

1 In a village

the number of houses and the number of flats are in the ratio 7 : 4

the number of flats and the number of bungalows are in the ratio 8 : 5

There are 50 bungalows in the village.

How many houses are there in the village?

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(Total for Question 1 is 3 marks)

- 2 Kiaria is 7 years older than Jay.
Martha is twice as old as Kiaria.
The sum of their three ages is 77

Find the ratio of Jay's age to Kiaria's age to Martha's age.

.....
(Total for Question 2 is 4 marks)

3 The ratio $(y + x) : (y - x)$ is equivalent to $k : 1$

Show that $y = \frac{x(k + 1)}{k - 1}$

(Total for Question 3 is 3 marks)

4 There are only blue pens, green pens and red pens in a box.

The ratio of the number of blue pens to the number of green pens is 2 : 5

The ratio of the number of green pens to the number of red pens is 4 : 1

There are less than 100 pens in the box.

What is the greatest possible number of red pens in the box?

.....
(Total for Question 4 is 3 marks)

- 5 White shapes and black shapes are used in a game.
Some of the shapes are circles.
All the other shapes are squares.

The ratio of the number of white shapes to the number of black shapes is 3:7

The ratio of the number of white circles to the number of white squares is 4:5

The ratio of the number of black circles to the number of black squares is 2:5

Work out what fraction of all the shapes are circles.

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(Total for Question 5 is 4 marks)

- 6 On Saturday, some adults and some children were in a theatre.
The ratio of the number of adults to the number of children was 5 : 2

Each person had a seat in the Circle or had a seat in the Stalls.

$\frac{3}{4}$ of the children had seats in the Stalls.

117 children had seats in the Circle.

There are exactly 2600 seats in the theatre.

On this Saturday, were there people on more than 60% of the seats?
You must show how you get your answer.

(Total for Question 6 is 5 marks)

- 7 Daniel bakes 420 cakes.
He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.

$\frac{2}{7}$ of the cakes are vanilla cakes.

35% of the cakes are banana cakes.

The ratio of the number of lemon cakes to the number of chocolate cakes is 4:5

Work out the number of lemon cakes Daniel bakes.

.....
(Total for Question 7 is 5 marks)

8 The points A , B , C and D lie in order on a straight line.

$$AB:BD = 1:5$$

$$AC:CD = 7:11$$

Work out $AB:BC:CD$

..... : :

(Total for Question 8 is 3 marks)

9 Deon needs 50 g of sugar to make 15 biscuits.

She also needs

three times as much flour as sugar

two times as much butter as sugar

Deon is going to make 60 biscuits.

(a) Work out the amount of flour she needs.

..... g

(3)

Deon has to buy all the butter she needs to make 60 biscuits.

She buys the butter in 250 g packs.

(b) How many packs of butter does Deon need to buy?

.....

(2)

(Total for Question 9 is 5 marks)

10 A shop sells packs of black pens, packs of red pens and packs of green pens.

There are

2 pens in each pack of black pens

5 pens in each pack of red pens

6 pens in each pack of green pens

On Monday,

number of packs of black pens sold : number of packs of red pens sold : number of packs of green pens sold = 7:3:4

A total of 212 pens were sold.

Work out the number of green pens sold.

.....
(Total for Question 10 is 4 marks)

11 £360 is shared between Abby, Ben, Chloe and Denesh.

The ratio of the amount Abby gets to the amount Ben gets is 2:7

Chloe and Denesh each get 1.5 times the amount Abby gets.

Work out the amount of money that Ben gets.

£.....

(Total for Question 11 is 4 marks)

12 There are some small cubes and some large cubes in a bag.
The cubes are red or the cubes are yellow.

The ratio of the number of small cubes to the number of large cubes is 4:7

The ratio of the number of red cubes to the number of yellow cubes is 3:5

(a) Explain why the least possible number of cubes in the bag is 88

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.....

.....

(1)

All the small cubes are yellow.

(b) Work out the least possible number of large yellow cubes in the bag.

.....

(3)

(Total for Question 12 is 4 marks)

13 Given that $\frac{a}{b} = \frac{2}{5}$ and $\frac{b}{c} = \frac{3}{4}$

find $a:b:c$

.....
(Total for Question 13 is 3 marks)

14 Carlo puts tins into small boxes and into large boxes.

He puts 6 tins into each small box.

He puts 20 tins into each large box.

Carlo puts a total of 3000 tins into the boxes so that

number of tins in small boxes : number of tins in large boxes = 2 : 3

Carlo says that less than 30% of the boxes filled with tins are large boxes.

Is Carlo correct?

You must show all your working.

(Total for Question 14 is 5 marks)

15 $5c + d = c + 4d$

(a) Find the ratio $c : d$

.....
(2)

$6x^2 = 7xy + 20y^2$ where $x > 0$ and $y > 0$

(b) Find the ratio $x : y$

.....
(3)

(Total for Question 15 is 5 marks)

16 Rosie, Matilda and Ibrahim collect stickers.

$$\begin{array}{l} \text{number of stickers} \\ \text{Rosie has} \end{array} : \begin{array}{l} \text{number of stickers} \\ \text{Matilda has} \end{array} : \begin{array}{l} \text{number of stickers} \\ \text{Ibrahim has} \end{array} = 4:7:15$$

Ibrahim has 24 more stickers than Matilda.

