

Name: _____

Date: _____

Notes

Algebra Section 1.4

Pages 21-26



Goals: "I will translate verbal sentences into equations or inequalities"
"I will decide if a given value is a solution to an equation or inequality"

Vocabulary:

Inequality: An open sentence that contains one of these symbols $\leq, \geq, >, <$

Writing an equation or inequality

Math Verbs:

The same as	more than	less than	at least	at most
equal to	fewer than	no more than	no less than	greater than

Try These:

Write the equation or inequality. For each inequality give at least one value that will make the statement true.

"The difference between 12 and a number k is 8." $12 - k = 8$

"The quotient of a number p and 12 is 3." $\frac{p}{12} = 3$

"The quotient of a number p and 12 is at least 3." $\frac{p}{12} \geq 3$ p can be 48

"The sum of a number y and 15 is at most 5." $y + 15 \leq 5$ y can be -15

"The product of 7 and a number q is more than 10." $7q > 10$ q can be 2

"The sum of a number n and 12 is less than 18" $n + 12 < 18$ n can be 3

"Your math grade, g , needs to be at least a 75" $g \geq 75$ g can be 75

Solution (of an equation or inequality):

Determine if the number listed is a SOLUTION to the equation or inequality.

Example 1:

$$3 + 2x = 15 \quad x=3$$

Input the value $3 + 2 \cdot 3 = 15 \quad x=3$

Simplify $3 + 6 = 15$

$$9 = 15$$

Check Does $9=15$? No! This **is not** a solution of the equation.

Example 2:

$$12 < 4x - 5 \quad x=7$$

Input the value $12 < 4 \cdot 7 - 5 \quad x=7$

Simplify $12 < 28 - 5$

$$12 < 23$$

Check Is $12 < 23$? Yes! This **is** a solution of the inequality.

Try These:

a) $8 - 2x = 2 \quad x = 3$

$$8 - 2 \cdot 3 = 2$$

$$8 - 6 = 2$$

$$2 = 2$$

Yes! $2=2$

This is a solution of the equation.

b) $2z + 5 > 12 \quad z = 1$

$$2 \cdot 1 + 5 > 12$$

$$2 + 5 > 12$$

$$7 > 12$$

No! 7 is not > 12

This is not a solution of the equation.

c) $4 < 7 - q \quad q = 3$

$$4 < 7 - 3$$

$$4 < 4$$

No! 4 is not < 4

This is not a solution of the equation.

d) $18 > 2x - 3 \quad x=4$

$$18 > 2 \cdot 4 - 3$$

$$18 > 8 - 3$$

$$18 > 5$$

Yes! 18 is > 5

This is a solution of the equation.

Check whether the given number is a solution: (the number given comes after the semi-colon)

a) $9 - x = 4; 5$

$$9 - 5 = 4$$

$$4 = 4$$

Yes! 5 is a solution of the equation.

b) $b + 5 < 15; 7$

$$7 + 5 < 15$$

$$12 < 15$$

Yes! 7 is a solution of the equation.

Combining inequalities:

There will be two signs. Give at least one value that could be a solution of the inequality.

Example:

A number n is greater than 5 and less than 13

$$5 < n < 13 \quad n \text{ could be } 10$$

Try These:

a) x is greater than 3 and less than 9

$$3 < x < 9 \quad x \text{ could be } 6$$

b) A number y is no less than 5 and no more than 13

$$5 \leq y \leq 13 \quad y \text{ could be } 8$$

c) A number q is at least 5 and less than 17

$$5 \leq q < 17 \quad q \text{ could be } 11$$

Word Problems:

a) The last time you and 3 friends went to a mountain bike park, you had a coupon for \$10 off the total purchase and paid \$17 for 4 tickets. What is the regular price for the 4 tickets? What is the regular price of 1 ticket?

$$4x - 10 = 17 \quad 4 \text{ tickets cost } \$27. \quad 1 \text{ ticket costs } \$6.75$$

b) A basketball player scored 351 points last year. If the player plays 18 games this year, will an average of 20 points per game be enough to beat last year's total?

$$351 < 18 \cdot 20$$

$$351 < 360$$

Yes!

c) Tyler would like to make no less than \$610 selling coffee mugs online. If he sells 28 mugs for \$22 each, will he achieve his goal?

$$610 \leq 28 \cdot 22$$

$$610 \leq 616$$

Yes!