

5-5 Inequalities Involving Absolute Value

Inequalities with \leq or $<$ are treated like *AND* inequalities
 Inequalities with $>$ or \geq are treated like *OR* inequalities
 When we solve the second case take the opposite number and inequality symbol

Exercises

Solve each inequality. Then graph the solution set.

1. $|y| < 3$ **AND**

$y < 3$ and $y > -3$

2. $|x - 4| < 4$ **AND**

$x - 4 < 4$ AND $x - 4 > -4$
 $x < 8$ and $x > 0$

3. $|y + 3| \leq 2$ **AND**

$y + 3 \leq 2$ AND $y + 3 \geq -2$
 $y \leq -1$ $y \geq -5$

4. $|c - 2| > 6$ **OR**

$c - 2 > 6$ OR $c - 2 < -6$
 $c > 8$ or $c < -4$

5. $|x - 3| > 0$ **OR**

$x - 3 > 0$ or $x - 3 < 0$
 $x > 3$ $x < 3$

6. $|3f + 10| \geq 4$ **OR**

$3f + 10 \geq 4$ $3f + 10 \leq -4$
 $3f \geq -6$ $3f \leq -14$
 $f \geq -2$ or $f \leq -\frac{14}{3}$
 $f \leq -4\frac{2}{3}$

$\leq <$
AND

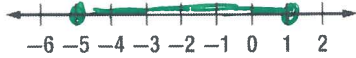
$\geq >$
OR

NAME _____

DATE _____

PERIOD _____

7. $|b + 2| \leq 3$ AND



$b + 2 \leq 3$ $b + 2 \geq -3$
 $b \leq 1$ $b \geq -5$

8. $|w - 2| \leq 5$ AND



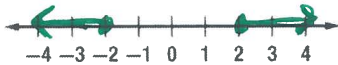
$w - 2 \leq 5$ $w - 2 \geq -5$
 $w \leq 7$ $w \geq -3$

9. $|t + 2| \leq 4$ AND



$t + 2 \leq 4$ $t + 2 \geq -4$
 $t \leq 2$ $t \geq -6$

10. $|x| \geq 2$ OR



$x \geq 2$ or $x \leq -2$

11. $|x| \geq 3$ OR



$x \geq 3$ or $x \leq -3$

12. $|2x + 1| \geq -2$ OR



$2x + 1 \geq -2$ or $2x + 1 \leq 2$
 $2x \geq -3$ $2x \leq 1$
 $x \geq -1.5$ or $x \leq 0.5$

Match each open sentence with the graph of its solution set.

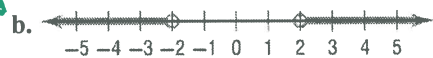
1. $|x| > 2$ OR

$x > 2$ or $x < -2$



2. $|x - 2| \leq 3$ AND

$x - 2 \leq 3$ and $x - 2 \geq -3$
 $x \leq 5$ and $x \geq -1$



3. $|x + 1| < 4$

Chapter 5

$x + 1 < 4$ and $x + 1 > -4$
 $x < 3$ and $x > -5$

