

Ratios, Rates, and Proportional Relationships STUDY GUIDE

Name Key
 $\frac{13}{24}$
 ~~$\frac{13}{24}$~~

You must show all work that you typed into your calculator for credit.

1. In a certain area, there are 26 stores to 48 restaurants. Write the ratio of houses to businesses as a fraction in simplest form. Then explain its meaning.

$\frac{26}{48} = \frac{13}{24}$ For every 13 stores there are 24 restaurants

2. On his fruit stand, Mr. Roberts has 12 papayas, 21 star fruits, 27 mangos, and 18 strawberries. What is the ratio of the number of papayas to the total number of pieces of fruit? Write the ratio in all 3 forms.

$\frac{12}{78} = \frac{6}{39} = \frac{2}{13}$

2. $\frac{2}{13}$
 $\frac{2}{13}$
 2 to 13

Write two unit ratios for each scenario.

3. 210 heartbeats in 30 seconds $\frac{210 \text{ hb}}{30 \text{ s}} = \frac{7 \text{ hb}}{1 \text{ s}} = \frac{1 \text{ hb}}{1/7 \text{ s}}$

3. $\frac{7}{1}$, $\frac{1}{1/7}$

4. 24 puzzles in 4 hours $\frac{24 \text{ P}}{4 \text{ hr}} = \frac{6 \text{ P}}{1 \text{ hr}} = \frac{1 \text{ P}}{1/6 \text{ hr}}$

4. $\frac{6}{1}$, $\frac{1}{1/6}$

5. 84 meters in 7 seconds $\frac{84 \text{ m}}{7 \text{ s}} = \frac{12 \text{ m}}{1 \text{ s}} = \frac{1 \text{ m}}{1/12 \text{ s}}$

5. $\frac{12}{1}$, $\frac{1}{1/12}$

Use the ratio table given to solve the problem.

6. Ms. Sims traveled to 24 countries in 72 days. At this rate, how many countries would she travel to in 60 days?

Countries	24	$\div 12$ 2	20
Days	72	$\div 12$ 6	60

6. 20

7. Determine if the rates \$156 raised for washing 26 cars and \$252 raised for washing 36 cars are equivalent. Explain your reasoning.

$\frac{\$156}{26} = \frac{\$6}{1}$ $\frac{\$252}{36} = \frac{\$7}{1}$

7. NO, $\$6 \neq \7

8. Dylan read 12 pages of a novel in 5 minutes. At the same rate, how many pages can he read in 7 minutes? Show your work.

$\frac{12 \text{ p}}{5 \text{ min}} = \frac{84}{35 \text{ min}} = \frac{16.8}{7}$

8. 16.8 pages
 $16 \frac{4}{5}$

9. Erica can bike 18 miles in 4 hrs. How fast did she bike in miles per hour? Show your work.

$\frac{18 \text{ mi}}{4 \text{ hr}} = \frac{4.5}{1}$

9. 4.5 mi/hr

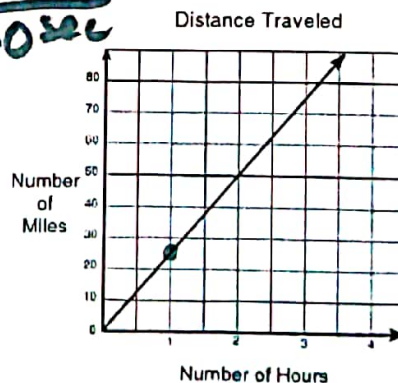
10. Tina walks at a rate of 150 feet per minute. How many feet per second does Tina walk? Show your work.

$\frac{150 \text{ ft}}{1 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{150 \text{ ft}}{60 \text{ sec}}$

10. 2.5 ft/sec

11. What does the point (1, 25) on the graph represent? (1 pt)

(1, 25)



11. For every 1 hour there are 25 miles

12) The cost of ordering tacos is shown in the table below.

Hamburgers	2	3	4	5
Cost \$	5	10	15	20

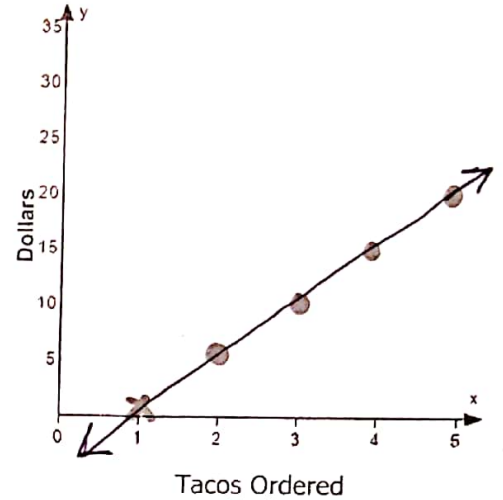
a) Does the table show a proportional relationship? Explain.

no, not all = to
\$2.50 per hamburger

b) Graph the data from the table to the right.

c) How does the graph support your answer from part a?

yes, straight but NOT
thru origin



13) Complete the ratio table to show a constant rate of change.

Hours	Pages Read
4	100

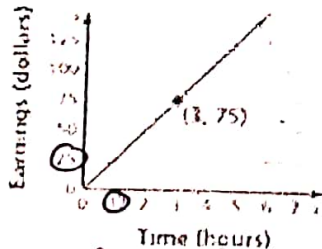
1 25
2 50
3 75
4 100
8 200 ✓

14) Sally and Maggie work at the hardware store. The wages earned for the weekend are shown in the table and graph below. Who gets paid more per hour? Show your work and explain how you determined your answer.

Maggie's Earnings

Work and explanation:

Sally's Earnings	
Time (h)	Earnings(\$)
2	52
4	104
6	156



Sally gets paid more.
\$26/hr

$$\frac{\$52}{2\text{hr}} = \$26/\text{hr}$$

$$\$25/\text{hr}$$

15) Determine if the relationship is a proportional relationship. Write "proportional" or "nonproportional" and explain your reasoning.

Hours	5	10	15	20
Cost \$	75	150	210	280

15. nonproportional $\frac{1}{15} \neq \frac{1}{14}$

$$\frac{1}{15} = \frac{1}{15} \quad \frac{1}{14} \neq \frac{1}{14}$$

Bonus) 65 centimeters per second is equivalent to how many meters per minute? _____
(2 points)

$$\frac{65\text{cm}}{1\text{sec}} \cdot \frac{1\text{m}}{100\text{cm}} \cdot \frac{60\text{sec}}{1\text{min}} = \frac{3900\text{m}}{100\text{min}} = 39\text{m}/\text{min}$$