

Honors Algebra 2
4.5 Completing the Square

1. Factor the following perfect square trinomials.

$f(x) = x^2 + 18x + 81$	$f(x) = x^2 - 16 + 64$	$f(x) = x^2 + \frac{3}{4}x + \frac{9}{64}$
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2. Find the **value of c** that makes each expression a perfect square trinomial.
Then write the expression as the square of the binomial.

$x^2 + 14x + c$	$a^2 + 12a + c$	$m^2 + 11m + c$
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3. Solve the following use the square root property:

$x^2 + 6x + 9 = 36$	$x^2 - 10x + 25 = 27$	$x^2 - 12x + 36 = 25$
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Steps to Complete the Square for $ax^2 + bx + c = 0$

1. The coefficient of the quadratic term must be 1. Divide each side by _____.
2. Isolate the constant term.
3. Create a perfect square trinomial. (Finding c above).
4. **Balance** the equation. Add _____ to both sides of the equation.
5. Write the left side as a binomial squared.
6. Take the square root of each side.
7. Solve for x.

4. Solve each of the following by completing the square.

$$x^2 - 14x + 19 = 0$$

$$v^2 + 18 = 9v$$

$$3a^2 + a - 2 = 0$$

$$2d^2 - 10d + 5 = 0$$

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$$x^2 + 10x - 11 = 0$$

$$2x^2 - 7x + 5 = 0$$

$$x^2 + 8x + 22 = 0$$

$$x^2 = 10x - 24$$