





## 10.5 Factoring $x^2 + bx + c$

- Goals:**
- Factor a quadratic expression of the form  $x^2 + bx + c$ .
  - Solve quadratic equations by factoring.

**EQ:** What are the steps you need to take to factor?

### Vocabulary

**Factor:** Reverse of FOIL

Written as a product of 2 linear expressions

$$(x - 1)(x + 2) \leftarrow \text{Factors}$$

**Example 1: Factoring when c is Positive**  
Factor.

a)  $x^2 + 17x + 60$

$(x+5)(x+12)$

$\begin{array}{r} 60 \\ 5 \cdot 12 \\ + \\ 17 \end{array}$

$\begin{array}{l} 1, 60 \\ 2, 30 \\ 3, 20 \\ 4, 15 \\ 5, 12 \end{array}$

	x	12
x	$x^2$	$12x$
5	$5x$	60

$x^2 + 17x + 60$  ✓

b)  $x^2 - 16x + 39$

$(x-3)(x-13)$

$\begin{array}{r} 39 \\ -3 \cdot -13 \\ + \\ -16 \end{array}$

$x^2 - 13x - 3x + 39$

$x^2 - 16x + 39$

**Example 2: Factoring when c is Negative**  
Factor.

a)  $x^2 - 12x - 64$

$(x-16)(x+4)$

OR  $(x+4)(x-16)$

$\begin{array}{r} -64 \\ -16 \cdot 4 \\ + \\ -12 \end{array}$

$\begin{array}{l} 1, 64 \\ 2, 32 \end{array}$

b)  $x^2 + 10x - 75$

$(x+15)(x-5)$

$\begin{array}{r} -75 \\ 15 \cdot -5 \\ + \\ 10 \end{array}$

\*Set 4&5 "X" wkst

\*"9.7" Masters wkst #1-20