

Accel. Geometry  
Solving Quadratics Practice

Name Key  
Date \_\_\_\_\_ Per \_\_\_\_\_

Solve each equation by taking square roots, factoring, using the quadratic formula, or completing the square.

1.  $x^2 + 8 = 28$

$$\sqrt{x^2} = \sqrt{20}$$

$$x = \pm 2\sqrt{5}$$

2.  $7x^2 = -21$

$$\sqrt{x^2} = \sqrt{-3}$$

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

3.  $(4k + 5)(k + 1) = 0$

$$4k + 5 = 0 \quad k + 1 = 0$$

$$k = -\frac{5}{4} \quad k = -1$$

4.  $2x^2 + x = 5$

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

$$x = \frac{-1 \pm \sqrt{1^2 - 4(2)(-5)}}{2(2)}$$

$$x = \frac{-1 \pm \sqrt{41}}{4}$$

5.  $n^2 + 16n = -7$

$$n^2 + 16n + \frac{64}{3} = -7 + \frac{64}{3}$$

$$\sqrt{(n+8)^2} = \sqrt{57}$$

$$n+8 = \pm\sqrt{57}$$

$$n = -8 \pm \sqrt{57}$$

$\frac{57}{3} = 19$

6.  $x^2 - 11x + 19 = -5$

$$x^2 - 11x + 24 = 0$$

$$(x-8)(x-3) = 0$$

$$x = 8 \quad x = 3$$

7.  $x^2 + 8x + 12 = 0$

$$(x+2)(x+6) = 0$$

$$x = -2 \quad x = -6$$

8.  $x^2 - x = 5x - 9$

$$x^2 - 6x + 9 = 0$$

$$(x-3)(x-3) = 0$$

$$x = 3$$

9.  $x^2 - 2x - 4 = 0$

$$x^2 - 2x + 1 = 4 + 1$$

$$\sqrt{(x-1)^2} = \sqrt{5}$$

$$x-1 = \pm\sqrt{5}$$

$$x = 1 \pm \sqrt{5}$$

10.  $m^2 - 12m + 26 = 0$

$$m = \frac{12 \pm \sqrt{12^2 - 4(1)(26)}}{2(1)}$$

$$= \frac{12 \pm \sqrt{144 - 104}}{2} = \frac{12 \pm \sqrt{40}}{2}$$

$$= \frac{12 \pm 2\sqrt{10}}{2} = 6 \pm \sqrt{10}$$

$\frac{40}{2 \cdot 2} = \frac{10}{1} = 10$

$$11. \frac{1}{4}(b-8)^2 = 7$$

$$\sqrt{(b-8)^2} = \sqrt{28}$$

$$b-8 = \pm 2\sqrt{7}$$

$$\boxed{b = 8 \pm 2\sqrt{7}}$$

$$\begin{array}{l} 28 \\ \wedge \\ 2 \cdot 14 \\ \wedge \\ 2 \cdot 7 \end{array}$$

$$12. 6n^2 - 18n - 18 = 6$$

$$6n^2 - 18n - 24 = 0$$

$$6(n^2 - 3n - 4) = 0$$

$$6(n-4)(n+1) = 0$$

$$\boxed{n = 4 \quad n = -1}$$

$$13. 5r^2 - 44r + 120 = -30 + 11r$$

$$5r^2 - 55r + 150 = 0$$

$$5(r^2 - 11r + 30) = 0$$

$$5(r-5)(r-6) = 0$$

$$\boxed{r = 5 \quad r = 6}$$

$$14. n^2 - 4n = 2n + 35$$

$$n^2 - 6n + 9 = 35 + 9$$

$$\sqrt{(n-3)^2} = \sqrt{44}$$

$$n-3 = \pm 2\sqrt{11}$$

$$\boxed{n = 3 \pm 2\sqrt{11}}$$

$$\begin{array}{l} 44 \\ \wedge \\ 2 \cdot 22 \\ \wedge \\ 2 \cdot 11 \end{array}$$

$$15. b^2 + 2b = -20$$

$$b^2 + 2b + 20 = 0$$

$$b = \frac{-2 \pm \sqrt{2^2 - 4(1)(20)}}{2(1)}$$

$$= \frac{-2 \pm \sqrt{-76}}{2}$$

$$16. \sqrt{(2r-5)^2} = \sqrt{81}$$

$$2r-5 = \pm 9$$

$$2r-5 = 9 \quad \text{or} \quad 2r-5 = -9$$

$$2r = 14 \quad 2r = -4$$

$$\boxed{r = 7 \quad r = -2}$$

$$17. x^2 - 18x = -32$$

$$x^2 - 18x + 32 = 0$$

$$(x-16)(x-2) = 0$$

$$\boxed{x = 16 \quad x = 2}$$

$$18. 12s^2 - 5s = 2$$

$$12s^2 - 5s - 2 = 0$$

$$s = \frac{5 \pm \sqrt{5^2 - 4(12)(-2)}}{2(12)} = \frac{5 \pm \sqrt{121}}{24}$$

$$= \frac{5 \pm 11}{24}$$

$$\frac{5+11}{24} = \frac{16}{24} = \frac{2}{3}$$

$$\frac{5-11}{24} = \frac{-6}{24} = \frac{-1}{4}$$

$$19. a^2 + 2a - 3 = 0$$

$$(a+3)(a-1) = 0$$

$$\boxed{a = -3 \quad a = 1}$$

$$20. 3 - 4x^2 = -85$$

$$-4x^2 = -88$$

$$\sqrt{x^2} = \sqrt{22}$$

$$\boxed{x = \pm\sqrt{22}}$$

$$21. 2(x-3)^2 = 8$$

$$\sqrt{(x-3)^2} = \sqrt{4}$$

$$x-3 = \pm 2$$

$$x-3 = 2 \quad x-3 = -2$$

$$\boxed{x = 5 \quad x = 1}$$

$$22. r^2 - 4r - 91 = 7$$

$$r^2 - 4r + 4 = 98 + 4$$

$$\sqrt{(r-2)^2} = \sqrt{102}$$

$$r-2 = \pm\sqrt{102}$$

$$\boxed{r = 2 \pm \sqrt{102}}$$

$$\begin{array}{l} 102 \\ \wedge \\ 2 \cdot 51 \\ \wedge \\ 3 \cdot 17 \end{array}$$