



# Math Study Strategies

## Factoring Trinomials $ax^2 + bx + c$ , when $a=1$

$$\text{1st term of trinomial} = \left( \begin{array}{c} \text{1st term of} \\ \text{1st binomial} \end{array} \right) \left( \begin{array}{c} \text{1st term of} \\ \text{2nd binomial} \end{array} \right)$$

$$\text{Last term of trinomial} = \left( \begin{array}{c} \text{Last term of} \\ \text{1st binomial} \end{array} \right) \left( \begin{array}{c} \text{Last term of} \\ \text{2nd binomial} \end{array} \right)$$

$$\text{Middle term the trinomial} = \left( \begin{array}{c} \text{Product of} \\ \text{outer terms of} \\ \text{the binomials} \end{array} \right) + \left( \begin{array}{c} \text{Product of} \\ \text{inner terms of} \\ \text{the binomials} \end{array} \right)$$

If all terms of the trinomial are positive, then all terms of the binomials will be positive.

### Ex 1

$$x^2 + 9x + 8 = (x + 8)(x + 1)$$

If the last term of the trinomial is negative but the middle term and the first term are positive, then one term of the binomial will be **negative** and the other will be **positive**. (The greater factor will be **positive** and the smaller will be **negative**.)

### Ex 2

$$x^2 + 7x - 30 = (x + 10)(x - 3)$$

If the middle term and the last term of the trinomial are negative and the first term is positive, then the sign for one binomial will be **positive** and the other will be **negative**. (The greater factor will be **negative** and the smaller will be **positive**.)

### Ex 3

$$x^2 - 6x - 40 = (x - 10)(x + 4)$$

If the last term and the first term of the trinomial are positive but the middle term is negative, then both signs of the binomials will be negative

### Ex 4

$$x^2 - 11x + 18 = (x - 2)(x - 9)$$