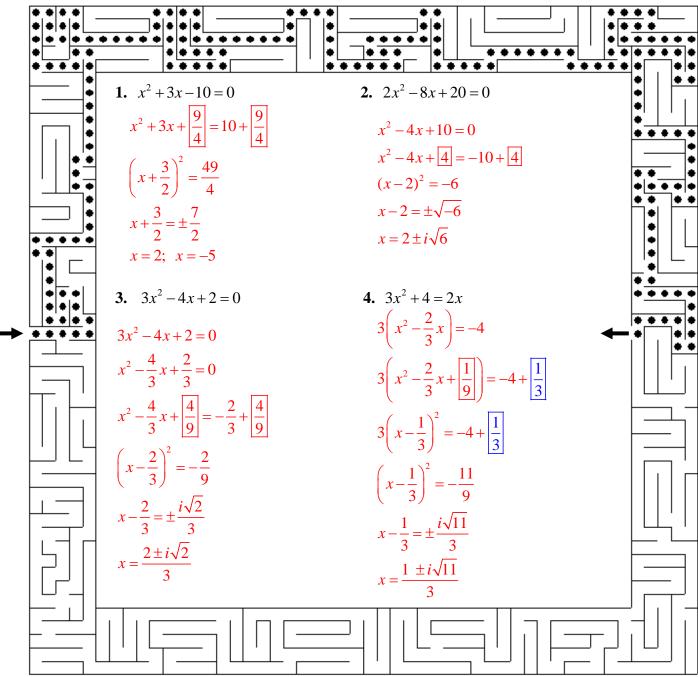# Completing the Square A2

Name_____**ANSWERS**_____

Directions: Find a path through the maze leading to the interior of the square. Then solve each quadratic equation by **completing the square**.

1. $x^2 + 3x - 10 = 0$

$$x^2 + 3x + \boxed{\frac{9}{4}} = 10 + \boxed{\frac{9}{4}}$$

$$\left(x + \frac{3}{2}\right)^2 = \frac{49}{4}$$

$$x + \frac{3}{2} = \pm\frac{7}{2}$$

$$x = 2; \ x = -5$$

2. $2x^2 - 8x + 20 = 0$

$$x^2 - 4x + 10 = 0$$

$$x^2 - 4x + \boxed{4} = -10 + \boxed{4}$$

$$(x-2)^2 = -6$$

$$x - 2 = \pm\sqrt{-6}$$

$$x = 2 \pm i\sqrt{6}$$

3. $3x^2 - 4x + 2 = 0$

$$3x^2 - 4x + 2 = 0$$

$$x^2 - \frac{4}{3}x + \frac{2}{3} = 0$$

$$x^2 - \frac{4}{3}x + \boxed{\frac{4}{9}} = -\frac{2}{3} + \boxed{\frac{4}{9}}$$

$$\left(x - \frac{2}{3}\right)^2 = -\frac{2}{9}$$

$$x - \frac{2}{3} = \pm\frac{i\sqrt{2}}{3}$$

$$x = \frac{2 \pm i\sqrt{2}}{3}$$

4. $3x^2 + 4 = 2x$

$$3\left(x^2 - \frac{2}{3}x\right) = -4$$

$$3\left(x^2 - \frac{2}{3}x + \boxed{\frac{1}{9}}\right) = -4 + \boxed{\frac{1}{3}}$$

$$3\left(x - \frac{1}{3}\right)^2 = -4 + \boxed{\frac{1}{3}}$$

$$\left(x - \frac{1}{3}\right)^2 = -\frac{11}{9}$$

$$x - \frac{1}{3} = \pm\frac{i\sqrt{11}}{3}$$

$$x = \frac{1 \pm i\sqrt{11}}{3}$$

5. Explain why it is necessary to have the leading coefficient of *x*-squared be one.
 The process of taking half of the middle term and squaring it to form a perfect square trinomial will not "work" if the leading coefficient is not one. Unfortunately, there is no short cut method to quickly form a perfect square trinomial when the leading coefficient is not one.

NOTE: different methods of presentation have been shown when the leading coefficient was not one (divide the equation by the leading coefficient OR factor out the leading coefficient).