

# Factoring Simple Trinomials ( $x^2 + bx + c$ )

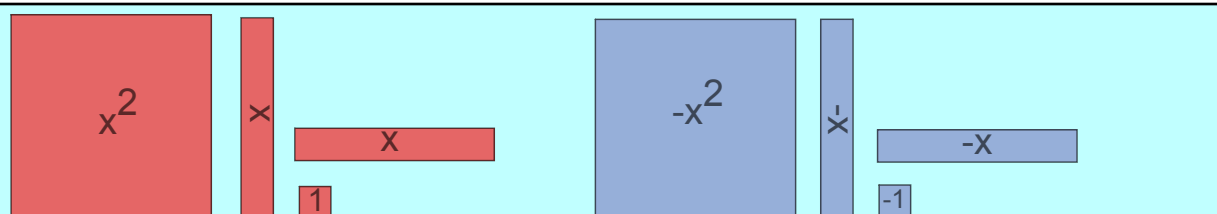
March 31/2010

## 1. Using Alge-tiles

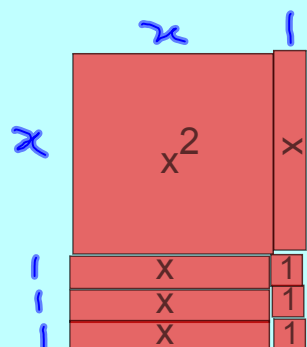
Model the expression as an area. The tiles must form a rectangle (or square).

The lengths of the sides are factors.

Mar 26-8:24 AM



Factor:  $x^2 + 4x + 3 = (x+1)(x+3)$



Mar 25-8:02 AM

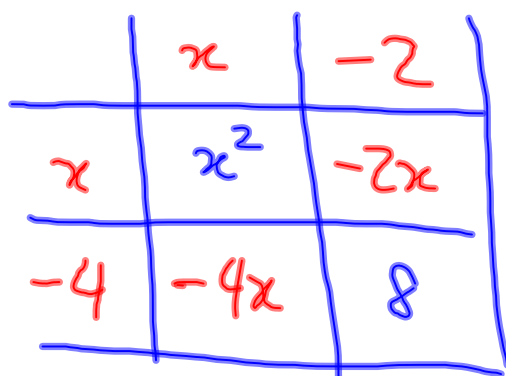
Factor:  $x^2 + 5x + 6 = (x+2)(x+3)$

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## 2. Using a Diagram

What are the possible dimensions of the constant value (bottom right corner)?

Ex. Factor  $x^2 - 6x + 8$



$$\begin{aligned}
 &2 \times 4 \\
 &(-2) \times (-4) \rightarrow (-2) + (-4) \\
 &1 \times 8 \\
 &(-1) \times (-8) \\
 &= -6
 \end{aligned}$$

$$\therefore x^2 - 6x + 8 = (x-4)(x-2)$$

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## 3. Algebraically

Consider:  $(x + 2)(x + 3) = 1x^2 + 5x + 6$

What relationship is there between the factors and the coefficients of the answer?           

$$2 + 3 = 5$$

$$2 \times 3 = 6$$

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In general, given

$$(x + m)(x + n) = x^2 + bx + c$$

then

$$b = m + n \quad \text{and} \quad c = m \times n$$

To factor  $x^2 + bx + c$ :

1. Find two numbers that add to b, and
2. the same two numbers that multiply to c.

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Ex. Factor  $x^2 - 8x + 12$ 

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

Multiply to 12	Add to -8
$6 \times 2$	$+8$ <span style="color: red;">✗</span>
<del><math>(-6) \times 2 = -12</math></del>	
$(-6) \times (-2)$	$-8$ <span style="color: blue;">✓</span>

To check your answer,  
multiply factors.

Mar 30-9:10 PM

Assigned Work:

Handout Section 3.5

# 2 - 6

(don't forget common factors in #6)

Mar 26-9:06 AM