

LESSON
2-6**4B-Solving Absolute Value Equations with Algebra****Solving Absolute-Value Equations**

There are three steps in solving an absolute-value equation. First isolate the absolute-value expression. Then rewrite the equation as two cases that do not involve absolute values. Finally, solve these new equations.

Solve $|x - 3| + 4 = 8$.

Step 1: Isolate the absolute-value expression.

$$|x - 3| + 4 = 8$$

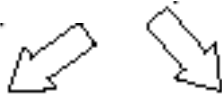
$$- 4 \quad - 4$$

Subtract 4 from both sides.

$$|x - 3| = 4$$

Step 2: Rewrite the equation as two cases.

$$|x - 3| = 4$$



Case 1

Case 2

Step 3: $x - 3 = -4$

$x - 3 = 4$

Solve. $+ 3 \quad + 3$

$+ 3 \quad + 3$

Add 3 to both sides.

$x = -1$

$x = 7$

The solutions are -1 and 7 .

Solve each equation.

1. $|x - 2| - 3 = 5$

2. $|x + 7| + 2 = 10$

3. $4|x - 5| = 20$

4. $|2x| + 1 = 7$

LESSON
2-6**Practice B*****Solving Absolute-Value Equations***

Solve each equation.

1. $|x| = 12$

2. $|x| = \frac{1}{2}$

3. $|x| - 6 = 4$

4. $5 + |x| = 14$

5. $3|x| = 24$

6. $|x + 3| = 10$

7. $|x - 1| = 2$

8. $4|x - 5| = 12$

9. $|x + 2| - 3 = 9$

10. $|6x| = 18$

11. $|x - 1| = 0$

12. $|x - 3| + 2 = 2$

13. Two numbers on a number line are represented by the absolute-value equation $|n - 5| = 6$.
What are the two numbers?