

## Lesson 8-7

### Example 1 Solving Inequalities

Solve  $b - 12 > 7$ . Check your solution.

$$\begin{array}{ll} b - 12 > 7 & \text{Write the inequality.} \\ b - 12 + 12 > 7 + 12 & \text{Add 12 to each side.} \\ b > 19 & \text{Simplify.} \end{array}$$

**Check**

$$\begin{array}{ll} b - 12 > 7 & \text{Write the inequality.} \\ 20 - 12 > 7 & \text{Replace } b \text{ with a number greater than 19, such as 20.} \\ 8 > 7 \checkmark & \text{The statement is true.} \end{array}$$

The solution is  $b > 19$ .

### Example 2 Solving Inequalities

Solve  $-8 \leq z + 5$ . Check your solution.

$$\begin{array}{ll} -8 \leq z + 5 & \text{Write the inequality.} \\ -8 - 5 \leq z + 5 - 5 & \text{Subtract 5 from each side.} \\ -13 \leq z \text{ or } z \geq -13 & \text{Simplify.} \end{array}$$

**Check** Replace  $z$  in the original equality with  $-13$  and then with a number greater than  $-13$ .

The solution is  $z \geq -13$ .

### Example 3 Standards Example

Maya's school hopes to earn at least \$5,000 from its annual fund-raiser. They have currently earned \$3,100. Which inequality indicates how much more they need to earn?

- A  $e < 1,900$       B  $e > 1,900$       C  $e \leq 1,900$       D  $e \geq 1,900$

#### Read the Item

The phrase *at least* means *greater than or equal to*.

#### Solve the Item

Let  $e$  = amount of money the school needs to earn

Estimate  $5,000 - 3,000 = 2,000$

$$\begin{array}{ccccccc} \text{School's} & & \text{amount school} & \text{is greater than} & & & \\ \text{current earnings} & \text{plus} & \text{needs to earn} & \text{or equal to} & & & \\ \underbrace{3,100} & + & \underbrace{e} & \geq & \underbrace{5,000} & & \end{array}$$

$$\begin{array}{l} 3,100 + e \geq 5,000 \\ 3,100 - 3,100 + e \geq 5,000 - 3,100 \\ e \geq 1,900 \end{array}$$

Write the inequality.  
Subtract 3,100 from each side.  
Simplify.

**Check for Reasonableness**  $1,900 \approx 2,000$  ✓

The answer is **D**.