

## 4-4 Writing Inequalities

## Writing Inequalities from Word Problems:

1. Read the word problem carefully.
2. Identify the words or phrases that indicate an inequality.
3. Identify the number(s) and the variable.
4. Write the inequality.
5. Solve the inequality.
6. Write the solution set.
7. Check your solution by substituting a number from the solution set into the original inequality.

## Key words:

- more than/greater than  $>$
- less than/fewer than  $<$
- at most/no more than  $\leq$
- at least/no less than  $\geq$

**Ex. 1:** Solve each problem by writing and solving an inequality.

**A.** A difference of a number and 15 is no more than -8.

Let  $x =$  a number

$$x - 15 \leq -8$$

$$\begin{array}{r} x - 15 \leq -8 \\ +15 \quad +15 \\ \hline x \leq 7 \end{array}$$

The number is no more than 7.

**B.** 18 is at least the product of -6 and a number.

Let  $x =$  a number

$$18 \geq -6x$$

$$\begin{array}{r} 18 \geq -6x \\ -6 \quad -6 \\ \hline -3 \leq x \quad x \geq -3 \end{array}$$

The number is at least -3.

**C.** Thirty-four is fewer than the quotient a number and negative 2.

Let  $x =$  a number

$$34 < \frac{x}{-2}$$

$$-2 \cdot 34 < \frac{x}{-2} \cdot -2$$

$$-68 > x \quad x < -68$$

The number is fewer than -68.

**D.** The difference of a number and 15 is at most negative 10.

Let  $x =$  a number

$$x - 15 \leq -10$$

$$\begin{array}{r} x - 15 \leq -10 \\ +15 \quad +15 \\ \hline x \leq 5 \end{array}$$

The number is at most 5.