1-6

NAME _____ DATE _____

# Reteaching Worksheet

## Solving Absolute Value Equations

The absolute value of a number is the number of units it is from 0 on the number line. Absolute value can also be defined as shown in the box to the right.

***Definition of Absolute Value***
For any real number $a$:
If $a \geq 0$, then $|a| = a$.
If $a < 0$, then $|a| = -a$.

The definition of absolute value is used in solving absolute value equations.

***Example:*** Solve $|x - 5| = 10$. Check each solution.

$$|x - 5| = 10$$

If $x - 5$ is positive or zero, then $|x - 5| = x - 5$.

$$x - 5 = 10$$
$$x = 15$$

or

If $x - 5$ is negative, then $|x - 5| = -(x - 5)$.

$$-(x - 5) = 10$$
$$x - 5 = -10$$
$$x = -5$$

***Check:***

$$|x - 5| = 10$$
$$|15 - 5| \stackrel{?}{=} 10$$
$$|10| \stackrel{?}{=} 10$$
$$10 = 10 \checkmark$$

or

$$|-5 - 5| \stackrel{?}{=} 10$$
$$|-10| \stackrel{?}{=} 10$$
$$10 = 10 \checkmark$$

The solutions are $-5$ and 15.

***Solve each equation.***

1. $|x + 15| = 37$

2. $|t - 4| - 5 = 0$

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

4. $|x - 5| = 45$

5. $|5x + 9| = 16$

6. $|8 + 5a| = 14 - a$

7. $2\left|x - \frac{6}{3}\right| = 8$

8. $\left|x - \frac{4}{3}\right| = 8$

9. $\left|\frac{1}{3}x + 3\right| = 0$

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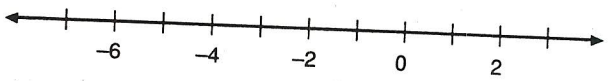
# Practice Worksheet

## Solving Compound Sentences and Absolute Value Inequalities

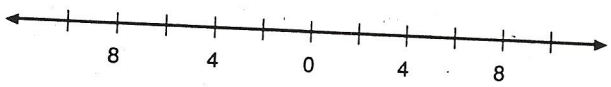
**Solve each compound sentence. Graph each solution set.**

**Solve each inequality. Graph each solution set.**

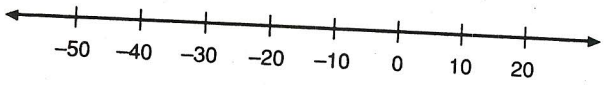
**5.** $|x + 2| > 4$



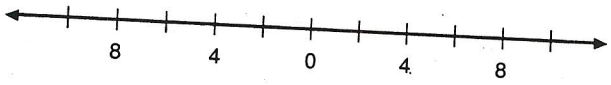

**6.** $|4x| + 1 > 27$




**7.** $|x + 9| \geq 30$



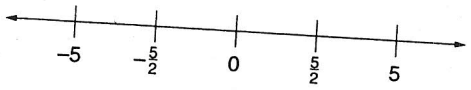

**8.** $|5x + 2| < 28$



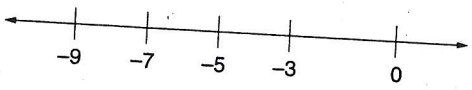

**Solve each problem.**

**Solve each inequality. Graph each solution set.**

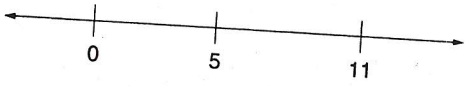
**5.** $|2w| \geq 5$



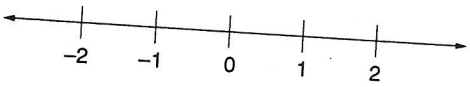

**6.** $|y + 5| < 2$



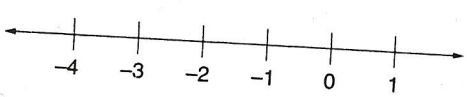

**7.** $|x - 8| \geq 3$




**8.** $|3x - 2| \leq -2$




**9.** $|x + 2| \leq 2x + 7$




**10.** $|x| > x - 1$