

Review for Test 3 - Ratios and Proportions (Lessons 21 - 30)

1-4: Determine if the following is a rate or a unit rate.

- 1) \$120 for 3 hours rate 2) 10 students per class unit rate
 3) \$25 per package unit rate 4) 35 miles per $\frac{1}{2}$ hour rate

5) A grocery store sells a 9-pack of bottled water for \$4.50 and a 12 pack of water for \$6.89. Find the unit price of each and determine which is the better buy.

$\frac{\$}{\text{amount}}$

$\frac{\$4.50}{9} = \frac{\$0.50}{1}$ $\frac{\$6.89}{12} = \frac{\$0.57}{1}$

9-pack is the better buy!

6) Mrs. Jones can read 18 books in 8 days. If she continues to read at this rate how many books can she read in 20 days?

$\frac{\text{books}}{\text{days}}$

~~$\frac{18}{8} = \frac{x}{20}$~~ ~~$8x = 360$~~

$x = 45 \text{ books}$

7) Jim ran $5\frac{1}{2}$ miles in $\frac{3}{4}$ of an hour. What is his unit rate in miles per hour?

$\frac{\text{mi}}{\text{hrs}}$

$\frac{5\frac{1}{2}}{\frac{3}{4}} = \frac{11}{2} \div \frac{3}{4} = \frac{11}{2} \cdot \frac{4}{3} = \frac{44}{6} = 7\frac{2}{6} = 7\frac{1}{3} \text{ miles per hour}$

8) Maggie rides her bike at a constant rate. The constant of proportionality that shows the rate at which Maggie rides her bike is $k = 5$. What does that mean in the context of the situation?

The amount of miles Maggie rides per hour.

9) True or False: The point (0, 0) will be on the graph of any proportional relationship.

True

10) The point (1, k) represents the unit rate on the graph of any proportional relationship.

(constant of proportionality)

11) Write an equation ($y = kx$) to represent the table below.

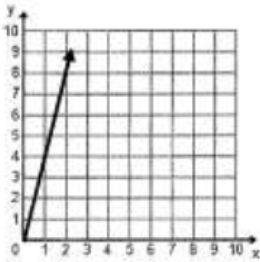
x	16	12	4
y	4	3	1

$$\frac{y}{x} = \frac{4}{16} = \frac{1}{4} \text{ or } 0.25$$

Equation: $y = \frac{1}{4}x$ or $y = 0.25x$

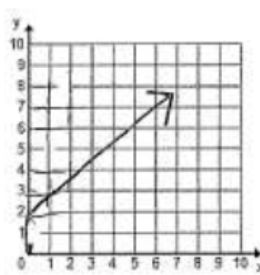
12) Determine whether or not the following graphs represent two quantities that are proportional to each other. Explain.

a)



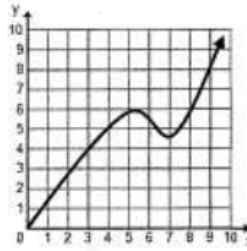
Proportional b/c the line is straight and passes through the origin.

b)



Not Proportional b/c the line does not start at the origin.

c)



Not Proportional b/c the line is not straight

13) The fee for ride tickets at a carnival is shown in the table below.

x	Tickets	5	10	15	20
y	Fee (\$)	4.75	9.50	14.25	19.00

A) Determine if this is a proportional relationship. Explain why or why not.

$$\frac{y}{x} = \frac{4.75}{5} = \frac{0.95}{1} \quad \frac{9.50}{10} = \frac{0.95}{1} \quad \frac{14.25}{15} = \frac{0.95}{1} \quad \frac{19}{20} = \frac{0.95}{1}$$

Proportional b/c all ratios are constant.

B) If proportional, write what the constant of proportionality means in the context of the situation.

It costs \$0.95 per ticket.

C) Write an equation to represent the situation. $y = 0.95x$

D) Using the equation, determine how many tickets you can buy for \$33.25. Show all work.

$$y = 0.95x$$

$$33.25 = 0.95x$$

$$\frac{33.25}{0.95} = \frac{0.95x}{0.95}$$

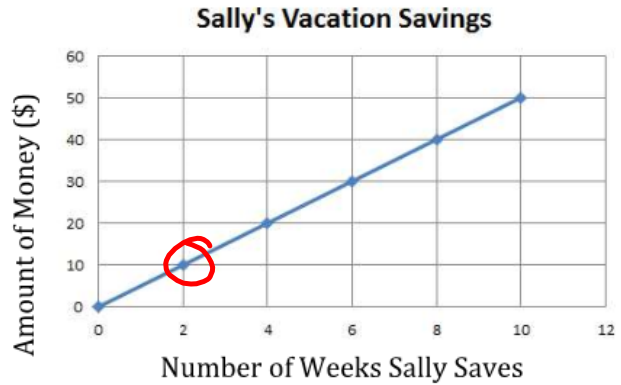
$$x = 35 \text{ tickets}$$

14) Sally got a job after school and put what she earned into a savings account for summer vacation.

A) Find the constant of proportionality.

Show all work.

$$\frac{y}{x} \text{ (2, 10)} \quad \frac{10}{2} = 5$$



B) Write an equation to represent this proportional relationship.

$$y = 5x$$

C) Explain what the point (6, 30) means in the context of the problem.

Sally saves \$30 in 6 weeks.

15) John runs 2.6 miles every half hour. What is her unit rate?

$$\frac{\text{mi}}{\text{hrs}}$$

$$\frac{2.6}{\frac{1}{2}}$$

$$\frac{2.6}{\frac{1}{2}} = \frac{2.6 \cdot 2}{\frac{1}{2} \cdot 2} = \frac{5.2}{1}$$

5.2 miles in 1 hour

16) It takes Sean 2 hours to drive 100 miles and 3 hours to drive 150 miles. Write an equation to show the proportional relationship between miles and hours. Show all work.

$$\frac{y}{x} \frac{\text{mi}}{\text{hrs}}$$

$$\frac{100 \text{ mi}}{2 \text{ hrs}} = \frac{50 \text{ mi}}{1 \text{ hr}}$$

$$y = 50x$$

17) In a baseball game, Dan has 30 hits in 105 at-bats and James has 10 hits in 35 at-bats. Do these ratios form a proportion? Show all work and explain.

Dan

$$\frac{30 \text{ hits}}{105 \text{ at-bats}} = \frac{.286}{1}$$

James

$$\frac{10 \text{ hits}}{35 \text{ at-bats}} = \frac{.286}{1}$$

Proportional
b/c the unit rates are equal.