

1-11-19

Aim: SWBAT translate word problems into mathematical inequalities.

HW: Packet Page 14 # 4 - 5 and Page 16 "elevator" question
Quiz Monday (know keyword and phrases really well)

Do Now: Check hw

Translating When a Variable Is Not Assigned

- Define a variable {state what the variable represents using let statement(s)}
- Identify the key words
- Translate into the order that the keywords require using the assigned variable
- Equations will contain one or more operations {+, -, ·, or ÷ (use a fraction bar to translate division)} and an equal sign.

To "Solve Algebraically" means...

- Define a variable
- Write an algebraic equation to represent the situation
- Solve the equation
- Echo back the question in a sentence that answers the question being asked

Solve algebraically.

3. Nicholas has 28 coins in his collection. That is 5 more than his brother Sam has in his collection. How many coins does Sam have in his collection?

ARITHMETIC
 $28 - 5 = 23$

ALGEBRAIC
 Let $x = \# \text{ of coins Sam has}$

$$\begin{array}{r} 28 = x + 5 \\ -5 \quad -5 \\ \hline 23 = x \end{array}$$
 Sam has 23 coins.

4. Mr. Edwards purchased 3 bags of potatoes. He bought 36 potatoes in all. Each bag contained the same number of potatoes. How many potatoes were in each bag?

ARITHMETIC
 $36 \div 3 = 12$

ALGEBRAIC
 Let $x = \# \text{ of potatoes}$

$$\begin{array}{r} 3x = 36 \\ \cancel{3} \quad 3 \\ \hline x = 12 \end{array}$$
 Each bag has 12 potatoes.

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Homework

Solve algebraically.

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

$$\begin{aligned} 5 \cdot 8 &= 40 \\ 124 - 40 &= 84 \\ 84 \div 12 &= 7 \end{aligned}$$

ALGEBRAIC

let x = # of boxes

$$\begin{aligned} 5 \cdot 8 + 12x &= 124 \\ 40 + 12x &= 124 \\ -40 & \quad -40 \\ \hline 12x &= 84 \\ \frac{12x}{12} &= \frac{84}{12} \\ x &= 7 \end{aligned}$$

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

ALGEBRAIC

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

$$\begin{aligned} 17 - 2 &= 15 \\ 15 \div 1.50 &= 10 \end{aligned}$$

ALGEBRAIC

let x = # of miles

$$\begin{aligned} 2 + 1.50x &= 17 \\ -2 & \quad -2 \\ \hline 1.50x &= 15 \\ \frac{1.50x}{1.50} &= \frac{15}{1.50} \end{aligned}$$

$$x = 10$$

I went 10 miles

$$\begin{aligned} 2 + 1.50x \\ 2 + (1.50)(20) \end{aligned}$$

$$2 + 30$$

$$32$$

No, going twice as far will cost \$32, not \$34.

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Aim: SWBAT translate word problems into mathematical inequalities.

Translating When a Variable Is Not Assigned

- Define a variable (state what the variable represents using let statement(s))
- Identify the key words
- Translate into the order that the keywords require using the assigned variable
- Inequalities will contain one or more operations {+, -, ·, or ÷ (use a fraction bar to translate division)} and an inequality symbol (<, >, ≤, ≥)

Write an algebraic inequality to represent each of the following.

1	<p>Six times the difference of a number and 3 is more than 24.</p> <p>let $n = \text{the \#}$</p> $6(n - 3) > 24$
2	<p>Nine more than 4 times a number is at least 30 plus 11 times the number.</p> <p>let $n = \text{the \#}$</p> $4n + 9 \geq 30 + 11n$
3	<p>Three times a number divided by 4 is no more than 5 plus twice the number.</p> <p>let $n = \text{the \#}$</p> $\frac{3n}{4} \leq 5 + 2n$

4. A taxi driver charges a flat fee of \$4 plus \$6 per mile. The tip is included in the mileage rate. Orlando only has \$22 to pay for his taxi ride. Write an inequality that would determine the greatest number of miles Orlando can ride in the taxi?

5. Cicely has \$30 to spend on art supplies. She wants to buy as many pastels as possible after buying a sketchbook that costs \$6. The pastels cost at most \$4 each. Write an inequality that would determine the greatest number of pastels that she can buy?

Solve algebraically.

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?

ARITHMETIC

ALGEBRAIC

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

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.

ARITHMETIC

ALGEBRAIC

Homework

Solve algebraically.

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?

ARITHMETIC

ALGEBRAIC

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) $f \geq 1100$

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.

a. Write a multiplication inequality that models the situation.

b. Solve the inequality.

c. What does the answer tell you about the number of people who can ride in the elevator?