

Check out

You should now be able to ...

✓	Describe proportion using fraction notation.	6
✓	Calculate fractional change.	6
✓	Solve problems involving ratios.	7
✓	Solve problems using direct proportion and scale factors.	7
✓	Interpret maps and scale drawings.	7
✓	Solve problems involving proportional reasoning, including financial problems.	7

Test it

Questions

1	6
2, 3	6
4 - 7	7
8, 9	7
10	7
11, 12	7



Language Meaning

Proportion	When change in one variable causes change in another variable (or variables).	If one bucket costs £3 then 5 buckets will cost £15
Repeated percentage	Applying a percentage change more than once.	£20 increased by 5% per year for 2 years is £22.05
Decimal multiplier	A single decimal used to calculate a percentage change.	Decrease by 15% is equivalent to $\times 0.85$
Ratio	A way of expressing a proportion.	2 : 5
Direct proportion	When change in one variable causes a linear change in another variable.	If one bucket costs £3 then 5 buckets will cost £15
Scale factor	The ratio length of image : length of object.	A scale factor of 3 means all the lengths in the image are 3 times those of the object

Example

1 Calculate the following leaving your answers as mixed numbers.

- a $\frac{3}{8}$ of £18
 b $10\frac{5}{9}$ of $\frac{2}{5}$ miles

2 Increase

- a £15 by $\frac{4}{9}$ b 840kg by $\frac{1}{7}$

3 Decrease

- a 33km by $\frac{2}{11}$ b $81\frac{1}{2}$ m by $\frac{2}{3}$

4 Write each ratio in its simplest form.

- a 3.2 : 1.6 : 4
 b 6.5kg : 4000g

5 Write each ratio in the form 1 : n

- a 8 : 28
 b 60cm : 2.25m

6 The ratio of red to blue in two shades of paint are 3 : 7 and 5 : 11. Which paint has the greater proportion of blue?

7 The ratio of lifeguards, adults and children in a swimming pool is 1 : 10 : 15

- a If there are 364 people in the swimming pool, how many are children?
 b How many adults will there be if there are 117 children?
 c How many lifeguards are required if there are 200 other people in the pool?

8 250g of butter costs £2.10. What is the cost of 175g of the same butter?

9 In a sale all items are reduced by the same percentage. A book is reduced from £19 to £12.35. A pen originally cost £9. What is its sale price?

10 A map has a scale of 1 : 35000

- a What distance does 3cm on the map represent in real life?
 b What length on the map represents a real-life measurements of 10.5km?

11 A car uses fuel at the rate of 1 litre every 14km when travelling at an average of 50km/h.

- Calculate to the nearest millilitre how much fuel the car uses to travel
 a 100km
 b for 45 minutes.

12 Three bottles of the same brand of olive oil are on sale:

bottle A holds 250ml and is priced at £1.99

bottle B holds 500ml and costs £3.49

bottle C holds 750ml and costs £5.99

Which bottle represents the best value for money?

What next?

Score	What next?
0 - 5	Your knowledge of this topic is still developing. To improve look at Formative test: 3C-15; MyMaths: 1037, 1103, 1117 and 1245
6 - 9	You are gaining a secure knowledge of this topic. To improve look at InvisPen: 142, 155, 193, 195 and 196
10 - 12	You have mastered this topic. Well done, you are ready to progress!