

# True or False Inequalities

Name \_\_\_\_\_

**Learning Target:** Tell whether an inequality involving a variable is true or false for a given value of the variable.

**Success Criteria:**

- I can evaluate an algebraic expression.
- I can tell whether an inequality is true or false.

## Think and Grow



**Key Idea** An **inequality** is a mathematical sentence that compares expressions.

$$\begin{array}{c} 2 < 4 \\ \uparrow \\ \text{less than} \end{array}$$

$$\begin{array}{c} 5 > 3 \\ \uparrow \\ \text{greater than} \end{array}$$

The variable in an inequality can have more than one value that makes the statement true.

**Example** Tell whether  $14 - n > 3$  is true or false when  $n = 9$ .

$$14 - n > 3$$

Write the inequality.

$$14 - \underline{\quad} \overset{?}{>} 3$$

Substitute 9 for  $n$ .

$$\underline{\quad} > \underline{\quad} \quad \checkmark$$

Subtract.

So, when  $n = 9$ , the inequality is \_\_\_\_\_.



**Example** Tell whether  $v \times 9 < 42$  is true or false when  $v = 5$ .

$$v \times 9 < 42$$

Write the inequality.

$$\underline{\quad} \times 9 \overset{?}{<} 42$$

Substitute 5 for  $v$ .

$$\underline{\quad} \nless \underline{\quad} \quad \times$$

Multiply.

So, when  $v = 5$ , the inequality is \_\_\_\_\_.

The symbol  $\nless$  means is not less than.



## Show and Grow

Tell whether the inequality is true or false for the given value of the variable.

1.  $b + 2 < 11; b = 10$

2.  $d - 8 > 17; d = 27$

3.  $7 \times r > 50; r = 7$

4.  $5 < \frac{y}{5}; y = 35$

# Practice

Name \_\_\_\_\_

Tell whether the inequality is true or false for the given value of the variable.

5.  $21 + h > 33; h = 14$

6.  $\frac{54}{m} > 10; m = 6$

7.  $k \times 8 < 70; k = 9$

8.  $37 - a < 12; a = 18$

9.  $46 > g + 17; g = 25$

10.  $63 < 9 \times q; q = 7$

11.  $\frac{c}{4} < 9 - 3; c = 20$

12.  $11 \times 5 > y + 24; y = 33$

13. **Which One Doesn't Belong?** Which value of the variable does *not* belong with the other three? Explain.

$$12 \times b < 100$$

$b = 3$

$b = 6$

$b = 7$

$b = 9$

14. **MP Number Sense** Without evaluating, explain how you can tell whether the inequality is true or false when  $p = 35$ .

$$34 + 27 > p + 28$$

15. **Modeling Real Life** A golfer's goal is to use less than 80 strokes in one round of golf. He uses 43 strokes in the first half of the round. Which inequality represents the situation? Can the golfer use 38 strokes in the second half of the round and meet his goal? Explain.

$43 + s < 80$

$80 < 43 + s$

$80 - 43 < s$



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