

Warm Up Grade 8W

April 4, 2016



Test on Unit 5 April 6 (Wednesday)



1) In the NHL, the ratio of shots taken to the goals scored by an all-star player is 9:2. The player has a 50-goal season. How many shots did he take?

Shot : goals
 $\times 25 \left(\begin{array}{l} 9 : 2 \\ x : 50 \end{array} \right) \times 25$
 225

He took 225 shots

2) The scale on a map of Manitoba is 1 : 50 km. This means 1 cm on the map represents 50 km actual distance. The map distance between two towns is 3.4 cm. What is the actual distance between the two towns?

Map : Real
 $\times 3.4 \left(\begin{array}{l} 1 \text{ cm} : 50 \text{ km} \\ 3.4 \text{ cm} : x \end{array} \right) \times 3.4$
 170 km

The distance between the two towns is 170 km



Extra Practice 8

$$1. a) x:8 = 9:24$$

$\div 3 \quad \div 3$

$$x = 3$$

$$b) y:15 = 7:3$$

$\times 5 \quad \times 5$

$$y = 35$$

$$c) a:8 = 9:4$$

$\times 2 \quad \times 2$

$$a = 18$$

$$d) p:12 = 15:10$$

$$p:12 = 3:2$$

$\times 6 \quad \times 6$

$$p = 18$$

$$e) b:5 = 18:6$$

$= 9:3$

$$b:5 = 3:1$$

$\times 5 \quad \times 5$

$$b = 15$$

$$f) t:11 = 6:33$$

$\div 3 \quad \div 3$

$$t = 2$$

$$g) 2:7 = 20:d$$

$\times 10 \quad \times 10$

$$d = 70$$

$$h) 34:85 = f:5$$

$\div 17 \quad \div 17$

$$f = 2$$

$$i) 45:30 = 6:s$$

$\div 5 \quad \div 5$

$$9:6 = 6: \underline{\quad}$$

$$3:2 = 6: \underline{4}$$

$$s = 4$$

$$j) 9:36 = c:8$$

$\div 3 \quad \div 3$

$$3:12 = \underline{\quad}:8$$

$$1:4 = 2:8$$

$\times 2 \quad \times 2$

$$c = 2$$

2. Preferred X to Interviewed = P : I

$$7 : 8 = \underline{\quad} : 216$$

$\times 27$ $\times 27$ $\xrightarrow{\quad}$ 189

189 people preferred Brand X

3. Attended : Total = A : T

$$4 : 7 = a : 112$$

$\times 16$ $\times 16$ $\xrightarrow{\quad}$ $a = 64$

64 students attended the dance

4. Boards : Skis = Boards : Skis

$$5 : 3 = b : 126$$

$\times 42$ $\times 42$ $\xrightarrow{\quad}$ $b = 210$

210 snowboards were rented

1cm = 40

$$5. \text{ Blueprint: actual} = B : a$$

$$1 : 40 = \underline{\quad} : 3.4$$

$\xrightarrow{\times 40}$ $\div 40$

l : w

$$3.4 : 4.8$$

$$\div 40 \quad \div 40$$

$$0.025 : 1 = \underline{0.085} : 3.4$$

$\times 3.4$ $\times 3.4$

$$0.085\text{m} : 0.12\text{m}$$

$$8.5\text{cm} : 12\text{cm}$$

$$\text{Blueprint: actual} = B : a$$

$$1 : 40 = \underline{\quad} : 4.8$$

$$0.025 : 1 = \underline{0.12} : 4.8$$

$\times 4.8$ $\times 4.8$

The room on the blueprint would be
 0.085 : 0.12 or 8.5cm by 12cm

b. length : width = length : width

$$5 : 3 = \underline{75} : 45$$

$\times 15$ $\times 15$

The length of the painting is 75cm

7. a) trumpet: clarinet = t : c

$$\begin{array}{ccc} 6 : 5 = \underline{\quad} : 10 \\ \times 2 \quad \times 2 \quad \quad \quad \times 2 \end{array}$$

12 students take trumpet

b) pian: trumpet = p : t

$$\begin{array}{ccc} 8 : 3 = \underline{\quad} : 12 \\ +4 \quad \times 4 \quad \quad \quad \times 4 \end{array}$$

32 students take piano

8. map: actual = map: actual

$$\begin{array}{ccc} 1 : 40 = \underline{\quad} : 340 \\ 0,5 : 20 = \underline{\quad} : 340 \\ \times 17 \quad \times 17 \quad \quad \quad \times 17 \end{array}$$

On the map, the distance is 8.5 cm.

Rates and Ratios



A ratio is a comparison between two things.

Rate is the relationship between two different units of measurement, such as meters and seconds, or dollars and hours.

A unit rate is when the second term in the ratio is always 1.

Rates are often written using a slash / which means per.

Ex: km/hr means kilometers per hour
beats/min means heartbeats per minute
\$/hr mean the amount of money per hour

The slash (/) or term per means for every one.

Canadian speed skater Jeremy Wotherspoon, of Red Deer, Alberta, set the world record for the 500 m at the 2004 World Cup in Italy. He skated at an average speed of 14.44 m/s. The white-tailed deer can run at speeds of up to 30 km/h.

