Questions

Q1.

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.

$p : q$
$= 80 : 20$
$= 4 : 1$

(Total for question = 5 marks)

Q2.

There are only red buttons, yellow buttons and orange buttons in a jar.
The number of red buttons, the number of yellow buttons and the number of orange buttons are in the ratio 7 : 4 : 9

Work out what percentage of the buttons in the jar are orange.

..... %

(Total for question = 2 marks)

Q3.

Raya buys a van for £8500 plus VAT at 20%

Raya pays a deposit for the van.
She then pays the rest of the cost in 12 equal payments of £531.25 each month.

Find the ratio of the deposit Raya pays to the total of the 12 equal payments.

Give your answer in its simplest form.

10,200
6375 −
3825 deposit

.....

(Total for question = 5 marks)

Deposit : Instalments
3825 : 6375
= 3 : 5

Q4.

Ewen has 48 white tiles and 16 blue tiles.

(a) Write down the ratio of the number of white tiles to the number of blue tiles.
Give your ratio in its simplest form.

W : B
48 : 16
3 : 1

.....

(2)

The cost of each white tile was £2
The cost of each blue tile was £4

(b) Work out the ratio of the total cost of the white tiles to the total cost of the blue tiles.

3x2 : 1x4
6 : 4
3 : 2
W cost : B cost

.....

(2)

(Total for question = 4 marks)

Q5.

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 = 5 parts

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

Is Carlo correct?
You must show all your working.

1 part = $\frac{3000}{5}$ = 600

1200 tins in small

1800 tins in large

Small boxes $\frac{1200}{6} = 200$

Large boxes $\frac{1800}{20} = 90$

290 boxes

$\frac{90}{290} \times 100$

$= 31.03\%$

(Total for question = 5 marks)

Q6.

Carla is wrong

There are 60 people in a choir.
Half of the people in the choir are women. 30 women

The number of women in the choir is 3 times the number of men in the choir. 10 men
The rest of the people in the choir are children. 20 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.

children : men

20 : 10

= 2 : 1

n = 2

(Total for question = 4 marks)

Q7.

There are four types of cards in a game.

Each card has a black circle or a white circle or a black triangle or a white triangle.

number of cards with a black shape : number of cards with a white shape = 3 : 5 = 27 : 45

number of cards with a circle : number of cards with a triangle = 2 : 7 = 16 : 56

Express the total number of cards with a black shape as a fraction of the total number of cards with a triangle.

Assume 72 cards

27 Black shapes
45 white shapes
16 Circles

$\frac{\text{Black shapes}}{\text{Triangles}} = \frac{27}{56}$

56 triangles

(Total for question = 3 marks)

Q8.

B : G

There are two drama groups in a school.

Gp1 36 : 48

In one group there are 36 boys and 48 girls.

3 : 4

In the other group, $\frac{3}{7}$ of the students are boys and the rest of the students are girls.

Gp2 $\frac{3}{7} : \frac{4}{7}$

Ann says,

"The ratio of the number of boys to the number of girls is the same for both groups."

Is Ann correct?
You must show how you get your answer.

3 : 4

Yes same ratio 3 : 4

(Total for question = 3 marks)

Q9.

Costcorp sells packets of mints to shop owners.

On Monday three shop owners buy mints from Costcorp.
Each shop owner buys small packets, medium packets and large packets of mints.

Alan buys 400 packets of mints.

32 % are small packets.
40 % are large packets.

28% medium 400 × 0·28 = 112 medium

Beryl buys 500 packets of mints.

$\frac{3}{10}$ are small packets.

$\frac{6}{10}$ medium 300 medium

$\frac{1}{10}$ are large packets.

Charlie buys 150 small packets of mints so that

150 small 200 medium

number of small packets : number of medium packets = 3 : 4

Work out the total number of medium packets of mints these shop owners buy.
You must show all your working.

112 + 300 + 200

612

.....

(Total for question = 5 marks)

Q10.

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

find $a : b : c$

$\frac{a}{b} = \frac{2}{5} \Rightarrow 5a = 2b$

$\frac{b}{c} = \frac{3}{4} \Rightarrow 4b = 3c$

$a : b : c$

$\frac{2}{5} : 1 : \frac{4}{3}$

$6 : 15 : 20$

.....

(Total for question = 3 marks)

Q11.

Azmol, Ryan and Kim each played a game.

Azmol's score was four times Ryan's score.
Kim's score was half of Azmol's score.

Write down the ratio of Azmol's score to Ryan's score to Kim's score.

A R K

4 : 1

1 : $\frac{1}{2}$

4 : 2

.....

(Total for question = 2 marks)

A : R : K

= 4 : 1 : 2