Name _____ Date _____ Class _____

LESSON 3-7

Review for Mastery

Solving Absolute-Value Inequalities

To solve an absolute-value inequality, first isolate the absolute-value expression. Then write and solve the two cases.

Solve $|x - 2| + 8 < 10$.

Step 1: Isolate the absolute-value expression.

$|x - 2| + 8 < 10$

$\underline{\quad -8 \quad -8}$ *Subtract 8 from both sides.*

$|x - 2| < 2$

Step 2: Solve the two cases.

$|x - 2| < 2$ means $x - 2 > -2$ AND $x - 2 < 2$.

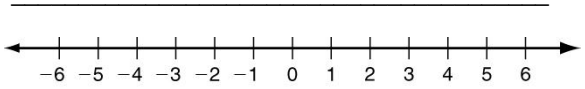
$\underline{+2 \quad +2} \qquad \underline{+2 \quad +2}$ *Solve each inequality.*

$x > 0$ AND $x < 4$

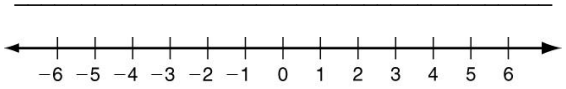
Graph the solution as shown.

Solve each inequality and graph the solutions.

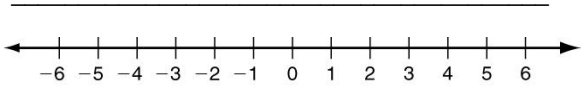
1. $|x| + 12 < 16$



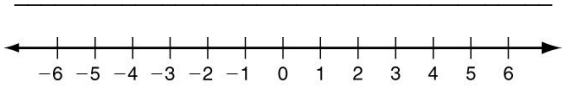
2. $|x - 1| + 5 \leq 9$



3. $7|x| \leq 21$



4. $|x + 4| - 3 < -2$



Name _____ Date _____ Class _____

LESSON 3-7

Review for Mastery

Solving Absolute-Value Inequalities (continued)

You can use a similar method to solve absolute-value inequalities that involve a greater-than symbol (>). As always, the first step is to isolate the absolute-value expression. Then work with the two cases.

Solve $|x - 5| - 4 > -1$.

Step 1: Isolate the absolute-value expression.

$|x - 5| - 4 > -1$

$+4 \quad +4$ *Add 4 to both sides.*

$|x - 5| > 3$

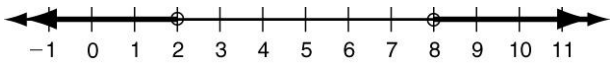
Step 2: Solve a compound inequality.

$|x - 5| > 3$ means $x - 5 < -3$ OR $x - 5 > 3$.

$+5 \quad +5 \qquad +5 \quad +5$ *Solve each inequality.*

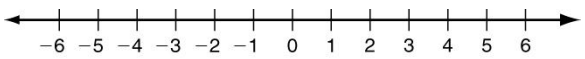
$x < 2$ OR $x > 8$

Graph the solution as shown.

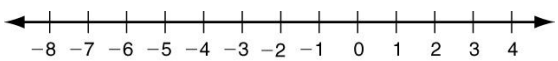


Solve each inequality and graph the solutions.

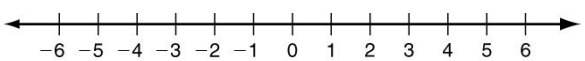
5. $4 + |x| \geq 5$



6. $2|x + 2| > 6$



7. $|x| - 7 > -3$



8. $|x - 4| + 5 \geq 8$