9-3 Factoring Trinomials

$x^2 + bx + c$

To factor quadratic trinomials of the form $x^2 + bx + c$, find the two integers whose product equals c and whose sum equals b.

Example: $x^2 + 5x + 6$

Example 1: b>0 and c>0 (both are positive)

Factor $x^2 + 7x + 12$

Factors of 12 | Sum of factors

Check : FOIL

Try : Factor $x^2 + 6x + 8$

Example 2: b<0 and c>0 (b is negative & c is positive)

Factor $x^2 - 12x + 27$

Factors of 27 | Sum of factors

Check : FOIL

Try : $x^2 - 10x + 16$

Example 3: b>0 and c<0 (b is positive, c is negative)

Factor $x^2 + 3x - 18$

Check : FOIL

Factors of 12	Sum of factors

Try: Factor $x^2 + x - 12$

Example 4: b < 0 and c < 0 (both are negative)

Factor $x^2 - x - 20$

Factors of 12	Sum of factors

Check : FOIL

Try : Factor $x^2 - 7x - 18$

Solve an Equation by Factoring

Some equations of the form $x^2 + bx + c$ can be solved by factoring then using the Zero Product Property.

Example: Solve $x^2 + 2x = 15$. Check your solutions!

Check

Try: Solve $x^2 + 5x = 6$. Check.

Real World Problem:
Catie has a small art studio in her backyard.
She wants to build a new studio that has three times the area of the old studio by increasing the length and the width by the same amount.
What are the new dimensions of the new studio?