## Examples of what children should be able to do, in relation to each (boxed) Programme of Study statement.

**solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts**

Answer problems such as:

* Here is a recipe for pasta sauce.

**Pasta sauce**

300 g tomatoes

120 g onions

75 g mushrooms

Sam makes the pasta sauce using 900 g of tomatoes. What weight of onions should he use? What weight of mushrooms?

* A recipe for 3 portions requires 150 g flour and 120 g sugar. Desi’s solution to a problem says that for 2 portions he needs 80 g flour and 100 g sugar. What might Desi have done wrong? Work out the correct answer.
* This map has a scale of 1 cm to 6 km.



The road from Ridlington to Carborough measured on the map is 6.6 cm long. What is the length of the road in kilometres?

**solve problems involving the calculation of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison**

Find simple percentages of amounts and compare them. For example:

* A class contains 12 boys and 18 girls. What percentage of the class are girls? What percentage are boys?
* 25% of the apples in a basket are red. The rest are green. There are 21 red apples. How many green apples are there?

**solve problems involving similar shapes where the scale factor is known or can be found**

* Solve simple problems involving direct proportion by scaling quantities up or down, for example:

Two rulers cost 80 pence. How much do three rulers cost?

* Use the vocabulary of ratio and proportion to describe the relationships between two quantities solving problems such as:

Two letters have a total weight of 120 grams. One letter weighs twice as much as the other. Write the weight of the heavier letter.

The distance from A to B is three times as far as from B to C. The distance from A to C is 60 centimetres. Calculate the distance from A to B.



**solve problems involving unequal sharing and grouping using knowledge of fractions and multiples**

Relate fractions to multiplication and division (e.g. 6 ÷ 2 = ½ of 6 = 6 × ½), simplify fractions by cancelling common factors, find fractions of whole-number quantities and solve problems such as:

* What fraction is 18 of 12
* What fraction is 500ml of 400ml?
* What is 14⁄35 in its simplest form? ⅖
* What ⅓ × 15? What about 15 × ⅓? How did you work it out?
* What is two thirds of 66?
* What is three quarters of 500?

## Non-Statutory Guidance

Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (e.g. similar shapes, recipes).

Pupils link percentages or 360° to calculating angles of pie charts.

Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation a:b to record their work.

Pupils solve problems involving unequal quantities e.g. ’for every egg you need three spoonfuls of flour’, ‘⅗ of the class are boys’. These problems are the foundation for later formal approaches to ratio and proportion.