

TARGET To solve problems involving proportion.

A proportion is a quantity that is part of a whole. In everyday life we often have to solve problems of proportion when dealing with recipes.

Example 1

A cake recipe requires 50 g of butter to be used for every cake. The amount of butter needed will increase in proportion to the number of cakes.

Cakes	Butter
1	50 g
2	100 g
3	150 g
⋮	⋮
7	350 g
8	400 g
and so on.	

Example 2

A recipe for 8 people requires 1000 g of fruit. How much fruit is needed for 5 people?

Step 1 Find how much fruit is needed for 1 person.

$$125 \text{ g } (1000 \text{ g} \div 8 = 125 \text{ g})$$

Step 2 Find how much fruit is needed for 5.

$$625 \text{ g } (125 \text{ g} \times 5 = 625 \text{ g})$$



A

- In an art lesson lasting one and a half hours Keeley spends 15 minutes drawing and the rest of the time painting. Write as a fraction in its lowest terms the proportion of the lesson Keeley is:
 - drawing
 - painting.
- One litre of orange paint is made by mixing 200 ml of red paint with 800 ml of yellow. Write as a percentage the proportion of the mixture which is:
 - red
 - yellow.
- Rex and Rover share a 600 g can of dog food. Rex eats 250 g. Rover eats 350 g. Write the proportion eaten by each dog as a fraction in its lowest terms.
- There are 60 passengers on a bus. 45 are children. 15 are adults. Write as a percentage the proportion of passengers who are:
 - children
 - adults.

A necklace is made using this pattern of beads.



- How many beads are there altogether if there are:
 - 36 red beads
 - 40 yellow beads?
- How many red beads are there if there are 40 beads altogether?
- How many yellow beads are there if there are 72 beads altogether?

8 NUT BROWNIES

100 g butter 2 eggs
 120 g chocolate 80 g sugar
 60 g flour 160 g nuts
 Makes 8 brownies

Rewrite the above ingredients for:

- 4 brownies
- 24 brownies.

TARGET To solve problems involving ratio and proportion.

Ratio compares part to part.

Proportion compares part to whole.

Example 1

A necklace is made using this pattern of beads.



Ratios of blue to red beads $2 : 3$

Proportion of blue beads $\frac{2}{5}$

Proportion of red beads $\frac{3}{5}$

Example 2

In a supermarket 2 large packets of cereal are put on the shelves for every 5 small packets. 40 small packets are put out. How many large packets are put on the shelves?

Find ratio of small to large packets.

$$5 : 2$$

Find value of one part.

$$8 (40 \div 5 = 8)$$

Work out the number of large packets put out on shelves.

$$16 (8 \times 2 = 16)$$

Example 3

At a swimming gala 3 in every 8 swimmers receive a medal. How many medals are awarded if there are 72 swimmers altogether?

Find proportion of swimmers receiving a medal.

$$\frac{3}{8} (3 \text{ in every } 8)$$

Find the number of medals awarded.

$$27 (72 \div 8 = 9 \quad 9 \times 3 = 27)$$

A

A necklace is made using this pattern of beads.



- 1 Write the ratio of green beads to black beads.
- 2 Write the proportion of the beads which is green.
- 3 If there are 20 green beads, how many black beads are there?
- 4 If there are 56 beads altogether, how many beads are:
 - a) black
 - b) green?
- 5 A map has a scale of 1 cm to 2 km. Two castles are 23 cm apart on the map. What is the actual distance between the castles?
- 6 Lavinia makes jam. One jar in every 4 is plum jam. She makes 56 jars altogether. How many jars of plum jam does she make?
- 7 A shop sells 5 ice creams to every 2 lollies it sells. 35 ice creams are sold. How many lollies are sold?
- 8 Two in every three members of the audience at a concert are children. There are 1200 children at the concert. How many adults are in the audience?
- 9 In Year 4 the ratio of children with a pet to those with no pet is 5 : 4. If 36 children do not have a pet, how many do?

