

1-18-18

Aim: SWBAT translate and solve inequalities.

HW: Packet Page 12 - 13

Quiz tomorrow

Do Now: Correct hw

## 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.

$$\begin{array}{r} x + 9 \geq 5 \\ -9 \quad -9 \\ \hline x \geq -4 \end{array}$$

3) Three times a number is at least 20.

$$\begin{array}{r} 3x \geq 20 \\ \frac{3x}{3} \geq \frac{20}{3} \\ x \geq 6\frac{2}{3} \end{array}$$

4) Eighteen minus a number is at most 19

$$\begin{array}{r} 18 - x \leq 19 \\ -18 \quad -18 \\ \hline -x \leq 1 \\ \times \quad \times \\ \hline x \geq -1 \end{array}$$

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	$\leq$	Number of cars to wash	$\times$	Amount earned per car	$+$	Money already saved
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$$500 \leq c \times 6 + 116$$

$$\begin{array}{r} 500 \leq 6c + 116 \\ -116 \quad -116 \\ \hline 384 \leq 6c \end{array}$$

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

$$64 \leq c$$

I have to wash at least 64 cars.

**HOMEWORK:** Define a variable, write an inequality, solve it, and write your answer in a sentence.

Pg. 152 # 43. You run a race in 2.5 hours. The record winning time is 1.9 hours. How many minutes can you improve by to break the record?

let  $x =$  # of hours

$$\begin{array}{r} 2.5 - x < 1.9 \\ -2.5 \quad -2.5 \\ \hline -x < -0.6 \\ \quad -1 \quad -1 \\ \hline x > 0.6 \end{array}$$

$0.6 \text{ hours} = \frac{6}{10} \text{ hours} = 36 \text{ min}$   
I need to improve my time by more than 36 min.

Pg. 152 # 44. The frequency  $f$  of the human singing voice is between 81 hertz and about 1100 hertz. Which statement is not true about  $f$ ?

A)  $f \geq 81$

B)  $f \leq 1100$

C)  $81 \leq f$

D)  $f \geq 1100$

$81 < f < 1100$

Pg. 157 # 47. An elevator can hold a maximum of 2000 pounds. The average weight of a person is 150 pounds. Let  $p$  be the number of people the elevator can hold.

- Write a multiplication inequality that models the situation.
- Solve the inequality.
- What does the answer tell you about the number of people who can ride in the elevator?

$$\begin{array}{r} 150p \leq 2000 \\ \hline 150 \quad 150 \\ p \leq 13\frac{1}{3} \end{array}$$

Only 13 people can ride the elevator.

Pg. 158 # 52. John has test scores of 75, 84, 88, and 77 on four of his five science tests. He wants to get at least an average of 80 on his five tests. What is the lowest score that John can get on his last test to achieve his goal?

A) 76

B) 79

C) 80

D) 81

$$\frac{75+84+88+77+x}{5} \geq 80$$

$$\cancel{5} \cdot \frac{324+x}{\cancel{5}} \geq 80 \cdot 5$$

$$\begin{array}{r} 324+x \geq 400 \\ -324 \quad -324 \\ \hline x \geq 76 \end{array}$$

John needs a 76% or higher.

**Pg. 327 # 18.** You have at most \$200 to spend on a health club membership. The initial fee to join is \$50. There is a monthly fee of \$32. How many months can you be a member without spending more than \$200?

**Pg. 327 # 19.** You are making craft items to sell for \$2 each. The materials cost you \$55. You want to make a profit of at least \$100. Which inequality can you use to find the number of items you will need to sell?

- A)  $2x - 55 \leq 100$       B)  $2x - 55 \geq 100$       C)  $2x + 55 \geq 100$       D)  $2x + 55 \leq 100$

**Pg. 328 # 21.** A teen club has weekly dances. You can become a member of the club for \$30 a year and pay only \$4 to attend each dance. Otherwise, each dance costs \$6. How many dances do you have to attend so that becoming a member will cost less than paying the nonmember rate?