Ratios, Rates, Complex Fractions & Dimensional Analysis

Name Block

No Calculator for # 1-8. You may use a calculator for # 9-16.

1) Simplify

- 2) Simplify 3=+14
- 3) Write the word ratio and complex fraction that can be used to solve this problem. Then solve. In $3\frac{1}{4}$ hours, Sara runs 13 miles. Find her average rate of speed in miles per hour.

$$\frac{\text{miles}}{\text{hour}} = \frac{13}{3\frac{1}{4}} = \frac{13}{1} + \frac{1}{3\frac{1}{4}}$$

$$= \frac{13}{1} + \frac{13}{4}$$

4) Write $21\frac{20}{2}$ % as a fraction in lowest terms.

$$\frac{21\frac{2}{3}}{100} = 21\frac{2}{3} \cdot 100$$

$$= \frac{13}{3} \cdot \frac{1}{100}$$

$$= \frac{13}{60}$$

5) Of the 24 students in math class, 15 are boys. What is the ratio of girls to boys? Give ratio in simplest form.

$$\frac{9 \text{ inls}}{\text{boys}} = \frac{24 - 15}{15} = \frac{9}{15} = \frac{3}{5}$$

6) In $2\frac{1}{2}$ hours, Sara drove 170 miles. Find the unit rate in miles per hour.

$$\frac{m_1}{h_1} = \frac{170}{2^{\frac{1}{2}}} = \frac{170}{170} + \frac{15}{2}$$

$$\frac{170}{1} + \frac{15}{2}$$

$$\frac{34}{170} \cdot \frac{2}{5}$$

$$\frac{34}{170} \cdot \frac{2}{5}$$

$$\frac{68 \, m_1/h_1}{1}$$

7) Write these ratios in simplest form:

A) 18 to 6
$$\frac{18}{6} = \frac{3}{1}$$

B) 12 to 20
$$\frac{12}{20} = \frac{3}{5}$$

C)
$$\frac{20 \text{ in}}{3 \text{ ft}}$$
 $\frac{20 \text{ in}}{36 \text{ in}}$ $\frac{5}{9}$

8) Use this data from a survey of 100 students to decide if the statement is <u>true of false</u>.

If false show why it is false.

One out of five students go to sports practice as soon as they get home from school.

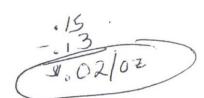
What do you do first when you Ratio of get home from school?

Activity	Number of students
Eat a snack	45
Do homework	10
Watch TV	20
Go to sports practice	25

9) A 24 oz bottle of Shelly's shampoo usually costs \$3.60. She buys it on sale for \$3.12. How much money does she <u>save per ounce</u> when she buys it on sale?

Reg 3.60+24=\$.15/02

Sale 312+24 = \$.13/02



10) Jan drove 300 miles in 5 hours, Sue drove 180 miles in 4 hours, and Erika drove 480 miles in 8 hours. If they were all driving at constant speeds, which two girls were driving at the same rate? Explain (show) your reasoning using the concept of unit rate.

Jan 300 = 5 = 60 mi/hr Sue 180 + 4 = 45 mi/hr.

Frika 480 +8 = 60 mi/nr.

Jan & Erika

11) There are 36 jolly ranchers in a 24 ounce bag that costs \$2.88. Find the cost per jolly rancher.

2.88 + 36 2.08/j.r. 12) A two pound bag of candy costs \$4.39. An eighteen ounce bag costs \$2.79. Find the better buy based on unit

21b.= 3202

1802

$$4.39 \div 32 = .1371$$

2.79 - 18 = .155

BO.16/02

	13) Which of these trail mix recipes is more "chocolaty" (more chocolate per total ounces)? Explain your reasoning	
	Trail Mix A 12 oz cheerios 15 oz raisins 8 oz M&M's Trail Mix B 26 oz cheerios 14 oz raisins 12 oz M&M's	
_	Choc 8 12 mans 35 52	
	. 2285 . 2307	
	. 23 7.22	
	15)Use the process of dimensional analysis to convert 45 km/m to meters per second.	
	45 km 1000 m . 1 min 1 min 1 km 60 sec.	
	45(1000) = 45000 60 60	
	= (750 m/sec) [60 sec = 1 min 1000 m = 1 km	

