

Lesson 23: True and False Number Sentences

Classwork

Opening Exercise

Determine what each symbol stands for, and provide an example.

Symbol	What the Symbol Stands For	Example
=	is equal to	$4\frac{7}{8} = 4.875$
>	is greater than	$5\frac{1}{4} > 4\frac{7}{8}$
<	is less than	$4\frac{1}{2} < 4\frac{7}{8}$
\leq	is less than or equal to	$4\frac{7}{8} \leq 4\frac{7}{8}$
\geq	is greater than or equal to	$5\frac{1}{4} \geq 4\frac{7}{8}$

Example 1

For each equation or inequality your teacher displays, write the equation or inequality, and then substitute 3 for every x . Determine if the equation or inequality results in a true number sentence or a false number sentence.

$$5 + x = 8 \quad x = 3 \quad (\text{True})$$

$$5 + 3 = 8 \quad 8 = 8$$

$$5x > 8 \quad x = 3$$

$$5(3) > 8$$

$$15 > 8 \quad \text{True}$$

$$5x = 8 \quad x = 3 \quad (\text{False})$$

$$5(3) = 8$$

$$15 \neq 8$$

$$5 + x \geq 8 \quad x = 3$$

$$5 + 3 \geq 8$$

$$8 \geq 8$$

$$\text{True.}$$

$$5 + x > 8 \quad x = 3 \quad (\text{False})$$

$$5 + 3 > 8$$

$$8 > 8$$

False...

Exercises

Change
Directions: Substitute the indicated value into the variable, and state (in a complete sentence) whether the resulting number sentence is true or false. If true, find a value that would result in a false number sentence. If false, find a value that would result in a true number sentence.

1. $4 + x = 12$. Substitute 8 for x .

$$4 + 8 = 12$$

$$12 = 12$$

True

2. $3g > 15$. Substitute $4\frac{1}{2}$ for g .

$$3(4\frac{1}{2}) > 15$$

$$12\frac{1}{2} > 15 \quad \text{False}$$

3. $\frac{f}{4} < 2$. Substitute 8 for f .

$$\frac{8}{4} < 2$$

$$2 < 2 \quad \text{False}$$

4. $14.2 \leq h - 10.3$. Substitute 25.8 for h .

$$14.2 \leq 25.8 - 10.3$$

$$14.2 \leq 15.5 \quad \text{True}$$

5. $4 = \frac{8}{h}$. Substitute 6 for h .

$$4 = \frac{8}{6}$$

$$4 = \frac{4}{3} \quad \text{False}$$

6. $3 > k + \frac{1}{4}$. Substitute $1\frac{1}{2}$ for k .

$$3 > 1\frac{1}{2} + \frac{1}{4}$$

$$3 > 1\frac{3}{4}$$

True

7. $4.5 - d > 2.5$. Substitute 2.5 for d .

$$4.5 - 2.5 > 2.5$$

$$2 > 2.5$$

False

8. $8 \geq 32p$. Substitute $\frac{1}{2}$ for p .

$$8 \geq 32(\frac{1}{2})$$

$$8 \geq 16$$

False.

9. $\frac{w}{2} < 32$. Substitute 16 for w .

$$\frac{16}{2} < 32$$

$$8 < 32$$

True.

10. $18 \leq 32 - b$. Substitute 14 for b .

$$18 \leq 32 - 14$$

$$18 \leq 18$$

True.