

1-16-18

Aim: SWBAT translate and solve inequalities.

HW: Packet Page 11

Quiz Thursday

Do Now:

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

Pg. 138 # 30. You need 124 plastic forks for a party. At one store you buy the last 5 boxes, and each box contains 8 forks. At another store you find boxes that contain 12 forks. How many of these boxes do you need to buy?

**ARITHMETIC**

$$5 \cdot 8 = 40$$

$$124 - 40 = 84$$

$$84 \div 12 = 7$$

**ALGEBRAIC**

let  $x$  = # of boxes

$$5 \cdot 8 + 12x = 124$$

$$\cancel{40} + 12x = 124$$

$$\underline{-40} \quad \underline{-40}$$

$$12x = 84$$

$$\underline{12} \quad \underline{12}$$

$$x = 7$$

I need to buy 7 boxes.

Pg. 138 # 31. The senior class at your school made a \$300 profit at the school fair by having a dunk tank. The dunk tank cost \$135 to rent, and the senior class charged \$5 for each person to play. If one third of people who participated were adults, how many adults participated?

**ARITHMETIC**

$$300 + 135 = 435$$

$$435 \div 5 = 87$$

$$\frac{1}{3} \cdot 87 = 29$$

**ALGEBRAIC**

let  $x$  = # of people

$$5x - 135 = 300$$

$$\underline{+135} \quad \underline{+135}$$

$$\frac{5x}{5} = \frac{435}{5}$$

$$x = 87$$

A total of 29 adults participated.

$$87 \div 3 = 29$$

Pg. 138 # 33. A taxi cab costs \$2 plus an additional \$1.50 for every mile. You ride costs \$17 before the tip. How many miles did you go? Will it cost twice as much to go twice as far? Explain.

**ARITHMETIC**

$$17 - 2 = 15$$

$$15 \div 1.50 = 10$$

**ALGEBRAIC**

let  $x$  = # of miles

$$2 + 1.5x = 17$$

$$\underline{-2} \quad \underline{-2}$$

$$\frac{1.5x}{1.5} = \frac{15}{1.5}$$

$$x = 10$$

I went 10 miles.

if  $x = 20$

$$2 + 1.5(20)$$

$$2 + 30$$

$$32$$

No, it will not cost \$34. Instead, it will cost \$32. The \$2 fee is a one-time fee.

Pg. 138 # 35. You have a job in which you make \$6 an hour plus tips. You made a total of \$34 yesterday. How much did you make in tips?

ARITHMETIC

ALGEBRAIC

Not enough information! The number of hours worked needs to be known in order to determine the amount of tips.

Pg. 138 # 38. Amanda takes her car to the repair shop. The mechanic starts working on the car at 10:30 A.M., takes a 45 minute lunch break, and then continues working into the afternoon. The parts to fix the car cost \$350 and the labor costs \$80 per hour. Amanda pays \$730 in all. At what time does the mechanic finish the work?

ARITHMETIC

ALGEBRAIC

$$730 - 350 = 380$$

$$200 + 80 = 280$$

$$10:30 \text{ AM} + 4 \text{ hours } 45 \text{ min} + 45 \text{ min} = 4 \text{ PM}$$

let  $x = \#$  of hours

$$350 + 80x = 730$$

$$\begin{array}{r} 350 + 80x = 730 \\ -350 \phantom{=} \\ \hline 80x = 380 \end{array}$$

$$\frac{80x}{80} = \frac{380}{80}$$

$$x = 4\frac{3}{4} \text{ hours}$$

$$\begin{array}{r} 10:30 \text{ AM} \\ 4:45 \\ + 0:45 \\ \hline 11:00 \end{array}$$

The car will be finished at 4 PM.

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

Pg. 321 # 33. You agree to raise at least \$2500 for charity to enter a marathon. You raised \$925 by asking people to pledge \$25 each. How many more \$25 pledges do you need?

let  $x = \#$  of pledges

$$\begin{array}{r} 925 + 25x \geq 2500 \\ -925 \qquad \qquad -925 \\ \hline \end{array}$$

$$\begin{array}{r} 25x \geq 1575 \\ \frac{25x}{25} \geq \frac{1575}{25} \\ x \geq 63 \end{array}$$

I need at least 63 more pledges.

Pg. 321 # 34. While at camp, you call your parents from a pay phone. The first minute costs you \$0.25 and each additional minute costs \$0.10. You have \$1.65 in change. Solve the inequality

$0.25 + 0.10m \leq 1.65$  to find the number of additional minutes  $m$  you can talk.

A) less than 14    **B) no more than 14**    C) at most 19    D) fewer than 19

$$\begin{array}{r} 0.25 + 0.10m \leq 1.65 \\ -0.25 \qquad \qquad -0.25 \\ \hline \end{array}$$

$$\begin{array}{r} 0.10m \leq 1.40 \\ \frac{0.10m}{0.10} \leq \frac{1.40}{0.10} \\ m \leq 14 \end{array}$$

Pg. 321 # 35. You are approaching the high score of 18,550 on a video game in which you have to catch discs for 150 points each. Your current score is 16,000. How many more discs do you need to catch to have a new high score? Interpret your solution.

let  $x = \#$  of discs

$$\begin{array}{r} 16000 + 150x > 18550 \\ -16000 \qquad \qquad -16000 \\ \hline \end{array}$$

$$\begin{array}{r} 150x > 2550 \\ \frac{150x}{150} > \frac{2550}{150} \\ x > 17 \end{array}$$

I need to catch 18 more discs.

### 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<br>Raise | $\leq$ | Number of<br>cars to wash | $\times$ | Amount earned<br>per car | $+$ | Money already<br>saved |
|-------------------|--------|---------------------------|----------|--------------------------|-----|------------------------|