quad -9 \end{array}$$

$$\begin{array}{l} t+1=0 \\ -1 \quad -1 \end{array}$$

$$t = -9$$

$$t = -1$$

$$\begin{array}{ccc} & 9 & \\ 1 & \times & 9 \\ & 10 & \end{array}$$

Example 2 b is Negative and c is Positive

Factor $x^2 - 8x + 12$. Confirm your answer

$$(x-2)(x-6)$$

12
-2 -6
-8

1	12
2	6
3	4

$$\begin{array}{r} x-2 \\ x-6 \\ \hline x^2 - 6x + 12 \\ -2x \end{array}$$

What does "confirm your answer" mean?

2B. $w^2 - 11w + 28 = 0$

$$(w-4)(w-7) = 0$$

$$\begin{array}{l} \downarrow \\ w-4=0 \\ +4 \quad +4 \end{array}$$

$$w=4$$

$$\begin{array}{l} \downarrow \\ w-7=0 \\ +7 \quad +7 \\ w=7 \end{array}$$

$$(\quad) \cdot (\quad)$$

$$\begin{array}{ccc} & \underline{11} & \\ & 28 & \\ -4 & \times & -7 \\ & -11 & \\ & \underline{11} & \end{array}$$

$$\begin{array}{ccc} 1 & 2 & 8 \\ 2 & 1 & 4 \\ 4 & 7 & \end{array}$$

2A. $21 - 22m + m^2 = 0$

standard form

$$m^2 - 22m + 21 = 0$$

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

Example 3 c is Negative

Factor each polynomial.

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

b. $x^2 - 7x - 18 = 0$

Guided Practice

3A. $y^2 + 13y - 48 = 0$

3B. $r^2 - 2r - 24 = 0$