**Ratio and Proportions**

**Unit Rates:**

Vocabulary:

**Unit Rate** – two quantities that have different units (ie…miles and hours)

**Complex Fraction** – fractions that has a fraction in its numerator, denominator, or both

Find the unit of **3 (This is a complex fraction: Integer over a fraction)**

 **¾**

 **Solving:** 3 / (3/4) = (3/1) / (3/4) = (3/1) x (4/3) = (3 x 4) / (1 x 3) = 12/3 **= 4**

Ex (1): Find the unit rate of **16** oranges per **2** cups (**Numerator** = top & **Denominator** = bottom)

 16 / 2 = **4 oranges per cup**  \*\*4 oranges per cup is the unit rate answer\*\*

CFU:

1. Find the unit rate of 105 pizza slices for 15 people

**Proportional Relationships:**

Tell whether 6/4 and 8/12 form a proportion relationship

Compare the ratios in simplest form:

1. 6/4 = (divide by numerator & denominator by 2) = **3/2**
2. 8/12 = (divide by numerator & denominator by 4) = **2/3**

So, 6/4 and 8/12 do **not** form a proportion

Ex (2): Find a proportional relationship for 8 eggs for 3 cakes

 8 eggs = 16 eggs = 24 eggs = 32 eggs = 40 eggs = 48 eggs

 2 cake = 4 cake = 6 cake = 8 cake = 10 cake = 12 cake

In all cases you will find that all the ratios are the same (the top increased by 8 and the bottom increased by 2, but you can find the unit rate to find the next equivalent set)

Ex (3): Find a proportional relationship for 226 miles for 10 gallons of gas

1. 113 miles for 8 gallons c) 452 miles for 18 gallons
2. 113 miles for 5 gallons d) 452 miles for 22 gallons

Note: **To find the equivalent set, first find the unit rate of the original set then test each answer until you find the one that has the same unit rate.**

Answer is : B (113 miles for 5 gallons)

CFU:

1. Find a proportional relationship for 25 apples for 5 people (Please make up 3 equivalent sets)

Ex (4): Given the following: 5/2 = 10/b. What is the value for **b.**

1. 5/2 = 10/b \***First cross multiple**\* $\frac{5}{2} = \frac{10}{b}$
2. (5 x b) = (2 x 10) \***Second multiple each group**\*
3. 5b = 20 \***Third isolate the variable “b” by dividing 5 on both sides**\*
4. **b = 4**  \***Fourth solve for b which gives us the answer 4**\*

CFU:

1. Given the following: 15/12 = 5/w. What is the value for **w.**