Ibrahim has more stickers than Rosie.

How many more?

.....
(Total for Question 16 is 3 marks)

17 Natalie makes potato cakes in a restaurant.

She mixes potato, cheese and onion so that

weight of potato : weight of cheese : weight of onion = 9 : 2 : 1

Natalie needs to make 6000 g of potato cakes.

Cheese costs £2.25 for 175 g.

Work out the cost of the cheese needed to make 6000 g of potato cakes.

£.....

(Total for Question 17 is 4 marks)

18 Olivia and Jessica have in total half as many sweets as Fran and Gary have in total.

Fran and Gary share their sweets in the ratio 2 : 3

Olivia and Jessica share their sweets in the ratio 9 : 1

Fran got w sweets.

Gary got x sweets.

Olivia got y sweets.

Jessica got z sweets.

Find, in its simplest form, $w:x:y:z$

(Total for Question 18 is 4 marks)

19 p and q are two numbers such that $p > q$

When you subtract 5 from p and subtract 5 from q the answers are in the ratio 5 : 1

When you add 20 to p and add 20 to q the answers are in the ratio 5 : 2

Find the ratio $p : q$

Give your answer in its simplest form.

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(Total for Question 19 is 5 marks)

20 There are 60 people in a choir.
Half of the people in the choir are women.

The number of women in the choir is 3 times the number of men in the choir.
The rest of the people in the choir are children.

the number of children in the choir : the number of men in the choir = $n : 1$

Work out the value of n .
You must show how you get your answer.

$n = \dots\dots\dots$

(Total for Question 20 is 4 marks)

21 Tom and Adam have a total of 240 stamps.

The ratio of the number of Tom's stamps to the number of Adam's stamps is 3:7

Tom buys some stamps from Adam.

The ratio of the number of Tom's stamps to the number of Adam's stamps is now 3:5

How many stamps does Tom buy from Adam?

You must show all your working.

.....
(Total for Question 21 is 4 marks)

- 22** A group of people went to a restaurant.
Each person chose one starter and one main course.

starter	main course
soup	lasagne
prawns	curry

the number of people who chose soup : the number of people who chose prawns = 2 : 3

Of those who chose soup,

the number of people who chose lasagne : the number of people who chose curry = 5 : 3

Of those who chose prawns,

the number of people who chose lasagne : the number of people who chose curry = 1 : 5

What fraction of the people chose curry?

You must show how you get your answer.

.....
(Total for Question 22 is 4 marks)

23 Rizwan writes down three numbers a , b and c

$$a:b = 1:3$$

$$b:c = 6:5$$

(a) (i) Find $a:b:c$

.....
(2)

(ii) Express a as a fraction of the total of the three numbers a , b and c

.....
(2)

Emma writes down three numbers m , n and p

$$n = 2m$$

$$p = 5n$$

(b) Find $m:p$

.....
(2)

(Total for Question 23 is 6 marks)

24 There are four boxes on a shelf, **A**, **B**, **C** and **D**.

The total weight of **A** and **B** is 3 times the total weight of **C** and **D**.

The weight of **A** is $\frac{2}{3}$ of the weight of **B**.

The weight of **C** is 75% of the weight of **D**.

Find the ratio

weight of **A** : weight of **B** : weight of **C** : weight of **D**

.....

(Total for Question 24 is 4 marks)

25 A delivery company has a total of 160 cars and vans.

the number of cars : the number of vans = 3 : 7

Each car and each van uses electricity or diesel or petrol.

$\frac{1}{8}$ of the cars use electricity.

25% of the cars use diesel.

The rest of the cars use petrol.

Work out the number of cars that use petrol.

You must show all your working.

.....
(Total for Question 25 is 5 marks)

26 Cormac has some sweets in a bag.

The sweets are lime flavoured or strawberry flavoured or orange flavoured.

In the bag

number of lime : number of strawberry : number of orange
flavoured sweets : flavoured sweets : flavoured sweets = 9 : 4 : x

Cormac is going to take at random a sweet from the bag.

The probability that he takes a lime flavoured sweet is $\frac{3}{7}$

Work out the value of x .

$x = \dots\dots\dots$

(Total for Question 26 is 3 marks)

27 The ratio of Marta's hourly pay to Khalid's hourly pay is 6 : 5

Both Marta and Khalid get an increase of £1.50 in their hourly pay.

The ratio of Marta's hourly pay to Khalid's hourly pay after this increase is 13 : 11

Work out the hourly pay before the increase for Marta and for Khalid.

Marta £.....

Khalid £.....

(Total for Question 27 is 4 marks)

28 Rick, Selma and Tony are playing a game with counters.

Rick has some counters.

Selma has twice as many counters as Rick.

Tony has 6 counters less than Selma.

In total they have 54 counters.

the number of counters Rick has : the number of counters Tony has = $1 : p$

Work out the value of p .

$p = \dots\dots\dots$

(Total for Question 28 is 5 marks)