Equations containing Absolute Value

Algorithm
1. **Isolate the absolute value**
2. **Set the expression and the opposite of that expression on the inside of the absolute value signs equal to the number of the outside**
3. **Solve the resulting two equations**

Example   Solve $| 2x - 1 | = 9$

If 2x – 1 is positive, then   OR   If 2x – 1 is negative, then

$$2x - 1 = 9 \qquad\qquad -(2x - 1) = 9$$
$$2x = 10 \qquad\qquad 2x - 1 = -9$$
$$x = 5 \qquad\qquad 2x = -8$$
$$x = -4$$

The solution is $\{-4, 5\}$* There are 2 solutions when solving equations containing absolute value.

Solve the following equations.

1. $| x | = 7$

2. $| x - 1| = 8$

3. $| 2x + 1 | = 13$

4. $| x - 2 | + 4 = 10$

5. $| 2x - 3 | = 13$

6. $| 3(x-2) | = 12$

7. $5| x - 2| = 15$

8. $2 | 2x - 1 | - 4 = 8$

9. $3 | 4x - 2 | - 7 = 11$

10. $| -4x | = 10$

11. $| 3x - 1 | = 5x + 15$

12. $| 2x - 6 | = 0$

13. $5(2x + 3) | = -9$

14. $|x + 7| = 3$

15. $-2 |x + 7| = 8$