Warm Up Grade 8

Mar 23, 2018

Test Wed. Apr 4

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?

Shots : goals

9 : 2 ×25

225 : 50

He took 225 shots.

2) The scale on a map of Manitoba is 1 : 5 000 000. This means 1 cm on the map represents 5 000 000 cm actual distance. The map distance between two towns is 3.4 cm. What is the actual distacnce between the two towns?

Map : Actual

1 cm : 5 000 000 cm ×3.4

3.4 cm : 17 000 000 cm

17 000 000 cm = 170 000 m = 170 km

→ The actual distance is 170 km

Extra Practice 8

1. a) $x : 8 = 9 : 24$ (÷3, ÷3)

$x = 3$

b) $y : 15 = 7 : 3$ (×5, ×5)

$y = 35$

c) $a : 8 = 9 : 4$ (×2, ×2)

$a = 18$

d) $p : 12 = 15 : 10$

$p : 12 = 3 : 2$ (×6, ×6)

$p = 18$

e) $b : 5 = 18 : 6$

$= 9 : 3$

$b : 5 = 3 : 1$ (×5, ×5)

$b = 15$

f) $t : 11 = 6 : 33$ (÷3, ÷3)

$t = 2$

g) $2 : 7 = 20 : d$ (×10, ×10)

$d = 70$

h) $34 : 85 = f : 5$ (÷17, ÷17)

$f = 2$

i) $45 : 30 = 6 : s$ (÷5, ÷5)

$9 : 6 = 6 : \_\_$

$3 : 2 = 6 : 4$ (×2, ×2)

$s = 4$

j) $9 : 36 = c : 8$ (÷3, ÷3)

$3 : 12 = \_\_ : 8$

$1 : 4 = 2 : 8$ (×2, ×2)

$c = 2$

2. Preferred X to Interviewed = P : I

$7 : 8 = \_\_\_\_ : 216$

$\times 27 \quad \times 27$

189

189 people preferred Brand X

3. Attended : Total = A : T

$4 : 7 = a : 112$

$\times 16 \quad \times 16$

$a = 64$

64 students attended the dance

4. Boards : Skis = Boards : Skis

$5 : 3 = b : 126$

$\times 42 \quad \times 42$

$b = 210$

210 snowboards were rented

5. Blueprint : actual = B : a

1 : 40 = ___ : 3.4

×40 ÷40

0.025 : 1 = 0.085 : 3.4

×3.4 ×3.4

Blueprint : actual = B : a

1 : 40 = ___ : 4.8

0.025 : 1 = 0.12 : 4.8

×4.8 ×4.8

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

6. length : width = length : width

5 : 3 = ___ : 45

×15 ×15

75

The length of the painting is 75 cm

7. a) trumpet : clarinet = t : c

6 : 5 = ___ : 10

×2 ×2 12

12 students take trumpet

b) pian : trumpet = p : t

8 : 3 = ___ : 12

+4 ×4 32

32 students take pians

8. map : actual = map : actual

1 : 40 = ___ : 340

0,5 : 20 = ___ : 340

×17 ×17 8.5

On the map, the distance is 8.5cm.

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 hr = 60 min = 3600 sec
×60

Deer
30 km / 1 hr

1 km = 1000 m
×30
30 km = 30 000 m

1 hr = 3600 s

$\frac{30\text{ km}}{1\text{ hr}} = \frac{30\ 000\text{ m}}{3600\text{ s}}$

Deer

$\frac{30\ 000\text{ m}}{3600\text{ s}} \xrightarrow{\div 3600} \frac{8.\bar{3}\text{ m}}{1\text{ s}}$

Skater

$\frac{14.44\text{ m}}{1\text{ sec}}$

When we compare two things with different units, we have a 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.

*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. 4km / hr

2. Sanjit reads 3 books in 1 week. 3 books / 1 week

3. The tap drips 25 drops in 1 min.

25 drops / min

Part b) Express as a unit rate. (second term is always 1)

1. Betty drives her car 150 km in 2 h. ÷2 ↓ 150 km / 2 h ↓ ÷2

75 km / 1 h

2. The helicopter travels 180 km in 3 h.

180 km / 3 hr

÷3 ÷3

60 km / hr

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

1. The cost of pecans is $10.89 for each kilogram. different units so rate
2. Three out of every seven people are wearing glasses. Ratio people : total people
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 : point

Maria charged $15 for 3 h of babysitting.

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

a) $15 / 3hr ÷3
$5 / 1hr ÷3

$5/h is the unit rate

b) $5 / 1 hr x5
$25 / 5 hr

Maria gets $25 for 5hr.

c) $5 / hr x10
$50 / 10 hr

In order to make $50
Maria must work 10 hr.

Class/Homework

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#5, #6, #7, #8, #11a, ~~#12~~, ~~#13~~

Test

Wednesday April 4 on Unit 5 Percents, Ratios and Rates

To find unit rates, we can use diagrams, tables, and graphs.

A printing press prints 120 sheets in 3 min.

a) Express the printing as a unit rate. (diagram)
b) How many sheets are printed in 1 h?

Use the data in Example 1.
How long will it take to print 1000 sheets?

Time (min)	5	10	15	20	25
Sheets Printed