In Class Worksheet – Rates (#1)

1. In my pocket, I have 8 quarters and 6 dimes.
   a. Use a model to find the simplest ratio of quarters to dimes.

$\frac{8q}{6d}$ $\frac{4q}{3d}$

b. If I have 30 dimes in my pocket, how many quarters would I need in order to keep the same ratio as above?

40 Quarters

$\frac{40Q}{30d} = \frac{10 \cdot 4q}{10 \cdot 3d}$

c. Is 32 quarters and 24 dimes an equivalent ratio? Explain.

$\frac{32q}{24d} \stackrel{?}{=} \frac{8}{6} \quad \frac{4q}{3d}$ yes, if we mult. by $\frac{8}{8}$ we get $\frac{32}{24}$

d. What fractional portion of the coins in my pocket are dimes?

part / whole $\frac{6}{14} = \frac{8\text{ part}}{6d\text{ part}}$

$\frac{3}{7}$

Finding Unit Rates

Activity 1: Mauricio sometimes swims laps at his local recreation center for exercise. He wants to check whether he is swimming laps faster over time. When he first starts swimming, he can swim one lap in 90 seconds. Each week he records the number of laps that he swims and the amount of time that it takes him. Fill in his unit rate for laps per second (which could be a fraction) and his unit rate for seconds per lap (which could be a mixed number).

Number of laps	1 lap	8 laps	5 laps	10 laps
Time spent swimming	90 seconds	600 seconds	390 seconds	720 seconds
Laps per second	$\frac{1}{90}$	$\frac{8}{600}$	$\frac{5}{390}$	$\frac{10}{720}$
Seconds per lap	$\frac{90}{1}$	$\frac{600}{8}$	$\frac{390}{5}$	$\frac{720}{10}$

Which set of laps had the fastest pace? Explain your answer.

90 spl 75 spl 78 spl 72 spl

72 spl is his fastest time. We divide the seconds by the laps to get the unit rate

Directions: Find each unit rate for the given situation by using a model, and then check your answer by finding the quotient of the two quantities.

1. At the store, you can get 15 cans of peaches for $3.

a. Find the unit rate for $1.

$\frac{15c}{\$3} \div 3 = \frac{5c}{\$1}$

b. Find the unit rate for 1 can.

$\frac{\$3}{15c} = \frac{\$1}{5c} \quad \frac{\$.20}{1\text{ can}}$

2. Traveling between countries means exchanging currencies (money). Suppose the exchange rate is 3 dollars to 2 Euros.

a. How many Euros would you receive in exchange for 1 dollar (the unit rate for $1)?

$$\frac{2E}{\$3} = \frac{.67E}{\$1}$$

.67E/dollar

b. How many dollars would a person receive in exchange for 1 Euro (the unit rate for 1 Euro)?

$$\frac{\$3}{2E} = \frac{\$1.50}{1E}$$

$1.50 per Euro

3. Emina can walk $\frac{1}{2}$ mile in $\frac{1}{4}$ hour.

a. How many miles can she walk in one hour?

b. How long does it take her to walk 1 mile?

4. Napoleon earns $4\frac{1}{2}$ dollars in 5 hours.

a. How much does he make per hour?

b. How long will he have to work to earn one dollar?

$\frac{1}{2}$ $\frac{2}{3}$

5. Diego can swim $\frac{1}{2}$ of a mile in $\frac{2}{3}$ of an hour.

a. What is his rate in miles per hour?

b. What is his rate in hours per mile?

6. In 20 minutes, I ate $1\frac{1}{2}$ sub sandwiches.

a. What is my rate in sandwiches per hour?

b. What is my rate in hours per sandwich?