

	Example: $4x^2 + 10xy - 84y^2$
ALWAYS LOOK FOR A COMMON FACTOR!	$2(2x^2) + 5xy(-42y^2)$
DEFOIL – Factoring Trinomials	
1. Multiply the first & last terms	$2x^2 \times (-42y^2) = -84x^2y^2$
2. Find the factors – that give you the answer in step one – that combine to be the middle term.	$\begin{array}{r l} -84x^2y^2 & \\ \hline 12xy & 5xy \\ -7xy & \end{array}$
3. Replace the middle term with these factors.	$2(2x^2 + 12xy - 7xy - 42y^2)$
4. Factor by grouping: group the first two terms & group the last two terms & take out a common factor from each.	$2(2x^2 + 12xy - 7xy - 42y^2)$ $2[(2x^2 + 12xy)(-7xy - 42y^2)]$ $2[2x(x + 6y) - 7y(x + 6y)]$
5. What remains are your factors.	$2(x + 6y)(2x - 7y)$

Special Products:

- Difference of Two Squares: $a^2 - b^2 = (a + b)(a - b)$
 - Both terms are perfect squares
 - Must be subtraction
- Sum/Difference of Two Cubes
 - $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
 - $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
- Perfect Square Trinomials: $ax^2 \pm bx + c = (mx \pm n)^2$
 - Both ax^2 & c are positive perfect squares
 - The product of the square roots of ax^2 & c times 2 is the middle term

$$\sqrt{ax^2} = mx \text{ \& } \sqrt{c} = n$$