

## Do Now

**1** Express each of the following as a ratio.

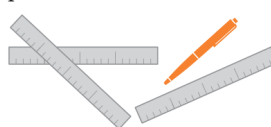
**a** circles to triangles



**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

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

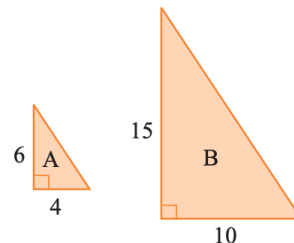
**15** In this diagram, what is the ratio of the:

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

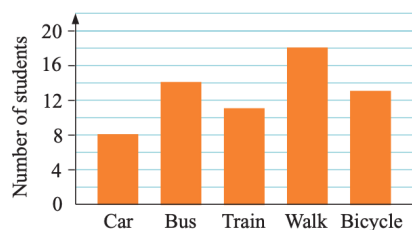
**b** height of triangle A to the height of triangle B?

**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**

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

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

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

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

**16** **a** 64

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