

7-7 Writing Inequalities (Pages 355–357)

Verbal problems with phrases like *greater than* or *less than* describe inequalities. Other phrases that suggest inequalities are *at least*, *at most*, and *between*. You will use inequalities to solve many real-life problems.

Inequality Statements	x is at least 3.	$x \geq 3$	x is less than 3	$x < 3$
	y is at most 9.	$y \leq 9$	y is more than 9	$y > 9$
	z is between 2 and 4.	$2 < z < 4$		

EXAMPLES

Define a variable and write an inequality. Then solve.

A Six times a number increased by 4 is at most fifty-eight.

Let h represent the number.

Six times $\rightarrow 6h$

increased by 4 $\rightarrow + 4$

is at most 58 $\rightarrow \leq 58$

$$6h + 4 \leq 58$$

$$6h + 4 - 4 \leq 58 - 4 \quad \text{Subtract 4 from each side.}$$

$$\frac{6h}{6} \leq \frac{54}{6} \quad \text{Divide each side by 6.}$$

$$h \leq 9$$

B Five less than half of a number is at least nine.

Let x represent the number.

Five less $\rightarrow - 5$

half of a number $\rightarrow \frac{1}{2}x$ or $\frac{x}{2}$

is at least 9 $\rightarrow \geq 9$

$$\frac{x}{2} - 5 \geq 9$$

$$\frac{x}{2} - 5 + 5 \geq 9 + 5 \quad \text{Add 5 to each side.}$$

$$\frac{x}{2} \geq 14$$

$$\frac{x}{2} \cdot 2 \geq 14 \cdot 2 \quad \text{Multiply each side by 2.}$$

$$x \geq 28$$

PRACTICE

Define a variable and write an inequality. Then solve.

- Three times a number increased by six is at least 24.
- Five more than four times a number is greater than 17.
- Eight less than three times a number is at most 30.
- Sixteen plus three times a number is at least 26.
- The sum of a number and one more than the number is at most 12.
- Four times a number increased by thirteen is less than 16.



7. Standardized Test Practice Eight times a number less three is more than 15. Which inequality describes this situation?

A $8 - 3x > 15$

B $8x - 3 > 15$

C $8x > 15$

D $3 - 8x > 15$

Answers: 1. $x \geq 6$ 2. $x > 6$ 3. $x < 3$ 4. $x \leq 12\frac{3}{2}$ 5. $x \geq 3\frac{1}{3}$ 6. $x \leq 5\frac{2}{1}$ 7. $\frac{4}{3}$
