

LESSON #7: FACTORING TRINOMIALS (a > 1)

Do Now:

Multiply: $(2x + 3)(x - 1)$
 $2x^2 - 2x + 3x - 3$
 $2x^2 + x - 3$

Factor the following: OMG SAME!

1. $2x^2 + x - 3$
 $2x^2 = 2x + 3x - 3$
 $2x(x - 1) + 3(x - 1)$
 $(2x - 3)(x - 1)$

2. $16x^2 + 8x + 1$
 $16x^2 = 4x + 4x + 1$
 $4x(4x + 1) + 1(4x + 1)$
 $(4x + 1)(4x + 1)$

Factoring Trinomials with a > 1

- 1) Bring the 1st and last term down.
- 2) Multiply the first and last coefficients.
- 3) Find factors that add or subtract to the middle term and multiply to the product of the first and last coefficients.
- 4) Rewrite the problem with 4 terms.
- 5) Factor by "Grouping"- Split problem down the middle.
- 6) Factor the 1st two terms (GCF).
- 7) Copy and paste the () on the other side.
- 8) Put the GCF of last two terms in front.
- 9) Determine your factors.
- 10) To check, double distribute or use tabular method.

$2x^2 + 5x - 3$
 M = -6 and S = +5
 $2x^2 + 6x - 1x - 3$
 $2x(x + 3) - 1(x + 3)$
 $(x + 3)(2x - 1)$

-10x

3. $4x^2 - 6x - 4$

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

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

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

60x

4. $5x^2 - 17x - 12$

$5x^2 - 5x - 12x - 12$

$5x(x-1) - 12(x-1)$

$(5x-12)(x-1)$

-36x²

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

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

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

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

9x²

6. $9x^2 - 6x + 1$

$9x^2 - 3x - 3x + 1$

$3x(3x-1) - 1(3x-1)$

$(3x-1)(3x-1)$

+120x²

7. $10x^2 + 26x + 12$ → FIX

$10x^2 + 20x + 6x + 12$

$10x(x+2) + 6(x+2)$

$(10x+6)(x+2)$

★ 8. $2x^3 + 3x^2 - 5x + 8x^2y + 12xy - 20y$

$x(2x^2 + 3x - 5) + 4y(2x^2 + 3x - 5)$

$(x+4y)(2x^2 + 3x - 5)$

$(x+4y)(2x^2 - 2x + 5x - 5)$

$(x+4y)(2x(x-1) + 5(x-1))$

$(x+4y)(2x+5)(x-1)$