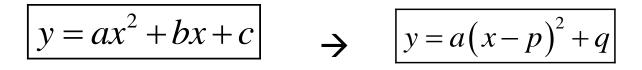
## Math 10H: How to Complete the Square:

"Completing the Square" is a process to convert a quadratic equation from general form to standard form



Ex: Complete the square:  $y = 3x^2 + 12x - 10$ 

$$y = 3x^{2} + 12x - 10$$
  

$$y = (3x^{2} + 12x) - 10$$
  

$$y = 3(x^{2} + 4x) - 10$$
  

$$y = 3(x^{2} + 4x + 4 - 4) - 10$$
  

$$y = 3(x^{2} + 4x + 4) - 12 - 10$$
  

$$y = 3(x^{2} + 4x + 4) - 12 - 10$$
  

$$y = 3(x^{2} + 4x + 4) - 12 - 10$$
  

$$y = 3(x + 2)(x + 2) - 22$$
  

$$y = 3(x + 2)^{2} - 22$$

Bracket the first 2 terms, leave the 3<sup>rd</sup> term Factor out "a" from the first two terms Add and Subtr. the square of the second coefficcient:  $\left(\frac{1}{2}b\right)^2$ Take out the negative value from brackets,

Take out the negative value from brackets, remember to multiply with coefficient in front Factor trinomial into 2 similiar binomial Combine binomials into a square

The quadratic formula is now in standard form:  $y = a(x-p)^2 + q$