3-1   **Reteaching**

Inequalities and Their Graphs

You use the following symbols for inequalities.

> $>$ is greater than $\geq$ is greater than or equal to
>
> $<$ is less than $\leq$ is less than or equal to

What inequality represents "5 plus a number **y** is less than -10"?

Problem

5 plus a number y	is less than	-10
$5 + y$	$<$	-10

The inequality $5 + y < -10$ represents the phrase.

Exercises

Write an inequality that represents each verbal expression.

1. p is greater than or equal to 5   **2.** a is less than or equal to -4

3. 2 times d is less than 10   **4.** r divided by 5 is greater than 0

Problem

Is -2 a solution of $3t + 10 \geq 5$?

$3t + 10 \geq 5$	Original inequality
$3(-2) + 10 \overset{?}{\geq} 5$	Substitute -2 for t.
$-6 + 10 \overset{?}{\geq} 5$	Simplify.
$4 \ngeq 5$	-2 is not a solution.

Exercises

Determine whether each number is a solution of the given inequality.

5. $5b - 7 > 13$ **a.** -4 **b.** 4   **c.** 8

6. $2(m + 1) < -6$ **a.** -6 **b.** -4 **c.** -2

7. $\dfrac{8 + h}{2} \leq 8$ **a.** 6   **b.** 8   **c.** 10
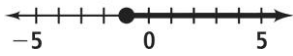
When graphing an inequality on a number line, an open circle means the number is not included in the inequality. A closed circle means the number is included in the inequality.

What is the graph of $w \geq -1$?

Since w is greater than or equal to -1, place a closed circle at -1.

Draw a dark line with an arrow to the right of the closed circle to show the numbers greater than -1.
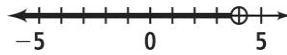

Exercises

Graph each inequality.

8. $y \leq 0$ **9.** $p > -4$

10. $a \geq -2$

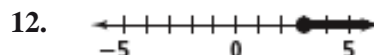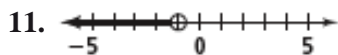What inequality represents the graph?

The circle is open so 4 is not included in the inequality.
The dark line and arrow are to the left indicating less than.
The graph represents "x is less than 4" or $x < 4$.

Exercises

Write an inequality for each graph.

11.   **12.**

13.   **14.**

Define a variable and write an inequality for each situation.

15. A car dealership sells at least 35 cars each week.

16. No more than 425 tickets to a musical will be sold.

17. You must be at least 18 years old to vote.

18. The party store sold more than 720 balloons in July.