

Ratios and proportions

1. Danny shares a bag of 20 sweets with his friends.

He gives Mary $\frac{3}{5}$ of the sweets.

He gives Ann $\frac{1}{10}$ of the sweets.

He keeps the rest for himself.

How many sweets does Danny keep for himself?

2. A silver chain has a volume of 5 cm^3 .

The density of silver is $10.5 \text{ grams per cm}^3$.

Work out the mass of the silver chain

3. Kate buys 2 lollies and 5 choc ices for £6.50

Pete buys 2 lollies and 3 choc ices for £4.30

Work out the cost of one lolly. Give your answer in pence.

4. Mr Brown makes some compost.

He mixes soil, manure and leaf mould in the ratio 3:1:1

Mr Brown makes 75 litres of compost.

(a) How many litres of soil does he use? Mr Brown sows 200 flower seeds.

For each flower seed the probability that it will produce a flower is 0.8

(c) Work out an estimate for the number of these flower seeds that will produce a flower.

5. The density of concrete is $2.3 \text{ grams per cm}^3$.

(a) Work out the mass of a piece of concrete with a volume of 20 cm^3 .

480 grams of a cheese has a volume of 400 cm^3 .

(b) Work out the density of the cheese

6. The cost of hiring a car can be worked out using this rule, $\text{cost} = £90 + 50\text{p per mile}$

The cost of hiring a car and driving m miles is C pounds.

(a) Complete the formula for C in terms of m .

Zara hired a car. The cost is £240

(b) How many miles did Zara drive?

7. Lillian, Max and Nazia share a sum of money in the ratio 2 : 3 : 5

Nazia receives £60. Work out how much money Lillian receives

8. The length of a coach is 15 metres.

Jonathan makes a model of the coach.

He uses a scale of 1:24

Work out the length, in centimetres, of the model coach.

9. A 10 pence coin is made from copper and nickel.

The ratio of the weight of copper to the weight of nickel is 18:6

(a) Write the ratio 18:6 in its simplest form.

The diameter of the 10 pence coin is 2.45 cm.

(b) Work out the circumference of the coin.

Give your answer correct to 1 decimal place

10. Michael buys 3 files.

The total cost of these 3 files is £5.40

Work out the total cost of 7 of these files.

11. Three women earned a total of £36. They shared the £36 in the ratio 7:3:2

Donna received the largest amount.

(a) Work out the amount Donna received. A year ago, Donna weighed 51.5 kg. Donna now weighs 8 % less.

(b) Work out how much Donna now weighs. Give your answer to an appropriate degree of accuracy.

12. A shop sells CDs and DVDs.

In one week the number of CDs sold and the number of DVDs sold were in the ratio 3:5. The total number of CDs and DVDs sold in the week was 728

Work out the number of CDs sold.

13. The cost of 1.5 kg of peaches is £0.84

The total cost of 3 kg of peaches and 2 kg of apples is £2.34

Work out the cost of 1 kg of apples.

14. Jane, Paul and Fred share £900 between them.

Paul gets $\frac{1}{3}$ of £900. Fred gets $\frac{2}{5}$ of £900.

What fraction of £900 does Jane get?

Give your fraction in its simplest form.

15. The ratio 35 000 000 : 50 can be written in the form $n : 1$

Work out the value of n .

Give your answer in standard form.

16. Ali, Ben and Colin are aged 10, 12 and 16 years.

They share £96.90 in the ratio of their ages.

How much does each receive ?

17. Julie has a bag containing x blue marbles and y red marbles.

The ratio of blue marbles to red marbles is 2 : 3

She adds z blue marbles.

The ratio of blue marbles to red marbles is now 2 : 1

What is the ratio between x and z ?

18. A car produces 2.78 kg of carbon dioxide per hour when driven in a city.

The car travels 30 miles in a city at an average speed of 20 mph.

How much carbon dioxide does the car produce during its journey?

19. In a secondary school the ratio of boys to girls is 10 : 11

There are 830 boys in the school.

How many girls are there in the school?