Ratios – Level 1

- Work with simple ratios and directed proportions
- Recognise and make use of simple scales on maps and drawings

Recap

Try the following….

1) $\frac{1}{7} + \frac{3}{7} = \square$ 2) $\frac{2}{5} + \frac{8}{15} = \square$ 3) $\frac{2}{3} + \frac{1}{4} = \square$

4) $\frac{3}{10} - \frac{1}{10} = \square$ 5) $\frac{11}{24} - \frac{3}{8} = \square$ 6) $\frac{5}{6} - \frac{1}{16} = \square$

What is a Ratio?...

A ratio is a relationship between two or more values.

If one changes, the other changes by the same number of times.

A ratio could look like this:...

Flour	eggs	milk	butter	£
300g :	4 :	100ml :	30g :	6.50

Try out..

1) Write one adult to four children as a ratio.

Try out..

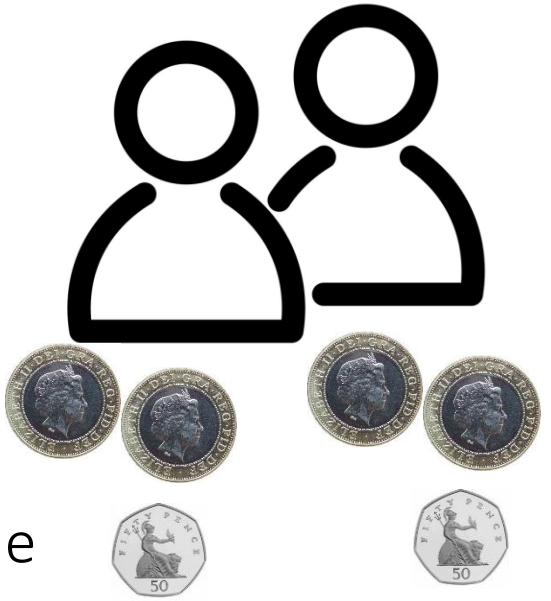
2) Write one movie is £4.99 as a ratio.

Writing Ratios

1) Two red to three green = 2 : 3
2) Eight trees to a field =
3) Thirty pupils to a class
4) Fifty pounds for five tickets
5) Half a cake to seven people
6) Seventy laps to two hours
   fifteen minutes
7) A cake weighing 400g, costs
   ten pounds
8) Mix paint yellow 2 tins, red 3 tins
   and blue 1 tin

Simplifying Ratios

Ratios can be simplified to write them in the easiest (simplest) way using the smallest numbers possible.



New Value	1	£2.50	New Value
Old Value	2	£5.00	Old Value

Here we can simplify two people have £5 between them, to say 1 person (each) has just £2.50…. but this is the same information, nothing has changed. We have just written it using smaller numbers.

Try out… Simplify 18m : 3m

Simplifying Ratios - Practice

Simplify each ratio as much as possible by dividing both numbers by the same amount (like equivalent fractions!)

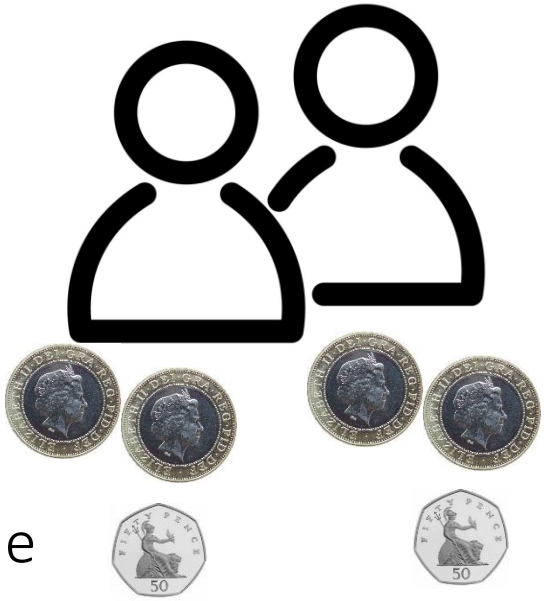
1) 5 : 15
2) 4 : 20
3) 7 : 21
4) 60 : 10
5) 100 : 20

6) £15 : £25
7) 40g : 24g
8) 30p : 50p : 90p
9) £3.40 : £2
10) 5 eggs : 20g butter : 300g sugar

Think!! Divide make both numbers smaller

Finding missing ratio parts

Ratios can be used to find missing parts of information.



