

## Ratio and proportion

1) Chris goes to a shop to buy meat, vegetables and fruit.

(a) (i) The costs of the meat, vegetables and fruit are in the ratio

$$\text{meat} : \text{vegetables} : \text{fruit} = 2 : 2 : 3.$$

The cost of the meat is \$2.40.

Calculate the **total** cost of the meat, vegetables and fruit.

*Answer(a)(i)* \$

[2]

(ii) Chris pays with a \$20 note.

What percentage of the \$20 has he spent?

*Answer(a)(ii)*

, % [2]

(b) The masses of the meat, vegetables and fruit are in the ratio

$$\text{meat} : \text{vegetables} : \text{fruit} = 1 : 8 : 3.$$

The total mass is 9 kg.

Calculate the mass of the vegetables.

*Answer(b)*

kg [2]

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2)

Daniella is 8 years old and Edward is 12 years old.

(a) Their parents give them some money in the ratio of their ages.

(i) Write the ratio Daniella's age : Edward's age in its simplest form.

*Answer(a)(i)* : [1]

(ii) Daniella receives \$30.  
Show that Edward receives \$45.

*Answer(a)(ii)*

3)

A model of a car is made to a scale of 1 : 40.  
The volume of the model is  $45 \text{ cm}^3$ .  
Calculate the volume of the car.  
Give your answer in  $\text{m}^3$ .

[1]

*Answer*  $\text{m}^3$  [3]

## Ratio and proportion

4)

The scale on a map is 1: 20 000.

- (a) Calculate the actual distance between two points which are 2.7 cm apart on the map.  
Give your answer in kilometres.

*Answer(a)* . km [2]

- (b) A field has an area of 64 400 m<sup>2</sup>.  
Calculate the area of the field on the map in cm<sup>2</sup>.

*Answer(b)* cm<sup>2</sup> [2]

5)

The scale of a map is 1 : 250 000.

- (a) The actual distance between two cities is 80 km.

Calculate this distance on the map. Give your answer in centimetres.

*Answer(a)* cm [2]

- (b) On the map a large forest has an area of 6 cm<sup>2</sup>.

Calculate the actual area of the forest. Give your answer in square kilometres.

*Answer(b)* . km<sup>2</sup> [2]

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6) Boris has a recipe which makes 16 biscuits.

The ingredients are

160 g flour,

160 g sugar,

240 g butter,

200 g oatmeal.

(a) Boris has only 350 grams of oatmeal but plenty of the other ingredients.

(i) How many biscuits can he make?

*Answer(a)(i)*

[2]

(ii) How many grams of butter does he need to make this number of biscuits?

*Answer(a)(ii)*

. g [2]

7) A car company sells a scale model  $\frac{1}{10}$  of the size of one of its cars.

Complete the following table.

	Scale Model	Real Car
Area of windscreen (cm <sup>2</sup> )	135	
Volume of storage space (cm <sup>3</sup> )		408 000

[3]

8) Jamie needs 300 g of flour to make 20 cakes.

How much flour does he need to make 12 cakes?

*Answer*

g [2]

## Ratio and proportion

- 9) A model of a ship is made to a scale of 1 : 200.  
The surface area of the model is  $7500 \text{ cm}^2$ .  
Calculate the surface area of the ship, giving your answer in square metres.

*Answer*  $\text{m}^2$  [3]

- 10) A factory produces bird food made with sunflower seed, millet and maize.

(a) The amounts of sunflower seed, millet and maize are in the ratio

$$\text{sunflower seed} : \text{millet} : \text{maize} = 5 : 3 : 1.$$

- (i) How much millet is there in 15 kg of bird food?

*Answer(a)(i)* kg [2]

(ii) In a small bag of bird food there is 60 g of sunflower seed.

What is the mass of bird food in a small bag?

*Answer(a)(ii)* g [2]