

# Algebra 2

## 3-04 Solve Quadratic Equations by Completing the Square (3.3)

### The Perfect Square

$$(x + 3)^2$$

$$(x + k)^2 = x^2 + 2kx + k^2 = ax^2 + bx + c$$

In a perfect square,

$$c = \underline{\hspace{2cm}}$$

Complete the square and then factor.

$$x^2 + 8x$$

### Solve by Completing the Square

1. \_\_\_\_\_ the quadratic so  $x$  terms on \_\_\_\_\_ side and \_\_\_\_\_ on other.
2. If the \_\_\_\_\_ is not 1, divide everything by it.
3. Complete the square: add \_\_\_\_\_ to both sides.
4. Rewrite the left-hand side as a \_\_\_\_\_ (factor).
5. \_\_\_\_\_ both sides.

$$\text{Solve } x^2 + 6x = 16$$

$$\text{Solve } x^2 - 18x + 5 = 0$$

Solve  $2x^2 - 11x + 12 = 0$

**Writing quadratic functions in Standard Form**

- $y = a(x - h)^2 + k$
- $(h, k)$  is the \_\_\_\_\_
- 1. Start with \_\_\_\_\_ form
- 2. \_\_\_\_\_ the terms with the  $x$
- 3. \_\_\_\_\_ out any number in front of the  $x^2$
- 4. Add \_\_\_\_\_ to both sides (inside the group on the right)
- 5. \_\_\_\_\_ as a perfect square
- 6. \_\_\_\_\_ to get the  $y$  by itself

Write in standard form  $y = 2x^2 + 12x + 16$

114 #9, 11, 21, 23, 27, 31, 33, 35, 37, 39, 41, 43, 45, 51, 55, Mixed Review = 20