

Algebra 2
Practice with Solving

Name: _____
Period: _____

Solve for x .

1. $|x| = 4$
2. $|x| = -2$
3. $|3x - 7| = 14$
4. $2|x + 1| = 10$
5. $|4x| - 3 = 21$
6. $\frac{|x-1|}{2} + 3 = 0$
7. $10 - |3 - 4x| = 2$
8. $1 - 3|x - 2| = -8$
9. $x^2 = 49$
10. $3x^2 - 5 = 295$
11. $(7 - 2x)^2 = 81$
12. $\sqrt{x} = 8$
13. $\sqrt{2x - 7} = 4$
14. $5 + \sqrt{x + 2} = 12$
15. $(3 - x)^2 + 3 = 28$
16. $\frac{6}{\sqrt{x}} = 2$
17. $\sqrt{x - 4} = 3$
18. $\left|\frac{x}{7}\right| = 3$
19. $(14 - x)^2 = 25$
20. $10 = \sqrt{\frac{m}{10}}$
21. $-10|x + 2| = -70$
22. $-8 + \sqrt{5a - 5} = -3$
23. $1 - \frac{|-9 + x|}{8} = -3$
24. $7 + 3(x - 4)^2 = 34$

Practice with Solving – Answers

1. $x = 4, x = -4$
2. No solution
3. $x = 7, x = -\frac{7}{3}$
4. $x = 4, x = -6$
5. $x = 6, x = -6$
6. No solution
7. $x = -\frac{5}{4}, x = \frac{11}{4}$
8. $x = 5, x = -1$
9. $x = 7, x = -7$
10. $x = 10, x = -10$
11. $x = -1, x = 8$
12. $x = 64$
13. $x = \frac{23}{2}$
14. $x = 47$
15. $x = -2, x = 8$
16. $x = 9$
17. $x = 13$
18. $x = -21, x = 21$
19. $x = 9, x = 19$
20. $m = 1000$
21. $x = 5, x = -9$
22. $a = 6$
23. $x = -23, x = 41$
24. $x = 1, x = 7$

Example $3 \cdot |6x-1| - 5 = 16$

$$3 \cdot |6x-1| = 21 \quad (\text{add } 5 \text{ to both sides})$$

$$|6x-1| = 7 \quad (\text{divide both sides by } 3)$$

$$6x-1 = \pm 7 \quad (\text{get rid of the ab. value signs})$$

$$\begin{array}{l} \swarrow \quad \searrow \\ 6x-1=7 \quad 6x-1=-7 \end{array}$$

$$6x=8 \quad 6x=-6$$

$$x = \frac{8}{6}$$

$$x = -1$$

$$x = \frac{4}{3}$$

Example $2(x+6)^2 + 4 = 36$

$$2(x+6)^2 = 32 \quad (\text{subtract } 4 \text{ from both sides})$$

$$(x+6)^2 = 16 \quad (\text{divide both sides by } 2)$$

$$\sqrt{(x+6)^2} = \sqrt{16} \quad (\text{get rid of the sq. root})$$

$$x+6 = \pm 4$$

$$\begin{array}{l} \swarrow \quad \searrow \\ x+6=4 \quad x+6=-4 \end{array}$$

$$x = -2$$

$$x = -10$$

Example $7 - |x-4| = 12$

$$-|x-4| = 5 \quad (\text{subtract } 7 \text{ from both sides})$$

$$|x-4| = -5 \quad (\text{divide both sides by } -1)$$

No solution!

(ab. value can never equal a negative value)

Example $\frac{\sqrt{x+3}}{4} = 2$

$$\sqrt{x+3} = 8 \quad (\text{multiply both sides by } 4)$$

$$(\sqrt{x+3})^2 = (8)^2 \quad (\text{square both sides})$$

$$x+3 = 64$$

$$x = 61$$