More on Proportions **Name: _____**

I. A **ratio is a comparison of two quantities with the same units**. There are three different ways to write a ratio.

For example if we want to compare the number 2 to the number 3, we would write it on of the following ways:

2 to 3 2:3 $\frac{2}{3}$

Remember that a ratio should always be in simplest form and have two numbers. (If the number is an integer, you would put it over 1)

II. A **rate is used to compare two quantities with different units**. Rates should also be in simplest form and when the denominator reduces to 1, we have a unit rate.

For example, if we want a rate for 5 cars and 20 people, we write:

$\frac{5\ cars}{20\ people} = \frac{1\ car}{4\ people}$ The last rate is in simplest form.

III. **Unit rates are rates that have a one in the denominator.** For example, to write 132 miles on 3 gallons of gas as a unit rate:

$\frac{132\ miles}{3\ gallons} = \frac{44\ miles}{1\ gallon} = 44\ miles\ per\ gallon\ or\ 44\ mpg$

Find the following unit rates:

a.) 1200 cars in 400 households b.) 243 miles in 9 hours

Application of Unit Rates:

One jar of jelly costs $2.32 for 16 ounces. Another jar costs $2.03 for 13 ounces. Find which jar is the better buy. Round your unit price to two decimal places.

IV. **Proportions are composed of two equal ratios or rates**.

Solve a proportion by cross multiplying.

$\frac{3}{5} = \frac{6}{10}$ This is a true proportion since the cross products equal each other 3*10=5*6 so 30=30

Solve each proportion. Check your solution.

a.) $\frac{8}{3} = \frac{24}{x}$ b.) $\frac{3}{2} = \frac{x+5}{x}$

Application problems using rates and proportions.

a.) Joe's car gets approximately 18 miles/gallon. His gas tank holds 40 gallons of gas. How far can Joe travel before his tank is empty.

b.) Patrick ran 4 laps of the track in 10 minutes. Ian ran 8 laps in 21 minutes. Who ran the fastest? Explain.

c.) David and Andy are hockey players. David scored 20 goals out of 40 shots at goal while Andy scored 25 goals out of 50 shots. Who is the better player?

d.) In the parking lot there are 8 blue cars and 12 silver cars.

i.) What is the ratio of blue cars to silver cars? Write your answer in simplest terms.

ii.) What is the ratio of silver cars to blue cars? Write your answer in simplest form.

e.) Leo has $40. He is traveling to Mexico and the exchange rate is $1 US = 12.86 Mexican Pesos. How many Mexican Pesos can Leon buy with his dollars?

f.) Smitty drives to her grandmas. She drives at 20 miles per hour. The trip takes 50 minutes. How long would the trip take if she drove at 45 miles per hour?

g.) Emma mixes some purple paint. She uses three pints of blue paint for every 5 pints of red paint. She wants to mix more paint of exactly the same color. She has 17.5 pints of red paint. How much blue paint does she need?

h.) Be careful with this one. Read the question very carefully. You may want to find the total number of parts to help you.
Twenty dollars is divided between Patric and Sara in the ratio of 4 to 3. How much money does each get? Give your answer to the nearest cent.