

# 6.1

## Solve Inequalities Using Addition and Subtraction

**Goal** • Solve inequalities using addition and subtraction.

### Your Notes

#### VOCABULARY

Graph of a linear inequality in one variable

Equivalent inequalities

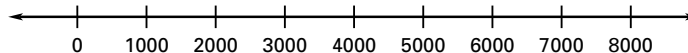
#### Example 1 Write and graph an inequality

**Food Drive** Your school wants to collect at least 5000 pounds of food for a food drive. Write and graph an inequality to describe the amount of food that your school hopes to collect.

#### Solution

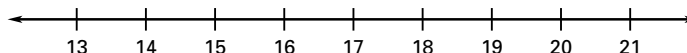
Let  $p$  represent the \_\_\_\_\_ . The value of  $p$  must be \_\_\_\_\_ 5000 pounds. So, an inequality is \_\_\_\_\_ .

Remember to use an open circle for  $<$  or  $>$  and a closed circle for  $\leq$  or  $\geq$ .



✓ **Checkpoint** Complete the following exercise.

1. You must be 16 years old or older to get your driver's license. Write and graph an inequality to describe the ages of people who may get their driver's license.



## Your Notes

### ADDITION PROPERTY OF INEQUALITY

**Words** Adding the same number to each side of an inequality produces an \_\_\_\_\_.

**Algebra** If  $a > b$ , then  $a + c > \underline{\hspace{2cm}}$ .

If  $a < b$ , then  $a + c < \underline{\hspace{2cm}}$ .

If  $a \geq b$ , then  $a + c \geq \underline{\hspace{2cm}}$ .

If  $a \leq b$ , then  $a + c \leq \underline{\hspace{2cm}}$ .

### Example 2 Solve an inequality using addition

Solve  $n - 3.5 < 2.5$ . Graph your solution.

#### Solution

$$n - 3.5 < 2.5$$

Write original inequality.

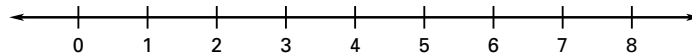
$$n - 3.5 + \underline{\hspace{1cm}} < 2.5 + \underline{\hspace{1cm}}$$

Add \_\_\_\_\_ to each side.

$$\underline{\hspace{2cm}}$$

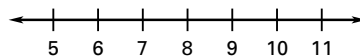
Simplify.

The solutions are all real numbers \_\_\_\_\_. Check by substituting a number \_\_\_\_\_ for  $n$  in the original inequality.

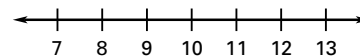


### Checkpoint Solve the inequality. Graph your solution.

2.  $6 > y - 3.3$



3.  $z - 7 \geq 4$



## Your Notes

### SUBTRACTION PROPERTY OF INEQUALITY

**Words** Subtracting the same number from each side of an inequality produces an \_\_\_\_\_.

**Algebra** If  $a > b$ , then  $a - c > \underline{\hspace{2cm}}$ .

If  $a < b$ , then  $a - c < \underline{\hspace{2cm}}$ .

If  $a \geq b$ , then  $a - c \geq \underline{\hspace{2cm}}$ .

If  $a \leq b$ , then  $a - c \leq \underline{\hspace{2cm}}$ .

### Example 3 Solve an inequality using subtraction

Solve  $3 \leq y + 8$ . Graph your solution.

#### Solution

$$3 \leq y + 8$$

Write original inequality.

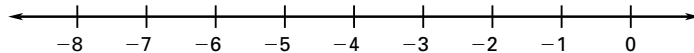
$$3 - \underline{\hspace{1cm}} \leq y + 8 - \underline{\hspace{1cm}}$$

Subtract  $\underline{\hspace{1cm}}$  from each side.

$$\underline{\hspace{2cm}}$$

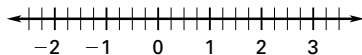
Simplify.

You can rewrite  $\underline{\hspace{2cm}}$  as  $\underline{\hspace{2cm}}$ . The solutions are all real numbers  $\underline{\hspace{2cm}}$ .

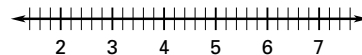


### Checkpoint Solve the inequality. Graph your solution.

4.  $r + 3\frac{1}{4} < 5$



5.  $3 + m \geq 7.2$



## Homework