

Warm up

1 Express each of the following as a ratio.

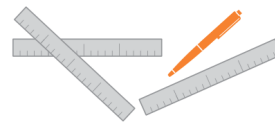
a circles to triangles



b stars to moons



c pens to rulers



2 David has \$4 and Carla has \$7. Find these ratios.

a David's money to Carla's money

b Carla's money to David's money

3 'My pocket money is three times your pocket money', says Gerard to Alison. What is the ratio of:

a i Gerard's pocket money to Alison's?

ii Alison's pocket money to Gerard's?

b Do we know how much pocket money each person receives?

4 Peter can cycle twice as fast as Amy. Find these ratios.

a i Amy's cycling speed to Peter's speed

ii Peter's cycling speed to Amy's speed

b Do we know the cycling speed of each person?



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Check your answers

1 a 2 : 5

b 3 : 2

c 1 : 3

2 a 4 : 7

b 7 : 4

3 a i 3 : 1

ii 1 : 3

b No

4 a i 1 : 2

ii 2 : 1

b No

WALT write ratio amounts as fractions and distribute amounts in a given ratio

Success Criteria I know ..

- Ratio can be written as a fraction
- Convert the units to same values eg mm to mm

Vocab - Distribute - share, divide

Ratio - proportion in which amounts are shared

Convert - transform, change

For each ratio, express the first part as a fraction of the whole.

a 4 : 5

b 1 : 9

c 7 : 2

- a** The ratio 4 : 5 has 9 parts in total. The fraction is $\frac{4}{9}$.
b The ratio 1 : 9 has 10 parts in total. The fraction is $\frac{1}{10}$.
c The ratio 7 : 2 has 9 parts in total. The fraction is $\frac{7}{9}$.

When converting a ratio to a fraction, first find the total number of parts by adding the numbers in the ratio, then put the part you want as a fraction over the total.



- 11** Each ratio shows the number of cats to dogs in a pet shop. For each ratio, express the number of cats as a fraction of the total number of animals.

a 2 : 3

b 4 : 3

c 5 : 4

d 6 : 1

e 8 : 5

f 5 : 7

g 11 : 3

h 2 : 5

Each fraction shows the first part of a ratio as a fraction of the whole. Find the ratio.

a $\frac{2}{3}$

b $\frac{1}{4}$

c $\frac{3}{8}$

- a** For $\frac{2}{3}$, the first part of the ratio is 2.
The second part of the ratio is $3 - 2 = 1$.
The ratio is 2 : 1.
b For $\frac{1}{4}$, the first part of the ratio is 1.
This leaves 3 parts out of a total of 4 parts. The ratio is 1 : 3.
c For $\frac{3}{8}$, the first part of the ratio is 3.
This leaves 5 part out of the total of 8 parts. The ratio is 3 : 5.

The denominator of a fraction is the total number of parts. When converting to a ratio, the numerator of the fraction is the first number and the remaining parts are the second number.



- 12** Each fraction shows the first part of a ratio as a fraction of the whole. Find the ratio.

a $\frac{3}{4}$

b $\frac{1}{5}$

c $\frac{3}{5}$

d $\frac{5}{7}$

e $\frac{4}{5}$

f $\frac{2}{9}$

g $\frac{6}{7}$

h $\frac{5}{9}$

- 13** Flour, water and salt is mixed in the ratio of 4 : 2 : 1 to form playdough.

- a** What fraction of the playdough is water?
b What fraction of the playdough is salt?

Express each of the following as a ratio.

a 7 cm to 3 m

b 73 mL to 2 L

c 3 h to 17 min

- a** Convert 3 m to 300 cm. The ratio is 7 cm to 300 cm or 7 : 300.
b Convert 2 L to 2000 mL. The ratio is 73 mL to 2000 mL or 73 : 2000.
c Convert 3 h to 180 min. The ratio is 180 min to 17 min or 180 : 17.

14 Express each of the following as a ratio.

a 1 m to 1 cm

b 7 mL to 1 L

c 11 s to 1 min

d 3 km to 173 m

e 2 h to 13 min

f 67 m to 1 km

g 3 L to 87 mL

h 1 km to 27 m

i 13 cm to 3 mm

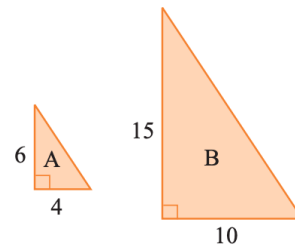
15 In this diagram, what is the ratio of the:

a base of triangle A to the base of triangle B?

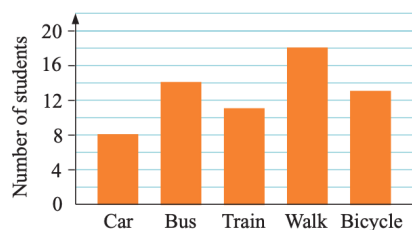
b height of triangle A to the height of triangle B?

c area of triangle A to the area of triangle B?

Hint: Area of a triangle = $\frac{1}{2}b \times h$ or $\frac{b \times h}{2}$.



16 The bar graph represents the results of a survey to determine the method by which students travel to school.



a Find the total number of students surveyed.

b Write as a ratio:

i students travelling by car : students who walk

ii students travelling by bus : total number of students surveyed.

c What fraction of the students surveyed travel to school by train?

d To 1 decimal place, what percentage of these student travels by:

i train?

ii bus?

iii car?



Check your answers

11	a $\frac{2}{5}$	b $\frac{4}{7}$	c $\frac{5}{9}$	d $\frac{6}{7}$ ¹⁰
	e $\frac{8}{13}$	f $\frac{5}{12}$	g $\frac{11}{14}$	h $\frac{2}{7}$
12	a 3 : 1	b 1 : 4	c 3 : 2	d 5 : 2
	e 4 : 1	f 2 : 7	g 6 : 1	h 5 : 4

13 **a** $\frac{2}{7}$ **b** $\frac{1}{7}$

14	a 100 : 1	b 7 : 1000	c 11 : 60
	d 3000 : 173	e 120 : 13	f 67 : 1000
	g 3000 : 87	h 1000 : 27	i 130 : 3

15 **a** 4 : 10 = 2 : 5 **b** 6 : 15 = 2 : 5 **c** 4 : 25

16 **a** 64

b i 4 : 9	ii 7 : 32	c $\frac{11}{64}$
d i 17.2%	ii 21.9%	iii 12.5%