Algebra Bellwork - October 20, 2011

Hall Beauty & Fitness charges a $44 sign-up fee and $30 per month. Torres Muscle Gym charges a $99 sign-up fee and $25 per month. When does Torres Muscle Gym become a better deal?

Check your answers:

91) -4	97) -30	9) -3
92) 27	98) 5	10) 3
93) -13	5) 3	10) -3
94) -4	6) -2	11) 3
95) -10	7) 7	12) 4
96) -36 -2	8) -3	

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X = months

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Total = 44 + 30x

Total = 99 + 25x

99 = 25

$44 + 30x = 99 + 25x$

$-25x \quad -25x$

compare

Same? different?

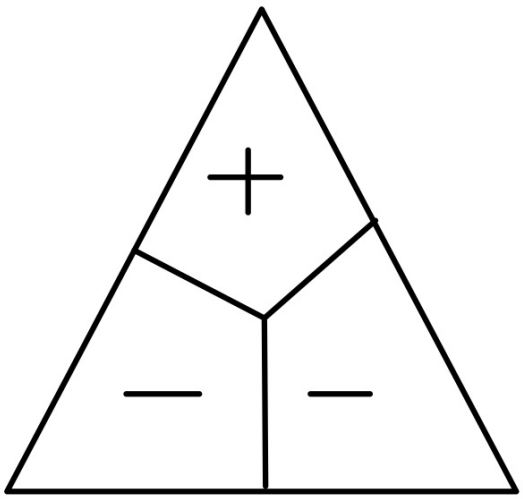
$44 + 5x = 99$

$-44 \quad -44$

$5x = 55$

$\frac{5x}{5} = \frac{55}{5}$

$x = 11$ months



A car travels 180 miles in 3 hours.
What is the car's rate of speed?

$\frac{180 \text{ mi.}}{3 \text{ hours}}$ $\frac{60 \text{ mi.}}{1 \text{ hour}}$

Ratio: comparison of two numbers by division.

Example: $3:10$ $\frac{3}{10}$

Rate: comparison of different things using a ratio.

Example: $\frac{\text{miles}}{\text{hour}}$ $\frac{\text{eggs}}{\text{cake}}$ $\frac{\text{rise}}{\text{run}}$ $\frac{\text{feet}}{\text{minute}}$

Unit Rate: rate with a denominator of 1.

Example: $\frac{\$.15}{1\text{oz}}$ $\frac{\text{miles}}{1\text{ gallon}}$

Which is the better deal?

$1.20 for a 20-ounce Coke.

$1.60 for a 32-ounce Coke.

$\frac{\$1.20}{20\text{ oz.}}$ $\frac{\$.06}{1\text{ oz}}$

$\frac{\$1.60}{32}$ $\frac{\$.05}{1\text{ oz}}$

Proportion: Equation where two ratios are equal.

3 cakes
10 eggs

$\frac{3}{10} = \frac{12}{x}$

12 cakes
? eggs ?

$\frac{3 \text{ games}}{\$20} = \frac{10 \text{ games}}{x}$

$3x = 120$

$\frac{3x}{3} = \frac{120}{3}$

$x = 40$ eggs

$3x = \frac{200}{3}$

$x = \$66.67$

Find each unit rate.

1. \$57 for 6 hours **2.** $\frac{\$2}{5 \text{ lb}}$ **3.** $\frac{524 \text{ cars}}{4 \text{ weeks}}$ **4.** $\frac{600 \text{ calories}}{1.5 \text{ h}}$

5. A 10-oz bottle of shampoo costs \$2.40 and a 12-oz bottle costs \$2.64. Find the unit rate for each. Which bottle has the lower unit cost?

6. Two students are preparing for a marathon. Hector ran 8 miles in 85 minutes. Mario ran 6 miles in 55 minutes. Who has the faster average speed?

7. Mrs. Magdalino kept records on how much she spent on gasoline and the maintenance of her car. She found that it cost \$485 to drive 500 mi in a month.

a. Find the cost per mile. Write an equation that relates the cost c for gasoline and maintenance of a car to the number of miles m the car is driven.

b. Use the equation to find the cost for driving 1200 miles.

c. About how many miles are driven for a cost of \$820?

Solve each proportion.

16. $\frac{2}{8} = \frac{n}{20}$ **17.** $\frac{4}{6} = \frac{m}{9}$ **18.** $\frac{5}{6} = \frac{c}{9}$ **19.** $\frac{7}{5} = \frac{k}{18}$

20. $\frac{3}{4} = \frac{x}{10}$ **21.** $\frac{3}{8} = \frac{x}{30}$ **22.** $\frac{8}{d} = -\frac{12}{30}$ **23.** $\frac{5}{9} = \frac{8}{w}$