

1-12-18

Aim: SWBAT translate and solve word problems.

HW: Packet Page 18

Review due Wednesday

Inequalities Test Thursday???

Do Now: Quiz

Aim: SWBAT define a variable and write an inequality to solve word problems.

Do Now:

Read the notes below. Then answer questions 1 & 2 at the bottom of the page.

NOTES.

When translating inequalities into mathematical inequalities

- Same rules as translating expressions and equations
 - Identify the key words
 - Translated in the exact order they are read
 - Switch the order when you read: "less than," "more than," "fewer than," "taken away from" and "subtracted from"
 - Place parentheses around sums and differences
 - Inequalities will contain +, -, or \div (use a fraction bar to translate division)
 - Inequalities will contain one or more operations and an inequality symbol (<, >, \leq , or \geq).
- ** Look at the chart below to help you translate the symbols **

Writing Inequalities

$a < b$	$a > b$
a is less than b. a is fewer than b.	a is greater than b. a is more than b.
$a \leq b$	$a \geq b$
a is less than or equal to b. a is at most b. a is no more than b.	a is greater than or equal to b. a is at least b. a is no less than b.

Write the sentence as an inequality, then solve. Remember to define the variable.

- 1) The difference of a number and 4 is less than 10 more than 3 times the number.

let $n = \text{the \#}$

$$\begin{array}{r} (n - 4) < 3n + 10 \\ -n \quad -n \\ \hline -4 < 2n + 10 \\ -10 \quad -10 \\ \hline -14 < 2n \\ \frac{-14}{2} < \frac{2n}{2} \\ -7 < n \end{array}$$

- 2) Six times the sum of a number and 8 is no more than 12 less than twice the number.

let $n = \text{the \#}$

$$\begin{array}{r} 6(n + 8) \leq 2n - 12 \\ 6n + 48 \leq 2n - 12 \\ -2n \quad -2n \\ \hline 4n + 48 \leq -12 \\ -48 \quad -48 \\ \hline 4n \leq -60 \\ \frac{4n}{4} \leq \frac{-60}{4} \\ n \leq -15 \end{array}$$

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Define the variables. Then write an inequality for the situation. DO NOT SOLVE!

(You will use two different variables here . . . one DOES NOT depend on the other)

- 1) If pens cost \$4 per pack and notebooks cost \$6 each, how many of each can you buy if you have \$25 in your pocket?

Let p = packs of pens

Let n = # of notebooks

Inequality: $4p + 6n \leq 25$

- 2) You are at the movies with your friend. At the snack bar, candy costs \$4 and drinks cost \$3.50. Together you have \$15. How many of each can you buy?

Let c = # of candies

Let d = # of drinks

Inequality: $4c + 3.50d \leq 15$

Write and solve an inequality to solve each of the following word problems. Be sure to define your variable and state your final answer in a sentence.

- 1) You want to download some new songs to your I-pod. Songs cost \$1.95 each. If you have a \$15 I-tunes card you got from your aunt (so that means you can spend at most \$15), how many songs can you download?

- 2) Individual tickets for a college basketball game cost \$12 each plus a one-time transaction fee of \$8. A season ticket costs \$125. How many games would you have to attend so that buying a season ticket is a better value than buying individual tickets?

Homework - Translating Inequalities to Solve Problems

Write the sentence as an inequality. Let x represent the unknown value. Then solve the inequality.

- 1) A number is no more than 12. 2) A number plus 9 is at least 5.
- 3) Three times a number is at least 20. 4) Eighteen minus a number is at most 19

For #'s 5 - 8, match the verbal sentence with the inequality. Write the letter on the line.

[A] $7(x + 4) \geq 15$ [B] $7x + 4 > 15$ [C] $4x - 7 < 15$ [D] $4(x - 7) \leq 15$

- _____ 5) Four times the difference of a number and 7 is no more than 15.
- _____ 6) Seven times the sum of a number and 4 is at least 15.
- _____ 7) The sum of seven times a number and 4 is more than 15.
- _____ 8) The difference of four times a number and 7 is less than 15.
- 9) You are raising money for a trip. You want to raise at least \$500 and have already saved \$116. You are going to raise the rest of the money by washing cars. You earn \$6 for every car that you wash. What is the minimum number of cars that you need to wash in order to obtain this goal? Use the verbal model below to write and solve an inequality.

Money to Raise	\leq	Number of cars to wash	\times	Amount earned per car	$+$	Money already saved
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