

Lesson 2 Translating Words into Inequations

Date:

Chapter 2: Optimization



Lesson 2:
Translating Words
into Inequations



$$\begin{cases} 3x + 5y \leq 13 \\ x > 2y - 3 \end{cases}$$

You will have to translate words into math so you need to understand the direction and the meaning of these symbols

- Symbols:
- $<$ less than, fewer than
 - $>$ greater than, more than, exceeds
 - \leq less than or equal to, at most, maximum of, no more than
 - \geq greater than or equal to, at least, minimum of, no less than

translate words into math using the variables

Examples with two variables: **Translate into inequalities**

- 1) At a school dance, students paid \$3.00 and guests paid \$5.00. The proceeds were more than \$600.00.

x = # of students
 y = # of guests

$$3x + 5y > 600$$

- 2) At a high school, at least twice as many girls as boys take enriched science.

x = # of girls
 y = # of boys

$$x \geq 2y$$

more girls than boys

ex



$\times 2$ to make them equal

- 3) Mario recycles empty bottles. Small bottles are worth 10 cents and large ones, 40 cents. He never collects more than \$40.00.

x = # of small bottles
 y = # of large bottles

$$10x + 40y \leq 40$$

- 4) John and Sheila are going to New York and Boston. They want to spend at least twice as much time in New York than Boston.

x = time spent in New York
 y = time spent in Boston

$$x \geq 2y$$

more time (hours) spent in N.Y. than Boston

these only involve EQUATIONS

Turning words into "math sentences"

The management of a tennis club wishes to hire personnel for its summer season. It wants to hire instructors and attendants. If x represents the number of instructors and y the number of attendants, translate each of the following constraints into a two-variable first degree equation.

- The total number of people hired is equal to 8. _____
- The number of instructors exceeds the number of attendants by 4. _____
- There are three times as many instructors as attendants. _____
- The number of instructors increased by twice the number of attendants is equal to 10. _____
- The number of attendants is equal to one third the number of instructors decreased by 1. _____

See answers below

write the math sentence for a) to f)

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You **MUST** define each of your variables before you write an equation:

Let x be the number of instructors

Let y be the number of attendants

answers:

The management of a tennis club wishes to hire personnel for its summer season. It wants to hire instructors and attendants. If x represents the number of instructors and y the number of attendants, translate each of the following constraints into a two-variable first degree equation.

- a) The total number of people hired is equal to 8. $x + y = 8$
- b) The number of instructors exceeds the number of attendants by 4. $x = y + 4$
- c) There are three times as many instructors as attendants. $x = 3y$
- d) The number of instructors increased by twice the number of attendants is equal to 10.
 $x + 2y = 10$
- e) The number of attendants is equal to one third the number of instructors decreased by 1.
 $y = \frac{1}{3}x - 1$

You can now do:

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