SM2 VOCAB 5-1 (Factoring Simple Trinomials)

Standard Form Quadratic Expression: an expression of the form: $\boxed{ax^2 + bx + c}$ where ‘a’, ‘b’, and ‘c’ are numerals (usually integers). In this lesson we will cover simple trinomials that have a “lead coefficient of ‘1’: $\boxed{x^2 + bx + c}$

Standard form quadratic expressions have already been “simplified”. There are no “like terms” and the same-based powers (base with its exponent) are arranged from left to right so that the exponents become smaller and smaller.

Examples: $\boxed{3x^2 + 7x - 6}$ $\boxed{3x^2 - 9x + 6}$ $\boxed{x^2 - 3x + 2}$ $\boxed{x^2 - 2}$

Factored Form Quadratic Expression: an expression of the form: $\boxed{a(x - p)(x + q)}$ where ‘a’, ‘p’, and ‘q’ are numerals (usually integers).

Notice that you don’t see any exponents. The number ‘a’ would be a common factor on one of the binomials (or a product of the common factors of both binomials).

Examples: $\boxed{2(x - 3)(x + 4)}$ $\boxed{6(x - 2)(x + 1)}$ $\boxed{x(x + 3)}$

“The Difference of Two Squares”: a binomial where each term can be considered the square of a number. They always factor into “conjugate pairs”. Examples: $\boxed{x^2 - 1}$ $\boxed{x^2 - 2}$ $\boxed{\rightarrow (x)^2 - \left(\sqrt{2}\right)^2}$

Conjugate pair (of binomials): a pair of binomials where the terms are the same for both binomials except that one has an opposite sign that the other. Examples: $\boxed{(x-1)(x+1)}$ $\boxed{(x - \sqrt{2})(x + \sqrt{2})}$

“The Sum of Two Squares”: a binomial where each term can be considered the square of a number. They always factor into imaginary number “conjugate pairs”. Examples:

$\boxed{x^2 + 4}$ $\boxed{\rightarrow (x + 2i)(x - 2i)}$ $\boxed{x^2 + 3}$ $\boxed{\rightarrow (x + i\sqrt{3})(x - i\sqrt{3})}$