

# Inequalities and Their Graphs

(Pages 504–508)

Inequalities can be expressed through words and symbols, and they can be graphed on a number line.

| Inequalities  |  |   |  |
|---|--|---|--|
| $<$   | $\leq$   | $>$   | $\geq$   |
| <ul style="list-style-type: none"> <li>less than</li> <li>fewer than</li> </ul> | <ul style="list-style-type: none"> <li>less than or equal to</li> <li>at most</li> <li>no more than</li> <li>a maximum of</li> </ul> | <ul style="list-style-type: none"> <li>greater than</li> <li>more than</li> </ul> | <ul style="list-style-type: none"> <li>greater than or equal to</li> <li>at least</li> <li>no less than</li> <li>a minimum of</li> </ul> |

## EXAMPLES

Graph each inequality on a number line.

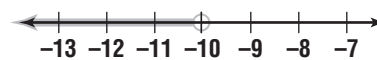
**A**  $x \geq 3.5$

Since  $x$  can equal 3.5, graph a bullet at 3.5. Graph all numbers greater than 3.5 by drawing a line and an arrow to the right.



**B**  $y < -10$

Since  $y$  cannot equal  $-10$ , graph a circle at  $-10$ . Graph all numbers less than  $-10$  by drawing a line and an arrow to the left.



## PRACTICE

Write an inequality to describe each number.

- a number less than  $-5$
- a number that is at least  $9$
- a number that is more than  $18$
- a number no more than  $-7$

Graph each inequality on a number line.

- $x > 8$
- $y \leq 4.5$
- $n < -1$

Write an inequality for each graph.

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- 11. Standardized Test Practice** Which expression describes a maximum number of 8?

- A**  $x \leq 8$       **B**  $x \geq 8$       **C**  $x < 8$       **D**  $x > 8$

Answers: 1.  $x < -5$  2.  $x \geq 9$  3.  $x > 18$  4.  $x \leq -7$  5-7. See Answer Key for graphs. 8.  $x \geq 12$  9.  $x > -4$  10.  $x < 0.5$  11. A