

Name _____

Date _____

Mr. Tallman

Review for Quiz 4 - Ratios and Proportions (Lessons 21 - 27)

1) Lauren jogs at a rate of 2 miles every $\frac{2}{5}$ of an hour. What is her unit rate in miles per hour?

A) 0.4 mi/hr

B) 5 mi/hr

C) 2 mi/hr

D) 10 mi/hr

Handwritten work for Question 1:
 $\frac{mi}{hr} = \frac{2}{\frac{2}{5}} = \frac{2 \cdot 5}{2} = 5$
 $\frac{2}{\frac{2}{5}} = \frac{2 \cdot 5}{2} = 5$

2) The tables below show the number of pages that several students read over a four day period. Which table shows a proportional relationship?

~~A~~

| | | | | |
|--------------------|----|----|----|----|
| Number of Days x | 1 | 2 | 3 | 4 |
| Total Pages y | 16 | 24 | 32 | 40 |

Handwritten work for Table A:
 $\frac{y}{x} = \frac{16}{1} = 16$
 $\frac{24}{2} = 12$

B

| | | | | |
|--------------------|----|----|----|----|
| Number of Days x | 1 | 2 | 3 | 4 |
| Total Pages y | 12 | 24 | 36 | 48 |

Handwritten work for Table B:
 $\frac{y}{x} = \frac{12}{1} = 12$
 $\frac{24}{2} = 12$
 $\frac{36}{3} = 12$
 $\frac{48}{4} = 12$

~~C~~

| | | | | |
|--------------------|----|----|----|----|
| Number of Days x | 1 | 2 | 3 | 4 |
| Total Pages y | 15 | 20 | 25 | 30 |

Handwritten work for Table C:
 $\frac{y}{x} = \frac{15}{1} = 15$
 $\frac{20}{2} = 10$

~~D~~

| | | | | |
|--------------------|---|----|----|----|
| Number of Days x | 1 | 2 | 3 | 4 |
| Total Pages y | 8 | 16 | 27 | 36 |

Handwritten work for Table D:
 $\frac{y}{x} = \frac{8}{1} = 8$
 $\frac{16}{2} = 8$
 $\frac{27}{3} = 9$

3) An elevator moves at a constant speed of 20 feet per second. If the elevator travels for 3.5 seconds, how many feet has the elevator traveled?

Handwritten work for Question 3:
 $\frac{ft}{Sec} = \frac{20 ft}{1 Sec} = \frac{x}{3.5 Sec}$
 $x = 70 ft$

A) 3.5 feet

B) 23.5 feet

C) 70 feet

D) 5.7 feet

4) Two pounds of dried cranberries cost \$5.04, 3 pounds of dried cranberries cost \$7.56, and 7 pounds of dried cranberries cost \$17.64. What is the unit price?

Handwritten work for Question 4:
 $\frac{\$}{lbs} = \frac{\$5.04}{2} = \frac{\$2.52}{1 lb}$
 $\frac{\$7.56}{3} = \frac{\$2.52}{1 lb}$
 $\frac{\$17.64}{7} = \frac{\$2.52}{1 lb}$

\$2.52 per pound

5) Write an equation ($y = kx$) to represent the proportional relationship described in question #4. $y = 2.52x$

6) In a brownie recipe, for every $\frac{1}{6}$ of a cup of flour needed, $\frac{3}{5}$ of a cup of sugar is needed. How many cups of flour is needed for every cup of sugar? (HINT: Find the unit rate)

$$\frac{\text{flour}}{\text{sugar}} = \frac{\frac{1}{6}}{\frac{3}{5}} = \frac{1}{6} \cdot \frac{5}{3} = \frac{5}{18}$$
 of a cup of flour

7) A satellite travels $29\frac{1}{2}$ miles every $4\frac{1}{2}$ seconds. What is the unit rate of speed?

- A) $6\frac{21}{26}$ miles per second B) $29\frac{1}{2}$ miles per second $\frac{\text{mi}}{\text{Sec}}$
- C) $33\frac{5}{6}$ miles per second D) $127\frac{5}{6}$ miles per second.
- $\frac{59}{2} \div \frac{9}{2} = \frac{59}{9} = \frac{65}{9}$
 $\frac{59}{2} \div \frac{9}{2} = \frac{59}{9} = \frac{65}{9}$
 $\frac{59}{2} \div \frac{9}{2} = \frac{59}{9} = \frac{65}{9}$

8) The table below shows the cost of downloading apps to a smartphone.

| | | | | | | |
|---------------------|-----|---|----|----|----|----|
| Number of Downloads | x | 2 | 4 | 5 | 6 | 10 |
| Total Cost (\$) | y | 6 | 12 | 15 | 18 | 30 |

A) Is this a proportional relationship? Show all work.

$\frac{6}{2} = \frac{3}{1}$ $\frac{12}{4} = \frac{3}{1}$ $\frac{15}{5} = \frac{3}{1}$ $\frac{18}{6} = \frac{3}{1}$ $\frac{30}{10} = \frac{3}{1}$

Yes!

B) If so, what is the constant of proportionality? $k = 3$

C) What does the constant of proportionality represent in the context of the situation?

It costs \$3 per app.

D) Write an equation to represent this situation. $y = 3x$

9) Michael reads 12 pages of a book in 18 minutes, 8 pages in 12 minutes, and 20 pages in 30 minutes.

A) Is this a proportional relationship? Show all work.

$\frac{\text{Pgs}}{\text{min}}$ $\frac{12}{18} = \frac{2}{3}$ $\frac{8}{12} = \frac{2}{3}$ $\frac{20}{30} = \frac{2}{3}$ Yes!

B) If so, what is the constant of proportionality? $\frac{2}{3}$

C) What does the constant of proportionality represent in the context of the situation?

Michael reads $\frac{2}{3}$ of a page in one minute.

D) Write an equation to represent this situation. $y = \frac{2}{3}x$

10) The table below shows the relationship between the number of cars sold and the money earned for a car salesperson. Is this a proportional relationship? Show all work and explain.

| Number of Cars Sold x | Money Earned y |
|-------------------------|------------------|
| 1 | 250 |
| 2 | 600 |
| 3 | 950 |
| 4 | 1076 |
| 5 | 1555 |

$\frac{y}{x}$ $\frac{250}{1} = 250$ $\frac{600}{2} = 300$

Not proportional!

The ratios are not constant.

11) Brand A pasta sauce weighs 26 ounces and costs \$4.99. Brand B pasta sauce weighs 32 ounces and costs \$5.79.

A) Which brand of pasta sauce is the better buy? Show all work.

$\frac{\$}{\text{oz}}$ $\frac{4.99}{26} = \frac{\text{Brand A}}{102}$

$\frac{5.79}{32} = \frac{\text{Brand B}}{102}$

Better buy.

B) Explain your answer from part A.

Brand B is the better buy because brand B's unit price is lower.

