Factoring Complex Trinomials ($ax^2 + bx + c$, $a \neq 1$)
Part 2

Breaking Up the Middle Term (bx)

Expand (x + 4)(2x + 3). What are the x-terms?

$= 2x^2 + 6x + x + 3$

$= 2x^2 + 7x + 3$

	x	+ 3
2x	$2x^2$	6x
+4	4x	3

Mar 26-8:24 AM

Factoring Complex Trinomials ($ax^2 + bx + c$, $a \neq 1$)
Part 2

March 29/2011

Expand (x + 4)(2x + 3). What are the x-terms?

$(x + 4)(2x + 3) = 2x^2 + 3x + 8x + 12$

$= 2x^2 + 11x + 12$

expand & simplify

factoring

To factor $2x^2 + 11x + 12$, we need to do these steps in reverse order.

How do the numbers 3 and 8 relate to 2, 11, and 12?

$3 + 8 = 11$ $3 \times 8 = 2 \times 12 = 24$

Mar 26-8:24 AM

Once you have broken the middle term, you can factor by grouping

$2x^2 + 11x + 12 = 2x^2 + 3x + 8x + 12$

$= x(2x+3) + 4(2x+3)$

$= x\,a + 4\,a$

$= a(x+4)$

$= (2x+3)(x+4)$

Mar 26-8:24 AM

Ex. Factor $6m^2 + 13m - 5$

Numbers add to: 13 (sum)

Numbers multiply to: -30 (product) $6(-5)$

Numbers are:

15 and -2 (integers)

This technique is called SPI (sum, product, integers)

S - sum
P - product
I - integers

Apr 3-8:57 PM

Ex. Factor $6m^2 + 13m - 5$

Numbers are: -2 and 15

Now factor by grouping:

$6m^2 + 13m - 5 = 6m^2 + 15m - 2m - 5$ (13m)

$= 3m(2m+5) - 1(2m+5)$

$= (2m+5)(3m-1)$

Apr 3-8:57 PM

Ex. Factor: $10x^2 - 11x - 6$

negative integer is larger.

S: -11

P: -60

I: ~~-1, 60~~ 1, -60 ~~-2, 30~~ 2, -30 ~~-3, 20~~ 3, -20 ~~-4, 15~~ 4, -15 ~~-5, 12~~ 5, -12

~~-6, 10~~ 6, -10

$= 10x^2 + 4x - 15x - 6$

$= 2x(5x+2) - 3(5x+2)$

$= (5x+2)(2x-3)$

Apr 3-9:10 PM

Assigned Work:

p.223-224 #3bc, 4bc, 5abc, 6,
#7abc, 11, 15, 17(Challenging)

Look for common factors first!!!

Mar 26-9:06 AM