

4-4 Writing Inequalities

Writing Inequalities from Word Problems:

1. Read phrase/problem carefully.
2. Identify key words/operations and values/variables. ←
3. Define variables {let $x = \underline{\hspace{2cm}}$ }
4. Translate into an inequality.
5. Solve.
6. Verify to see if answer makes sense.
7. Answer word problems in a complete sentence including correct units.

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.
 $x = \text{a number}$

$$x - 15 \leq -8$$

$$\begin{array}{r} +15 \quad +15 \\ \hline \end{array}$$

$$x \leq 7$$

The number is no more than seven.

B. 18 is at least the product of -6 and a number.
 $x = \text{a number}$

$$18 \geq -6x$$

$$18 \geq -6x$$

$$\begin{array}{r} -6 \quad -6 \\ \hline \end{array}$$

$$-3 \leq x$$

$$x \geq -3$$

The number is greater than or equal to negative three.

C. Thirty-four is fewer than the quotient a number and negative 2.
 $x = \text{a number}$

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

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

$$-68 > x$$

$$x < -68$$

The number is less than negative 68.

D. The difference of a number and 15 is at most negative 10.
 $x = \text{a number}$

$$x - 15 \leq -10$$

$$\begin{array}{r} +15 \quad +15 \\ \hline \end{array}$$

$$x \leq 5$$

The number is at most five.