Lesson 7-3

Example 1 Write Inequalities with < or >
Write an inequality for each sentence.
a. The account balance is more than $50.
Variable Let b represent account balance.
Inequality $b > 50$

b. The temperature is less than 34°.
Variable Let t represent temperature.
Inequality $t < 34$

Example 2 Write Inequalities with ≤ or ≥
Write an inequality for each sentence.
a. Your age is greater than or equal to 14.
Variable Let a represent age.
Inequality $a \geq 14$

b. The bowl has less than or equal to 8 apples.
Variable Let n represent the number of apples.
Inequality $n \leq 8$

Example 3 Use an Inequality
BABYSITTING The wage for babysitting in a certain community is at least $3.25 per hour. Write an inequality to describe the hourly wage for babysitting.

Words Hourly babysitting wage is at least $3.25.

Variable Let w = hourly babysitting wage.

Inequality $w \geq 3.25$

The inequality is $w \geq 3.25$.

Example 4 Determine Truth of an Inequality
For the given value, state whether each inequality is *true* or *false*.

a. $3 > 4a - 9$, $a = 2$

$3 > 4a - 9$ Write the inequality.

$3 \overset{?}{>} 4(2) - 9$ Replace a with 2.

$3 \overset{?}{>} 8 - 9$ Simplify.

$3 > -1$ Simplify.

This sentence is true.

b. $\frac{x}{6} - 2 \leq 8$, $x = 120$

$\frac{x}{6} - 2 \leq 8$ Write the inequality.

$\frac{120}{6} - 2 \overset{?}{\leq} 8$ Replace x with 120.

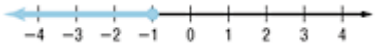
$20 - 2 \overset{?}{\leq} 8$ Simplify.

$18 \not\leq 8$ Simplify.

This sentence is false.

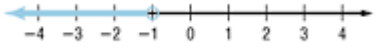
Example 5 Graph Inequalities
Graph each inequality on a number line.

a. $x \leq -1$

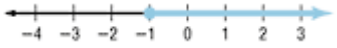


b. $x > -1$

c. $x < -1$



d. $x \geq -1$



Example 5 Write an Inequality
Write the inequality for the graph.

A closed circle is on 3, so the point 3 is included in the graph. The arrow points to the left, so the graph includes all numbers less than or equal to 3.
The inequality is $x \leq 3$.