

Name: _____

Solving Quadratics

Practice SOLVING by factoring

1. $x^2 = 5x + 6$

2. $3x^2 - 12x + 12 = 0$

3. $-x^2 + 8 = 7x$

4. $2x^2 - 19x + 42 = 0$

Practice SOLVING using the quadratic formula

5. $x^2 - 5x + 6 = 0$

6. $3x^2 + 1 = 12x$

7. $-x^2 + 5x = 8$

8. $4x^2 + 18x + 20 = 0$

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Practice SOLVING by completing the square and isolating x

9. $3x^2 - 12x + 12 = 0$

10. $x^2 - 5x - 6 = 0$

11. $x^2 + 7x - 8 = 0$

12. $2x^2 - 19x + 42 = 0$

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Solving Quadratics

Practice SOLVING by factoring

1. $x^2 = 5x + 6$

$$x^2 - 5x - 6 = 0$$

$$(x-6)(x+1) = 0$$

$$x = 6 \text{ or } x = -1$$

3. $-x^2 + 8 = 7x$

$$0 = x^2 + 7x - 8$$

$$0 = (x+8)(x-1)$$

$$x = -8 \text{ or } x = 1$$

2. $3x^2 - 12x + 12 = 0$

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

$$3(x-2)(x-2) = 0$$

$$x = 2 \text{ only}$$

4. $2x^2 - 19x + 42 = 0$

$$2 \begin{pmatrix} 1 \\ 2 \end{pmatrix} \times \begin{matrix} 1 & 2 & 3 \\ 4 & 2 & 14 \end{matrix} \begin{pmatrix} -6 \\ -7 \end{pmatrix}$$

$$(x-6)(2x-7) = 0$$

$$x = 6 \text{ or } x = \frac{7}{2}$$

Practice SOLVING using the quadratic formula

5. $x^2 - 5x + 6 = 0$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(6)}}{2(1)}$$

$$x = \frac{5 \pm \sqrt{1}}{2}$$

$$x = \frac{5}{2} = 2.5 \text{ or } x = \frac{4}{2} = 2$$

7. $-x^2 + 5x = 8$

$$-x^2 + 5x - 8 = 0$$

$$x = \frac{-5 \pm \sqrt{5^2 - 4(-1)(-8)}}{2(-1)}$$

$$x = \frac{-5 \pm \sqrt{-7}}{-2}$$

error \therefore no sol

6. $3x^2 + 1 = 12x$

$$3x^2 - 12x + 1 = 0$$

$$x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(3)(1)}}{2(3)}$$

$$x = \frac{12 \pm \sqrt{132}}{6}$$

$$x \approx 3.9 \text{ or } x \approx 0.09$$

8. $4x^2 + 18x + 20 = 0$

$$x = \frac{-18 \pm \sqrt{18^2 - 4(4)(20)}}{2(4)}$$

$$x = \frac{-18 \pm \sqrt{4}}{8}$$

$$x = \frac{-16}{8} = -2 \text{ or } x = \frac{-20}{8} = -\frac{5}{2}$$

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Practice SOLVING by completing the square and isolating x

9. $3x^2 - 12x + 12 = 0$

$$3(x^2 - 4x + 4 - 4) = -12$$

$$3(x-2)^2 - 4(3) = -12$$

$$3(x-2)^2 = 0$$

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

$$x-2 = \pm 0$$

$$x = 2$$

11. $x^2 + 7x - 8 = 0$

$$1(x^2 + 7x + \frac{49}{4} - \frac{49}{4}) = 8$$

$$1(x + \frac{7}{2})^2 - \frac{49}{4}(1) = 8$$

$$(x + \frac{7}{2})^2 = \frac{8}{1.4} + \frac{49}{4}$$

$$(x + \frac{7}{2})^2 = \frac{81}{4}$$

$$x + \frac{7}{2} = \pm \frac{9}{2}$$

$$x = -\frac{7}{2} \pm \frac{9}{2}$$

$$x = \frac{2}{2} = 1 \quad \text{or} \quad x = \frac{-16}{2} = -8$$

10. $x^2 - 5x - 6 = 0$

$$1(x^2 - 5x + \frac{25}{4} - \frac{25}{4}) = 6$$

$$1(x - \frac{5}{2})^2 - \frac{25}{4}(1) = 6$$

$$(x - \frac{5}{2})^2 = \frac{6 + \frac{25}{4}}{1.4}$$

$$(x - \frac{5}{2})^2 = \frac{49}{4}$$

$$x - \frac{5}{2} = \pm \frac{7}{2}$$

$$x = \frac{5}{2} \pm \frac{7}{2}$$

$$x = \frac{12}{2} = 6 \quad \text{or} \quad x = \frac{-2}{2} = -1$$

12. $2x^2 - 19x + 42 = 0$

$$2(x^2 - \frac{19}{2}x + \frac{361}{16} - \frac{361}{16}) = -42$$

$$2(x - \frac{19}{4})^2 - \frac{361}{16}(2) = -42$$

$$2(x - \frac{19}{4})^2 = \frac{-42 \cdot 8}{1.8} + \frac{361}{8}$$

$$\frac{1}{2} \cdot 2(x - \frac{19}{4})^2 = \frac{25 \cdot 1}{2}$$

$$(x - \frac{19}{4})^2 = \frac{25}{16}$$

$$x - \frac{19}{4} = \pm \frac{5}{4} \quad \left\{ \begin{array}{l} x = \frac{24}{4} = 6 \\ \text{or} \\ x = \frac{14}{4} = \frac{7}{2} \end{array} \right.$$

$$x = \frac{19}{4} \pm \frac{5}{4} \rightarrow x = \frac{14}{4} = \frac{7}{2}$$