NAME _____ DATE _____ PERIOD _____

5-5 Study Guide and Intervention

Inequalities Involving Absolute Value

Inequalities Involving Absolute Value (<) When solving inequalities that involve absolute value, there are two cases to consider for inequalities involving $<$ (or $\leq$).

If $|x| < n$, then $x > -n$ and $x < n$.

Remember that inequalities with *and* are related to intersections.

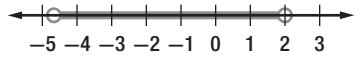
Example **Solve $|3a + 4| < 10$. Then graph the solution set.**

Write $|3a + 4| < 10$ as $3a + 4 < 10$ and $3a + 4 > -10$.

$3a + 4 < 10$	and	$3a + 4 > -10$
$3a + 4 - 4 < 10 - 4$		$3a + 4 - 4 > -10 - 4$
$3a < 6$		$3a > -14$
$\frac{3a}{3} < \frac{6}{3}$		$\frac{3a}{3} > \frac{-14}{3}$
$a < 2$		$a > -4\frac{2}{3}$

The solution set is $\left\{a \mid -4\frac{2}{3} < a < 2\right\}$.

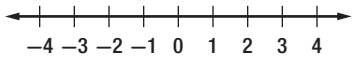
Now graph the solution set.



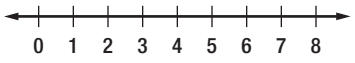
Exercises

Solve each inequality. Then graph the solution set.

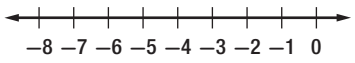
1. $|y| < 3$



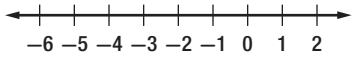
2. $|x - 4| < 4$



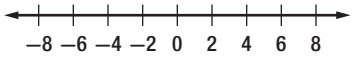
3. $|y + 3| \leq 2$



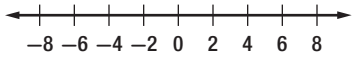
4. $|b + 2| \leq 3$



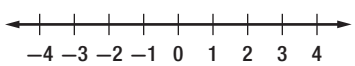
5. $|w - 2| \leq 5$



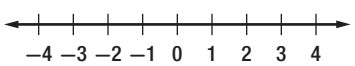
6. $|t + 2| \leq 4$



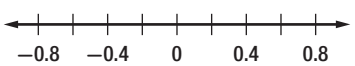
7. $|2x| \leq 8$



8. $|5y - 2| \leq 7$



9. $|p - 0.2| < 0.5$



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Lesson 5-5

NAME _____ DATE _____ PERIOD _____

5-5 Study Guide and Intervention *(continued)*

Inequalities Involving Absolute Value

Solve Absolute Value Inequalities (>) When solving inequalities that involve absolute value, there are two cases to consider for inequalities involving $>$ (or $\geq$). Remember that inequalities with *or* are related to unions.

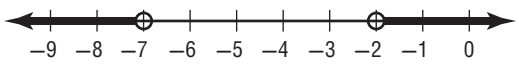
Example **Solve $|2b + 9| > 5$. Then graph the solution set.**

Write $|2b + 9| > 5$ as $|2b + 9| > 5$ or $|2b + 9| < -5$.

$2b + 9 > 5$	or	$2b + 9 < -5$
$2b + 9 - 9 > 5 - 9$		$2b + 9 - 9 < -5 - 9$
$2b > -4$		$2b < -14$
$\frac{2b}{2} > \frac{-4}{2}$		$\frac{2b}{2} < \frac{-14}{2}$
$b > -2$		$b < -7$

The solution set is $\{b \mid b > -2 \text{ or } b < -7\}$.

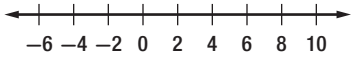
Now graph the solution set.



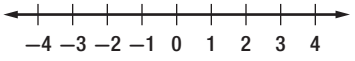
Exercises

Solve each inequality. Then graph the solution set.

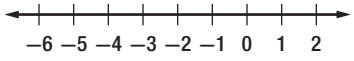
1. $|c - 2| > 6$



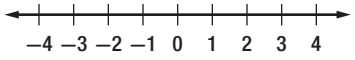
2. $|x - 3| > 0$



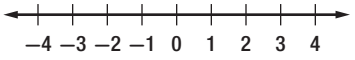
3. $|3f + 10| \geq 4$



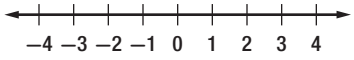
4. $|x| \geq 2$



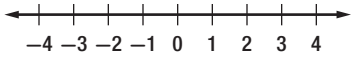
5. $|x| \geq 3$



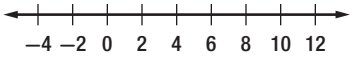
6. $|2x + 1| \geq -2$



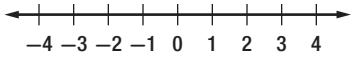
7. $|2d - 1| \geq 4$



8. $|3 - (x - 1)| \geq 8$



9. $|3r + 2| > -5$



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