

3.5

Polynomials of the Form $x^2 + bx + c$

Lesson 10

Connect

Factoring Trinomials

- When factoring a trinomial, we need to look at the **second term (b)** and the **third term (c)** to help find the factors.

Sum (2 nd Term)	Product (3 rd Term)	INTEGERS
Negative	Negative	Bigger #(-) Smaller #(+)
Negative	Positive	Both Negative numbers
Positive	Negative	Bigger #(+) Smaller #(-)
Positive	Positive	Both Numbers Positive

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Connect

Factoring Trinomials

Factor $x^2 - 2x - 8$

$$x^2 - 2x - 8$$

$$\begin{array}{l} \text{equal} \\ \boxed{(x-4)(x+2)} \\ \hline (x+2)(x-4) \\ \hline x^2 - 4x + 2x - 8 \\ \hline x^2 - 2x - 8 \end{array}$$

Steps:

Find two numbers that add up to the middle term

Now, those same two numbers need to multiply to give you the third term

Pick the signs from the chart that was provided.

Place the numbers as constants in the two binomials

Connect

Factoring Trinomials

Factor $y^2 - 5y + 4$

$$y^2 - 5y + 4$$

$$\begin{array}{l} \boxed{(y-1)(y-4)} \\ \hline y^2 - 4y - y + 4 \\ \hline y^2 - 5y + 4 \end{array}$$

Steps:

Find two numbers that add up to the middle term

Now, those same two numbers need to multiply to give you the third term

Pick the signs from the chart that was provided.

Place the numbers as constants in the two binomials

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Connect		Factoring Trinomials	
Factor $x^2 + 6x + 8$			
$ \begin{array}{l} 8 \\ 1 \cdot 8 \\ 2 \cdot 4 \end{array} $ $ \begin{array}{c} x^2 + 6x + 8 \\ \xrightarrow{+ \quad +} \\ (x+2)(x+4) \\ x^2 + 4x + 2x + 8 \\ \underline{ + + 8} \\ x^2 + 6x + 8 \end{array} $	<p>Steps:</p> <p>Find two numbers that add up to the middle term</p> <p>Now, those same two numbers need to multiply to give you the third term</p> <p>Pick the signs from the chart that was provided.</p> <p>Place the numbers as constants in the two binomials</p>		

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Connect		Factoring Trinomials	
Factor $x^2 + 2x - 15$			
$ \begin{array}{l} 15 \\ 1 \cdot 15 \\ 3 \cdot 5 \end{array} $ $ \begin{array}{c} x^2 + 2x - 15 \\ \xrightarrow{+ \quad -} \\ (x-3)(x+5) \\ x^2 + 5x - 3x - 15 \\ \underline{ - - 15} \\ x^2 + 2x - 15 \end{array} $	<p>Steps:</p> <p>Find two numbers that add up to the middle term</p> <p>Now, those same two numbers need to multiply to give you the third term</p> <p>Pick the signs from the chart that was provided.</p> <p>Place the numbers as constants in the two binomials</p>		

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Practice		YOU TRY!	
Factor each of the following			
$ \begin{array}{l} g^2 - 4g + 3 \\ (g-1)(g-3) \end{array} $	$ \begin{array}{l} x^2 + x - 12 \\ (x+4)(x-3) \end{array} $		

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Practice		YOU TRY!	
Factor each of the following			
$ \begin{array}{l} y^2 - 4y - 12 \\ (y-6)(y+2) \end{array} $	$ \begin{array}{l} z^2 + 9z + 18 \\ (z+6)(z+3) \end{array} $		

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Practice

HOMEWORK!

Textbook Questions:

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