New Value	1	???	New Value
Old Value	2	£5.00	Old Value

Think about how we could have found the missing value for how much each person has. What did we need to do to get to that missing value? Correct we needed to look at how the people have changed to work out how the money has changed. The people were halved (1 divided by 2, new divided by old) so the money was also halved.

Finding missing ratio parts - Practice

Use the idea that missing parts can be found by looking at what happens to the other values, to solve the following…

New Value

1)

4	
12	£60

Old Value

2)

	1kg
£9	3kg

3)

16	80
2	

4)

3m	2m
	20m

5)

	210
50	70

6)

100	
300	400

7)

£2	£3
£24	

8)

70g	63g
	9g

Working with Scales

Ratios can be used to help with maps and scales. This time the map (not real) is compared with a 'real' item as a size comparison.

This is called the SCALE

1 : 500

Map : Real

1 : 500 means **anything** measured on the map is x500 times bigger in real life

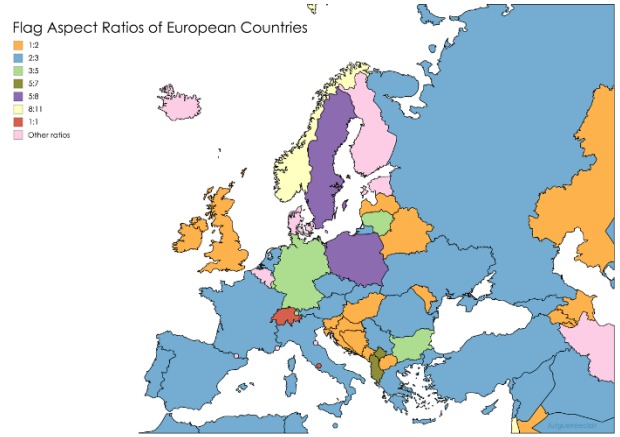
Try out..

If we measure 5cm on the map how far is this in the real world?

Answer: we use the ratio 1:500 and write 5cm: ???

5cm	
1	500

Working with Scales - Practice



Use the scales given to work out how far in real life the distance actually is using the measured amount.

1) 1 : 400 measured 6cm
2) 1 : 700 measured 5cm
3) 1 : 800 measured 10cm
4) 1 : 1000 measured 4cm
5) 1 : 350 measured 20cm

6) 1 : 2000 measured 4.5cm
7) 1 : 5000 measured 2.5cm
8) 1 : 10k measured 3cm
9) 1 : 50k measured 4.5cm
10) 2 : 3k measured 10cm

Exam questions

- 1) A recipe is for 4 fruit scones

200g flour
2 eggs
100ml milk
50g currants

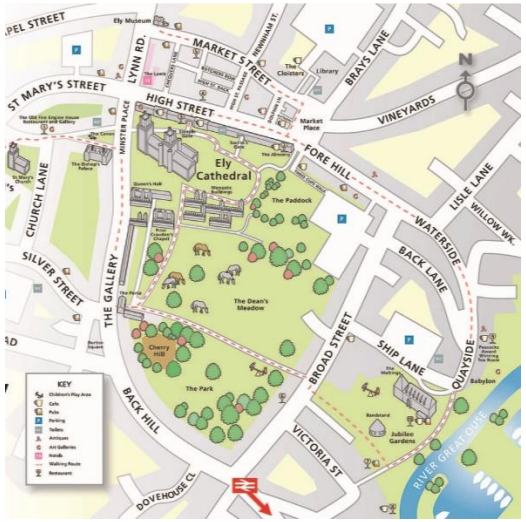
Calculate the amount of flour required to make 6 of these scones

..... 2 marks

Exam questions

- 2) A map shows a scale of 1 : 3,500

Jim measures a distance between two points as 6.5cm away on the map.



Calculate the actual distance Jim may travel in reality between these two points he measured

..... 2 marks

Exam questions

- 3) A picture is shown below with its length and width

The picture is enlarged by a scale factor of 1:4

A new length and width is required for the new frame to go around the new enlarged picture.

Original length = 20cm

Original width = 15cm

Find the new length and width of the enlarged picture using the scale given.

…… 2 marks

Exam questions

- 4) Concrete is mixed as below.

  Sand 3 bags
  Cement 1 bag
  Gravel 4 bags
  Water 50 Litres

  Calculate the amount of concrete produced if 3 bags of cement are used

  ..... 2 marks

Exam questions

- 5) A paint mixed is made from the following colours in the given quantities compared to each other.

RED	WHITE	GREEN
1	3	2

30 tins of paint are actually used for the final mixture. Find how many of each colour was used.

..... 3 marks