

Find the number you should add in order to complete the square.

1.  $x^2 + 14x + \boxed{49}$

2.  $x^2 + 4x + \boxed{4}$

3.  $x^2 - 3x + \boxed{2.25}$

Solve each equation by completing the square.

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

$$x^2 - 10x + 25 = 24 + 25$$

$$(x-5)(x-5) = 49$$

$$(x-5)^2 = 49$$

Solve:  $\sqrt{(x-5)^2} = \sqrt{49}$

$$x-5 = \pm 7$$

$$+7+5 \quad \boxed{12} \quad -7+5 \quad \boxed{-2}$$

7.  $x^2 + 15x = -26$

$$x^2 + 15x + 56.25 = -26 + 56.25$$

$$(x+7.5)^2 = 30.25$$

Solve:  $\sqrt{(x+7.5)^2} = \sqrt{30.25}$

$$x+7.5 = \pm 5.5$$

$$-7.5 \quad -7.5$$

$$x = \boxed{-13 \text{ or } -2}$$

10.  $-x^2 - 5x + 5 = 0 \quad \div -1$

$$x^2 + 5x - 5 = 0 \quad \div -1$$

$$x^2 + 5x = 5$$

$$x^2 + 5x + 6.25 = 5 + 6.25$$

Solve:  $\sqrt{(x+2.5)^2} = \sqrt{11.25}$

$$x+2.5 = \pm 3.35$$

$$-2.5 \quad -2.5$$

$$x = \boxed{.85 \text{ or } -5.85}$$

5.  $x^2 + 16x = 92$

$$x^2 + 16x + 64 = 92 + 64$$

$$(x+8)(x+8) = 156$$

$$(x+8)^2 = 156$$

Solve:  $\sqrt{(x+8)^2} = \sqrt{156}$

$$x+8 = \pm 12.49$$

$$-8 \quad -8$$

$$x = \boxed{-20.49 \text{ or } 4.49}$$

8.  $x^2 + 2x - 21 = 0$

$$x^2 + 2x = 21$$

$$x^2 + 2x + 1 = 22$$

$$(x+1)^2 = 22$$

Solve:  $\sqrt{(x+1)^2} = \sqrt{22}$

$$x+1 = \pm 4.69$$

$$-1 \quad -1$$

$$x = \boxed{3.69 \text{ or } -5.69}$$

11.  $-x^2 = -8x + 6 \quad \div -1$

$$x^2 = 8x - 6$$

$$x^2 - 8x = -6$$

$$x^2 - 8x + 16 = -6 + 16$$

Solve:  $\sqrt{(x-4)^2} = \sqrt{10}$

$$x-4 = \pm 3.16$$

$$+4 \quad +4$$

$$x = \boxed{7.16 \text{ or } .84}$$

6.  $x^2 = 2x + 48$

$$x^2 - 2x = 48$$

$$x^2 - 2x + 1 = 48 + 1$$

$$(x-1)^2 = 49$$

Solve:  $\sqrt{(x-1)^2} = \sqrt{49}$

$$x-1 = \pm 7$$

$$+1 \quad +1$$

$$x = \boxed{8 \text{ or } -6}$$

9.  $x^2 = 2x + 6$

$$x^2 - 2x = 6$$

$$x^2 - 2x + 1 = 7$$

$$(x-1)^2 = 7$$

Solve:  $\sqrt{(x-1)^2} = \sqrt{7}$

$$x-1 = \pm 2.65$$

$$+1 \quad +1$$

$$x = \boxed{3.65 \text{ or } -1.65}$$

12.  $4x^2 + 32x + 44 = 0 \quad \div 4$

$$x^2 + 8x = -11$$

$$x^2 + 8x + 16 = -11 + 16$$

$$(x+4)^2 = 5$$

Solve:  $\sqrt{(x+4)^2} = \sqrt{5}$

$$x+4 = \pm 2.24$$

$$-4 \quad -4$$

$$x = \boxed{-6.24 \text{ or } -1.76}$$

13. List 4 methods you might try when solving a quadratic equation:

a.  $x^2$  only?  $\sqrt{\quad}$  (PEMDAS)

b. Factor

c. Graph (x-intercepts)

d. Quadratic Formula

e. Complete the Square!