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Notes:

Factoring Trinomials ($a = 1$)

Created for you by Ms. Nhotsoubanh

Aim: Students will be able to factor quadratic trinomials whose quadratic coefficient is 1.

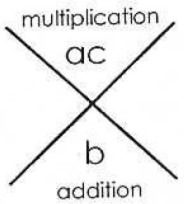
Factoring Polynomials when.....
- The degree(exponent) is 2(Quadratic)
- The number of terms is 3(Trinomial)
- The coefficient of the squared term is 1

Basic form of a trinomial

↓

$ax^2 + bx + c$

$(x \square)(x \square)$



Steps to factoring a trinomial where $a = 1$
1. Draw your parentheses and fill in the variable.
2. In your x-box: place "b" in the addition spot and "ac" in the multiplication spot.
3. Find the factors of "ac" that will give you the value of "b", if "ac" is: • positive – add the 2 factors • negative – subtract the 2 factors
4. Solve the x-box and place your answer in the parentheses.
5. Check your work by the distributive property (FOIL).

a b c

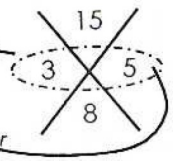
Example 1: Factor: $x^2 + 8x + 15$

$a = 1$

$b = 8$

$c = 15$

$(x + 3)(x + 5)$



Name: Key

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Glue on page 38

HW: red text p.215 #s 1-6, red text page 218 #s 1-6 use pages 39 & 40

Example 2: Factor:

a b c

$x^2 + 10x + 16$

ac = 16; 2 × 8; +10 = b

$(x + 2)(x + 8)$

Check by the distributive property

$(x+2)(x+8)$

$x(x+8) + 2(x+8)$

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

$x^2 + 10x + 16$ ✓

Example 3: Factor:

a b c

$x^2 + 15x + 54$

ac = 54; 6 × 9; +15 = b

$(x + 6)(x + 9)$

Check by the box-method

	x	+6
x	1st term x^2	$+6x$
+9	$+9x$	Last term +54

$6x + 9x = 15x$

Example 4: Factor:

a b c

$x^2 + 3x - 18$

ac = −18; −3 × 6; +3 = b

$(x - 3)(x + 6)$

Check by the distributive property

$(x-3)(x+6)$

$x(x+6) - 3(x+6)$

$x^2 + 6x - 3x - 18$

$x^2 + 3x - 18$ ✓

Example 5: Factor:

a b c

$x^2 + 4x - 12$

ac = −12; −2 × 6; +4 = b

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

Check by the box-method

	x	−2
x	1st term x^2	$-2x$
+6	$+6x$	Last term −12

$-2x + 6x = 4x$ ✓

Your Turn!

Example 6: Factor:

a b c

$x^2 - 7x - 18$

ac = −18; 2 × −9; −7 = b

$(x + 2)(x - 9)$

Check by the distributive property

$(x+2)(x-9)$

$x(x-9) + 2(x-9)$

$x^2 - 9x + 2x - 18$

$x^2 - 7x - 18$ ✓

Your Turn!

Example 7: Factor:

a b c

$x^2 - 2x - 35$

ac = −35; 5 × −7; −2 = b

$(x + 5)(x - 7)$

Check by the box-method

	x	+5
x	1st term x^2	$+5x$
−7	$-7x$	Last term −35

$5x - 7x = -2x$ ✓

Your Turn!

Example 8: Factor:

a b c

$x^2 - 6x + 8$

ac = 8; −4 × −2; −6 = b

$(x - 4)(x - 2)$

Check by the distributive property

$(x-4)(x-2)$

$x(x-2) - 4(x-2)$

$x^2 - 2x - 4x + 8$

$x^2 - 6x + 8$ ✓

Your Turn!

Example 9: Factor:

a b c

$x^2 - 7x + 12$

ac = 12; −3 × −4; −7 = b

$(x - 3)(x - 4)$

Check by the box-method

	x	−3
x	1st term x^2	$-3x$
−4	$-4x$	Last term +12

$-3x - 4x = -7x$ ✓