Planner

Ratios

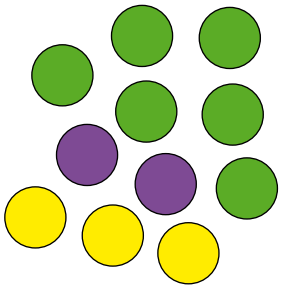
- Understanding the relationship between fractions and ratios
- Simplifying ratios

Keywords

You should know

explanation 1 — online

1 Here is a set of 11 counters.



What proportion of the counters are these colours?

Write your answer as a fraction.

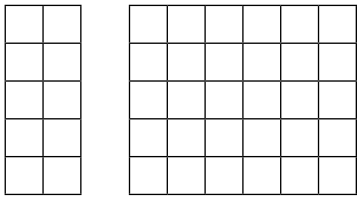
a green **b** purple

c yellow **d** yellow or purple

e green or purple **f** not purple

2 Copy these diagrams.

Colour each diagram so the ratio of shaded area to non-shaded area is 2:3.



3 Here are some animals in a safari park.

a What is the ratio of giraffes to lions?

b What is the ratio of lions to giraffes?

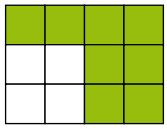
c What proportion of the animals are giraffes?

d One lion escapes. What is the new ratio of lions to giraffes?

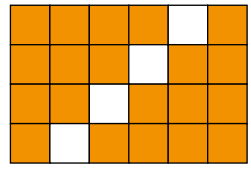
explanation 2 online

4 What proportion of each shape is coloured? Write it as a fraction in its simplest form.

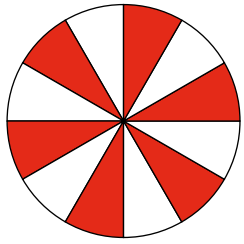
a



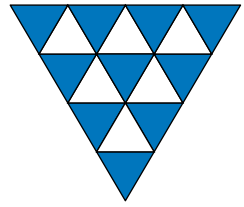
b



c



d



5 Write the ratio of coloured area to non-coloured area for each shape in question **4**.

6 Simplify these ratios.

a 2:4	**b** 3:6	**c** 5:10	**d** 5:15	**e** 4:12
f 6:12	**g** 2:8	**h** 7:14	**i** 4:16	**j** 2:18

7 Simplify these ratios.

a 8:24	**b** 9:27	**c** 15:45	**d** 12:36	**e** 11:66
f 14:56	**g** 28:21	**h** 48:144	**i** 49:63	**j** 54:81

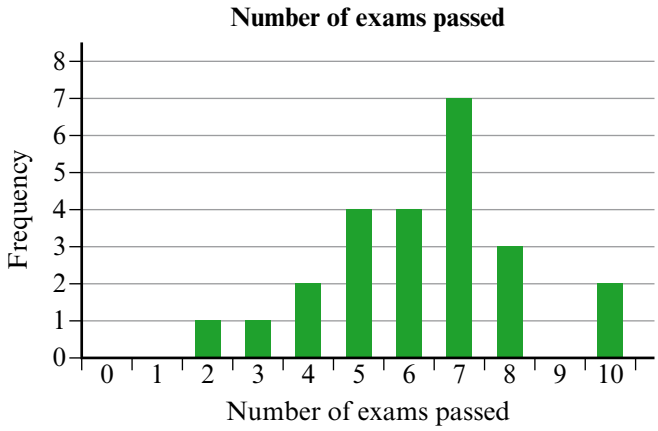
8 Write each ratio in its simplest form.

a 3:12	**b** 27:9	**c** 24:30	**d** 30:25
e 62:31	**f** 24:32	**g** 7:21	**h** 45:30
i 42:56	**j** 120:270	**k** 55:132	**l** 68:51

9 The following pairs of ratios are equivalent. ☐ stands for a number. Find its value for each of these.

a 1:2 = 3:☐	**b** 7:21 = ☐:42	**c** 2:5 = ☐:25
d 15:☐ = 45:18	**e** ☐:9 = 40:72	**f** 6:18 = 2:☐

10 The bar chart shows the number of exams passed by a group of 24 pupils.



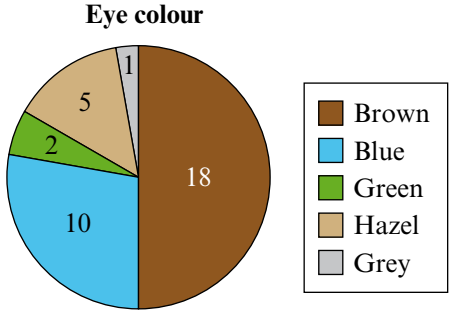
a What proportion of the pupils passed exactly 5 exams?
Give your answer as a fraction in its simplest form.

b What proportion of the pupils passed 5 or more exams?
Give your answer as a fraction in its simplest form.

c What is the ratio of pupils passing 5 exams to pupils passing other amounts?

d What is the ratio of pupils passing 5 or more exams to pupils passing fewer than 5 exams?

11 The pie chart shows the eye colour of a group of 36 people.



a What proportion of the people have hazel eyes?

b What is the ratio of people with hazel eyes to people with other coloured eyes?

c What proportion of the people have either hazel or green eyes?

d What is the ratio of people with green or hazel eyes to people with other coloured eyes?

12 Use the data on eye colour from question **11**.

a What is the ratio of blue to hazel eye colours of the 36 people? Write your ratio in its simplest form.

b What is the ratio blue : brown eyes? Write your ratio in its simplest form.

c Which two eye colours are in the ratio 9 : 1?

explanation 3a | explanation 3b | online

13 These ratios include units. Write each ratio in its simplest form.

a 15 cm : 60 cm **b** 240 m : 480 m **c** 36p : 9p

d 450 ml : 600 ml **e** 18 min : 8 min **f** £3.60 : £1.20

14 Lewis is baking. He needs to use flour and sugar in the ratio 3 : 1.
If he uses 150 g of sugar, how much flour does he need?

15 These ratios involve quantities with different units.

Write both quantities in the same units then write each ratio in its simplest form.

a 10 cm : 1 mm **b** 2 cm : 5 m

c 25 g : 3 kg **d** 97 m : 97 km

e £1.50 : 75p **f** 20 s : 5 min

g 1 km : 200 m **h** 15 kg : 2 tonnes

i 40 mm : 3 cm **j** £1 : 2p

k 16 cm : 1 m **l** 8 mm : 12 cm

m 12 mm : 6 cm **n** 10 min : 3 hours

o 6 mm : 5 m **p** 150 mm : 15 km

60 s = 1 min
60 min = 1 hour
24 hours = 1 day

1000 g = 1 kg
1000 kg = 1 tonne

10 mm = 1 cm
100 cm = 1 m

100p = £1

***16** Work out the missing quantities.

a £2 : □p = 4 : 1 **b** □mm : 15 cm = 1 : 5 **c** 3 kg : □g = 50 : 1

d □cm : 1 m = 2 : 5 **e** 250 g : □kg = 1 : 8 **f** 45p : □p = 3 : 1

g £1.50 : □p = 5 : 1 **h** 0.5 m : □cm = 2 : 1 **i** 1.2 km : □m = 3 : 4

17 Ruby says the ratio of 20p to £2 is 20 : 2 or 10 : 1. Explain why she is wrong.