Math 10H: How to Complete the Square:

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

$$\boxed{y = ax^2 + bx + c} \quad \rightarrow \quad \boxed{y = a(x - p)^2 + q}$$

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

$y = 3x^2 + 12x - 10$	
$y = (3x^2 + 12x) - 10$	Bracket the first 2 terms, leave the 3rd term
$y = 3(x^2 + 4x) - 10$	Factor out "a" from the first two terms
$y = 3(x^2 + 4x + 4 - 4) - 10$	Add and Subtr. the square of the second coeffiecient: $(\frac{1}{2}b)^2$
$y = 3(x^2 + 4x + 4) - 12 - 10$	Take out the negative value from brackets, remember to multiply with coefficient in front
$y = 3(x + 2)(x + 2) - 22$	Factor trinomial into 2 similiar binomial
$y = 3(x + 2)^2 - 22$	Combine binomials into a square

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