Factoring Notes Day 1 Fantastic Factorer: Key Date:

What does a polynomial look like in Factored Form?

$(x-11)(2x+12)$ → when factoring, answers should look like these.

$(x+7)(13x-12)(6x+4)$

1. Multiply $(x+4)(x+9)$ then factor $x^2+13x+36$.

	x	$+4$
x	x^2	$4x$
$+9$	$9x$	36

$x^2+4x+9x+36$

$x^2+13x+36$

$(x+4)(x+9)$

2a. Multiply $(x-3)(x+11)$.

	x	-3
x	x^2	$-3x$
$+11$	$11x$	-33

$x^2-3x+11x-33$

$x^2+8x-33$

2b. What patterns do you notice between the numbers in the factored forms and the standard forms in the problems above? (ex: where did the 13 come from in #1?)

The #s in factored form, $(x+4)(x+9)$, add to the "b" value $(4+9=13)$ and multiply to the "c" value $(4\cdot 9=36)$

3. Factor $x^2-12x+32$

32 ← "c"

$-8\cdot -4$

$-8+-4=-12$ "b"

$(x-8)(x-4)$

Factored Form

"a" ≠ 1 → Different Method

4. Factor $2x^2 - 9x - 5$

$a \cdot c = -10$

$-10 \cdot 1$

$-10 + 1 = -9$ ← "b"

$2x^2 - 10x + 1x - 5$

$2x(x - 5) + 1(x - 5)$

$(x - 5)(2x + 1)$

5. Factor $3x^2 + 5x - 12$

$a \cdot c = -36$

$9 \cdot -4$

$9 + -4 = 5$

?	?
$3x^2$	$+9x$
$-4x$	-12

x	3
$3x^2$	$+9x$
$-4x$	-12

?	?
$3x^2$	$+9x$
$-4x$	-12

GCF: $3x$, -4

x above because $3x \cdot x = 3x^2$, 3 above because $3x \cdot 3 = 9x$

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

You Try!

6. Factor $x^2 + 5x - 14$

7. Factor $4x^2 + 8x - 5$

8. Factor $x^2 - 81$ Hint: what is the "b" value?