

Lesson 7-5

Example 1 Multiply or Divide by a Positive Number

a. Solve $3x > 15$. Check your solution.

$$3x > 15 \quad \text{Write the inequality.}$$

$$\frac{3x}{3} > \frac{15}{3} \quad \text{Divide each side by 3.}$$

$$x > 5 \quad \text{Simplify.}$$

The solution is $x > 5$. You can check this solution by substituting a number greater than 5 into the inequality.

b. Solve $\frac{c}{3} \leq -2$. Check your solution.

$$\frac{c}{3} \leq -2 \quad \text{Write the inequality.}$$

$$3\left(\frac{c}{3}\right) \leq 3(-2) \quad \text{Multiply each side by 3.}$$

$$c \leq -6 \quad \text{Simplify.}$$

The solution is $c \leq -6$. You can check this solution by substituting a number less than or equal to -6 into the inequality.

Example 2 Write an Inequality

Multiple-Choice Test Item

Carla wants to divide her collection of pennies in to 10 even parts so that each part contains at least 25 pennies. Which inequality can be used to find how many pennies Carla has in her collection?

- A. $\frac{x}{10} < 25$ B. $\frac{x}{10} \geq 25$ C. $\frac{x}{10} > 25$ D. $\frac{x}{10} \leq 25$

Read the Test Item

You are to write an inequality to represent a real-world problem.

Solve the Test Item

Let x represent the number of pennies in the collection.

$$\underbrace{\frac{\text{number of pennies in the collection}}{10}}_{\frac{x}{10}} \quad \underbrace{\text{is at least}}_{\geq} \quad \underbrace{25}_{25}$$

The answer is B.

Example 3 Multiply or Divide by a Negative Number

Solve each inequality and check your solution. Then graph the solution on a number line.

a. $-2x \geq 10$

$$-2x \geq 10$$

Write the inequality.

$$\frac{-2x}{-2} \leq \frac{10}{-2}$$

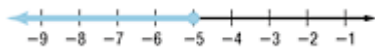
Divide each side by -2 and reverse the symbol.

$$x \leq -5$$

Simplify. Check this result.

You can check your result by replacing x with a number less than or equal to -5 .

Graph the solution, $x \leq -5$.



b. $\frac{p}{-4} < -1$

$$\frac{p}{-4} < -1$$

Write the inequality.

$$-4\left(\frac{p}{-4}\right) > -4(-1)$$

Multiply each side by -4 and reverse the symbol.

$$p > 4$$

Simplify. Check this result.

You can check your result by replacing p with a number greater than 4.

Graph the solution, $p > 4$.