Who is faster? How can you find out?

watch units
what is this in m/s?

Remember 1 km = 1000 m

$$1 \text{ hr} = \underset{\times 60}{60} \text{ min} = \underset{\times 60}{3600} \text{ sec}$$

Jeremy
14.44 m/s

Deer
30 km/h



$$\frac{30\,000 \text{ m}}{3600 \text{ s}}$$

Runs

faster

(covers more distance in same time)

$$8.\bar{3} \text{ m/s}$$

Not on test

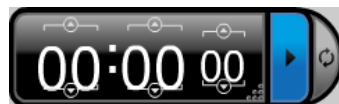
Speed skater
14.4 m/s

1 hr
→ 60 min × 60 sec
3600 s

The speed skater
is faster

Deer
30 km
hr

30 000 m
3600 sec
8.3 m/sec



When we compare two things with different units, we have **rate**.

Here are some rates:

- We need 5 sandwiches for every 2 people.
- Oranges are on sale for \$1.49 for 12.
- Gina earns \$4.75 per hour for baby-sitting.
- There are 500 sheets on one roll of paper towels.

The last two rates are **unit rates**.

Unit Rate compares a quantity to 1 unit.

$$\begin{array}{r} 5 \text{ sand} / 2 \text{ people} \\ \div 2 \quad \quad \div 2 \\ \hline 2.5 \text{ sand} / \text{person} \end{array}$$

*Rates cannot be expressed as percents since they compare two different quantities.

Part a) Express each unit rate using symbols.

1. Serena walks 4 km in 1 hr. 4 km/hr
2. Sanjit reads 3 books in 1 week. 3 books/wk
3. The tap drips 25 drops in 1 min. 25 drops/min

Part b) Express as a unit rate. (2nd term must be 1)
on

1. Betty drives her car 150 km in 2 h. 75 km/h
 $\div 2 \quad \div 2$

2. The helicopter travels 180 km in 3 h. 60 km/hr
 $\div 3 \quad \div 3$

Which sentences are ratios? Which sentences are rates?
How do you know?

1. The cost of pecans is \$10.89 for each kilogram.

Rate (different units)

2. Three out of every seven people are wearing glasses.
3 people out of 7 people

Ratio

3. Mr. Thompson travelled 620 km in 6 h.

Rate

4. Each block of a quilt has 5 red patches, 4 yellow patches, and 6 blue patches.

Ratio

5. In 7 games, the team scored a total of 23 points.

games : points

Ratio

Maria charged \$15 for 3 h of babysitting.

- What is Maria's rate per hour?
- How much does Maria charge for 5 h of babysitting?
- How many hours does Maria have to babysit to earn \$50?

a) $\$15 / 3 \text{ hr}$
 $\div 3 \quad \div 3$
 $\boxed{\$5 / \text{hr}}$

b) $\$5 / \text{hr}$
 $\times 5 \quad \times 5$
 $\$25 / 5 \text{ hr}$

c) $\$5 / \text{hr}$
 $\times 10 \quad \times 10$
 $\$50 / 10 \text{ hr}$



1. A human walks at an average speed of 5 km/h.
What is this speed in meters per second?

Comparing Rates

You can compare rates the same way that you compare ratios;

- Find the unit rate
- or find equivalent rates which have 1 of the terms the same.

Similar to last question on test

Example:

Which is a better deal?

A - 2 apples for \$0.68

or B- 8 apples for \$2.60

METHOD 1

- find the unit rate

$$\begin{array}{r}
 \$0.68 / 2 \text{ apples} \\
 \div 2 \qquad \div 2 \\
 \hline
 \$0.34 / \text{apple}
 \end{array}$$

$$\begin{array}{r}
 B \quad \$2.60 / 8 \text{ apples} \\
 \div 8 \qquad \div 8 \\
 \hline
 0.325 / \text{apple} \\
 \approx 0.33 / \text{apple} \\
 \text{Cheaper}
 \end{array}$$

Or METHOD 2

- change both to the cost for 8 apples

$$\begin{array}{r}
 \$0.68 / 2 \text{ apple} \\
 \times 4 \qquad \times 4 \\
 \hline
 \$2.72 / 8 \text{ apples}
 \end{array}$$

$$\begin{array}{r}
 \$2.60 / 8 \text{ apples} \\
 \text{Cheaper}
 \end{array}$$

Suppose I want 100 apples

$$\begin{array}{r}
 0.68 / 2 \text{ apple} \\
 \times 50 \qquad \times 50 \\
 \hline
 \$34 / 100 \text{ apples}
 \end{array}$$

$$2.60 / 8 \text{ apple}$$

Can I buy
12 pack
60 buy
13 pack

$$\begin{array}{r}
 2.60 \\
 \times 13 \\
 \hline
 33.80
 \end{array}$$

Class/Homework

Page 303-305

#5(A,B), #6(A,B), #8(A~~B~~), #11a,

Page 308



^{bc} #1, ^{bc} #2, ^{bc} #3, #4, #5a, #11, #12, #20(A,B)

Test

Wednesday April 6 on Unit 5 Percents, Ratios and Rates

