

ALGEBRA 1
3-7 PRACTICE WORKSHEET

Name KEY
Date _____

For each statement, write a compound inequality and graph the solution.

1. Name the 3 steps for solving absolute value equations and inequalities:

1. **ISOLATE** - the absolute value
2. **SEPARATE** - into two equations/inequalities
3. **SOLVE**

Solve each absolute value EQUATION, and check your answers mentally.

$$2. \quad \begin{array}{r} 10 = |x| - 3 \\ +3 \quad +3 \end{array}$$

$$13 = |x|$$

Isolate

$$13 = x \quad \text{or} \quad -13 = x$$

Separate
Solve

$$3. \quad |m - 6| = 5$$

$$\begin{array}{r} m - 6 = 5 \quad \text{or} \quad m - 6 = -5 \\ +6 \quad +6 \quad \quad \quad +6 \quad +6 \end{array}$$

$$m = 11 \quad \text{or} \quad m = 1$$

$$4. \quad \begin{array}{r} 9 = 2|d| - 7 \\ +7 \quad +7 \end{array}$$

$$\frac{16}{2} = \frac{2|d|}{2}$$

$$8 = |d|$$

$$8 = d \quad \text{or} \quad -8 = d$$

$$5. \quad \begin{array}{r} 4|p+1| + 2 = 14 \\ -2 \quad -2 \end{array}$$

$$\frac{4|p+1|}{4} = \frac{12}{4}$$

$$|p+1| = 3$$

$$\begin{array}{r} p+1 = 3 \quad \text{or} \quad p+1 = -3 \\ -1 \quad -1 \quad \quad \quad -1 \quad -1 \\ p = 2 \quad \quad \quad p = -4 \end{array}$$

6. Determine if the absolute inequality represents an "AND" or "OR" statement.

a. $|x| > 5$ OR

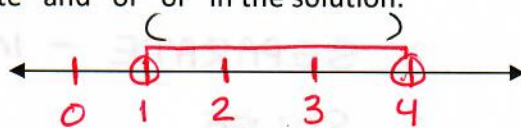
b. $|x| \geq 5$ OR

c. $|x| \leq 5$ AND

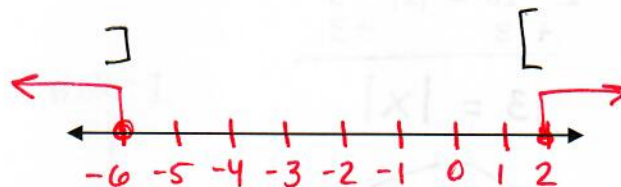
d. $|x| < 5$ AND

Solve and graph each absolute value INEQUALITY. State "and" or "or" in the solution.

7. $|2x - 5| < 3$



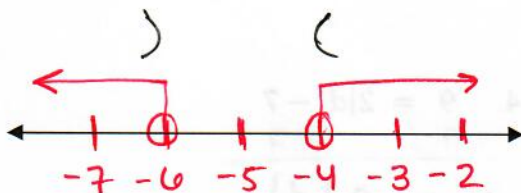
$$\begin{aligned} 2x - 5 < 3 & \text{ AND } 2x - 5 > -3 \\ 2x < 8 & \qquad 2x > 2 \\ x < 4 & \qquad x > 1 \end{aligned}$$



8. $7|x + 2| - 1 \geq 27$

$$\begin{aligned} 7|x + 2| & \geq 28 \\ |x + 2| & \geq 4 \end{aligned}$$

$$\begin{aligned} x + 2 \geq 4 & \text{ OR } x + 2 \leq -4 \\ x \geq 2 & \qquad x \leq -6 \end{aligned}$$



9. $-3|x + 5| + 4 < 1$

$$\begin{aligned} -3|x + 5| & < -3 \\ |x + 5| & > 1 \end{aligned}$$

$$\begin{aligned} x + 5 > 1 & \text{ OR } x + 5 < -1 \\ x > -4 & \qquad x < -6 \end{aligned}$$

10. $-5|2x - 3| \geq 15$



$$|2x - 3| \leq -3 \text{ FLIP}$$

NO SOLUTION - no absolute value is less than a negative