1-16-18

Aim: SWBAT continue to translate and solve word problems.

HW: Packet Page 21

Review due tomorrow (except compound inequalities)

Inequalities Test Friday

Do Now: With a partner,

- Bottom Half of Packet Page 17
- Top Half of Packet Page 19

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.

$x \leq 12$

2) A number plus 9 is at least 5.

$x + 9 \geq 5$

$-9 \quad -9$

$x \geq -4$

3) Three times a number is at least 20.

$\frac{3x}{3} \geq \frac{20}{3}$

$x \geq 6\frac{2}{3}$

4) Eighteen minus a number is at most 19

$18 - x \leq 19$

$-18 \quad -18$

$\frac{-x}{-1} \leq \frac{1}{-1}$

$x \geq -1$

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] $4(x - 7) \leq 15$

D 5) Four times the difference of a number and 7 is no more than 15.

A 6) Seven times the sum of a number and 4 is at least 15.

B 7) The sum of seven times a number and 4 is more than 15.

C 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	≤	Number of cars to wash	×	Amount earned per car	+	Money already saved

$500 \leq c \times 6 + 116$

$500 \leq 6c + 116$

$-116 \quad -116$

$\frac{384}{6} \leq \frac{6c}{6}$

$64 \leq c$

I have to wash at least 64 cars.

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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?

let x = # of songs

$$\frac{1.95x}{1.95} \leq \frac{15}{1.95}$$

$$x \leq 7\frac{9}{13}$$

I can download 7 songs from I-tunes.

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?

let x = # of tickets

$$125 < 8 + 12x$$
$$-8 \quad -8$$
$$\frac{117}{12} < \frac{12x}{12}$$
$$9\frac{3}{4} < x$$

I would have to attend 10 or more games for the season ticket to be a better value.

Aim: SWBAT continue to solve inequality word problems.

Do Now: Frank is trying to save for college. The college he wants to attend would cost $13,592 for four years tuition. He has saved $3926. He is planning to save more money each month by working for the next 3 years. At least how much money would he need to save each month so that he has enough to pay for his tuition? (remember there are 12 months in one year)

Let x = amt. of monthly savings

Inequality: $3926 + 36x \geq 13592$

$-3926 \quad -3926$

$\frac{36x}{36} \geq \frac{9666}{36}$

$x \geq 268.5$

He needs to save at least $268.50 a month.

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) A membership at a nutrition store costs $20 per year. You can buy vitamins for $18 a bottle without a membership, and $15 a bottle with a membership. How many bottles of vitamins do you need to buy each year to make a membership worthwhile?

let x = # of bottles

$20 + 15x < 18x$

$-15x \quad -15x$

$\frac{20}{3} < \frac{3x}{3}$

$6\frac{2}{3} < x$

The membership is worthwhile if I buy 7 or more bottles of vitamins.

2) As of the 2001 NFL season, the record for the most career yards rushing is 16,726 yards. If a player has 14,925 yards rushing in his career before the start of the 2002 season, what is the least number of yards he needs per game to break the record by the end of the 2002 season? Assume there are 16 games in a NFL season. (Round your answer to the nearest tenth)

let x = # of yards per game

$14925 + 16x > 16726$

$-14925 \quad -14925$

$\frac{16x}{16} > \frac{1801}{16}$

$x > 112.5625$

The player needs about 112.6 yds per game to beat the record.

3) A ferry boat holds 800 people. There are 260 people already on the boat. The owner of the boat wants to load several tour groups on. The tour groups come is sizes of 40 people. How many tour groups can be loaded onto the boat?

let x = # of tour groups

$260 + 40x \leq 800$

$-260 \quad -260$

$\frac{40x}{40} \leq \frac{540}{40}$

$x \leq 13\frac{1}{2}$

The owner can allow 13 or less tour groups on the boat.

Homework – Writing an Inequality to Solve Word Problems

For each of the following, define a variable and write an inequality to solve the problem. Be sure to state your final answer in a complete sentence.

1) Kevin is going to join a swim club. There is a $45 initiation fee. It costs $28 for each month that he is a member. Kevin only has $300 to pay for the membership. For how many months can he be a member? Will he be able to be a member for a full year?

2) A company spent $762,500 to make a movie that will be shown in theaters for 8 weeks. If the movie makes $1,250,000 in its first week, how much money does the movie need to earn in the next 7 weeks to make a profit of at least $2,000,000?

3) Five friends went out to dinner. Altogether, they only had $175 to spend on the entire meal. They each spent $2 on their beverage and decided to give the waitress a $28 tip. How much can each person spend on his or her own dinner if they each spend the same amount?