

Name: _____

Date: _____

Period: _____

Unit 3: Ratios, Rates, Unit Rates and Proportional Relationships

Quiz Review

Key

1. Be able to define the following words: ratio, rate, unit rate and proportion.

Directions: Write a ratio or rate for each of the situations. They must be simplified.

2. Compare the dogs to all animals.
10 cats, 12 fish, 8 birds, and 15 dogs

$$\frac{\text{Dogs}}{\text{Animals}} = \frac{15}{45} \div \frac{15}{15} = \frac{1}{3}$$

10
12
8
15
45

3. Compare the red candies to green candies.
12 yellow candies, 12 red candies
10 green candies, 28 purple candies

$$\frac{\text{Red}}{\text{Green}} = \frac{12}{10} \div \frac{2}{2} = \frac{6}{5}$$

4. Find the unit rate of dollars per hour.
Sue makes \$480 in 5 hours.

$$\frac{\$}{\text{hr}} = \frac{\$480}{5} \div \frac{1}{1} = \$96$$

\$96 per hour

Directions: Simplify the complex fractions.

5. Find the unit rate of heartbeats per second
Trent's heart beats 255 times in 3 minutes.

$$\frac{\text{heartbeats}}{\text{Seconds}} = \frac{255}{180} \div \frac{180}{180} = \frac{17}{12}$$

60 sec per 1 min so $3 \cdot 60 = 180$

≈ 1.416 heartbeats per 1 sec

6. Eli runs $\frac{4}{5}$ of a mile in $4\frac{2}{3}$ minutes.

Write a ratio that compares the miles to the number of minutes.

$$\frac{\text{miles}}{\text{min.}} = \frac{4}{5} \div \frac{4\frac{2}{3}}{1} = \frac{4}{5} \div \frac{14}{3} = \frac{4}{5} \cdot \frac{3}{14} = \frac{12}{70} = \frac{6}{35}$$

$\frac{6}{35}$ mile per 1 min

Directions: Determine if the following ratios are proportional.

8. $\frac{336}{72} = \frac{360}{8}$

NO

7. $10\frac{2}{5}$ liters of water fills $\frac{1}{10}$ of a fish pond.

Write a ratio that compares the fish pond to the amount of water.

$$\frac{\text{fish pond}}{\text{Water}} = \frac{1}{10} \div \frac{10\frac{2}{5}}{10\frac{2}{5}} = \frac{1}{10} \div \frac{52}{5} = \frac{1}{10} \cdot \frac{5}{52} = \frac{1}{104}$$

$\frac{1}{104}$ of the fish pond is filled by 1 liter Water.

9. $\frac{320}{10} = \frac{320}{80}$

yes

Directions: Solve each proportion, for the given variable. Show your work!!! It is an equation.

$$10. \frac{4}{15} = \frac{y}{45}$$

$$\frac{15y}{15} = \frac{180}{15}$$

$$y = 12$$

$$11. \frac{2}{21} = \frac{4}{c}$$

$$\frac{2c}{2} = \frac{84}{2}$$

$$c = 42$$

$$12. \frac{15}{z} = \frac{8}{20}$$

$$\frac{8z}{8} = \frac{300}{8}$$

$$z = 37.5$$

Directions: Determine which product is a "Better Buy" based on the unit rates. Show ALL work in an organized manner. Write your answer in a sentence.

13.

Sunscreen	10 oz.	32 oz.	80 oz.
Cost	\$1.30	\$2.88	\$8.80

$$\frac{\text{Cost}}{\text{oz}}$$

$$\frac{1.30}{10}$$

$$\frac{2.88}{32}$$

$$\frac{8.80}{80}$$

$$.13 \text{ per oz}$$

$$.09 \text{ per oz}$$

$$.11 \text{ per oz}$$

Sentence: The better buy is 32oz for \$2.88 at 9¢ per oz.
Your sentence should include the price per oz.

14. Callie needs to buy wrapping paper. Hallmark paper is \$2.59 for 5 yards. Kirkland wrapping paper is \$5.25 for 15 yards. Creative's paper is \$3.79 for 11 yards. Order the brand by least expensive to most expensive

Hallmark

$$\frac{\$2.59}{5 \text{ yds}} = .518$$

Kirkland

$$\frac{5.25}{15} = .35$$

Creative

$$\frac{\$3.79}{11} = .3445$$

Sentence: Creative, Kirkland, Hallmark