

Name: _____

GCSE (1 – 9)

Ratio Problems 2

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

- 1 The ratio of dogs to cats is 5:3
The ratio of fish to dogs is 6:1

Find the ratio of cats to fish.
Give your answer in its simplest form.

$$\begin{array}{l} D:C \\ 5:3 \end{array} \qquad \begin{array}{l} F:D \\ 6:1 \end{array}$$

Make Dogs the same. $\left. \begin{array}{l} \\ \end{array} \right\} \times 5$

$$\begin{array}{l} D:C \\ 5:3 \end{array} \qquad \begin{array}{l} F:D \\ 30:5 \end{array}$$

$$\begin{array}{l} D:C:F \\ 5:3:30 \end{array}$$

$$\begin{array}{l} C:F \\ 3:30 \\ 1:10 \end{array}$$

$$\underline{\underline{1:10}}$$

(Total for question 1 is 2 marks)

- 2 Given that $a:b=4:5$ and $b:c=3:2$

Find the ratio $a:b:c$
Give your answer in its simplest form.

$$\begin{array}{l} a:b \\ 4:5 \end{array} \qquad \begin{array}{l} b:c \\ 3:2 \end{array} \qquad \left. \begin{array}{l} \\ \end{array} \right\} \times 5 \text{ (MAKE } b \text{ the SAME)}$$

$$\begin{array}{l} 12:15 \\ 15:10 \end{array}$$

$$\begin{array}{l} a:b:c \\ 12:15:10 \end{array}$$

$$\underline{\underline{12:15:10}}$$

(Total for question 2 is 2 marks)

- 3 Alfie, Bertie and Charlie share £66.
 The amount Alfie and Bertie get is in the ratio 9:5
 The amount Bertie and Charlie get is in the ratio 2:1

How much does Alfie get?

$$\begin{array}{rcl}
 & A : B & B : C \\
 \times 2 \downarrow & 9 : 5 & 2 : 1 \\
 & 18 : 10 & 10 : 5 \quad \downarrow \times 5 \text{ (MAKE B THE SAME)}
 \end{array}$$

$$\begin{array}{r}
 A : B : C \\
 18 : 10 : 5 \quad (33 \text{ PARTS})
 \end{array}$$

$$\frac{66}{33} = £2 \quad (\text{PER PART})$$

$$\begin{array}{r}
 A : B : C \\
 £36 : £20 : £10
 \end{array}$$

£ 36

(Total for question 3 is 3 marks)

- 4 Dylan, Eli and Fabian share some sweets.
 The amount of sweets Dylan gets to the amount of sweets Eli gets is in the ratio 7:3
 The amount Dylan gets to the amount Fabian gets is in the ratio 4:5

Given Fabian gets 21 more sweets than Dylan.

Work out how many sweets Eli gets.

$$\begin{array}{rcl}
 & D : E & D : F \\
 \times 4 \downarrow & 7 : 3 & 4 : 5 \\
 & 28 : 12 & 28 : 35 \quad \downarrow \times 7 \text{ MAKE D THE SAME}
 \end{array}$$

$$\begin{array}{r}
 D : E : F \\
 28 : 12 : 35
 \end{array}$$

FABIAN GETS 7 MORE PARTS THAN DYLAN

$$7 \text{ PARTS} = 21 \text{ SWEETS}$$

$$1 \text{ PART} = 3 \text{ SWEETS}$$

$$\text{ELI GETS } 12 \times 3 = 36 \quad \dots \text{36 sweets}$$

(Total for question 4 is 3 marks)

5 Given that $a:b=3:7$ and $a:c=4:3$

Find the ratio $a:b:c$

Give your answer in its simplest form.

$$\begin{array}{l} a:b \\ 3:7 \\ \times 4 \downarrow \\ 12:28 \end{array} \quad \begin{array}{l} a:c \\ 4:3 \\ \times 3 \downarrow \text{(Make A The Same)} \\ 12:9 \end{array}$$

$$\begin{array}{l} a:b:c \\ 12:28:9 \end{array}$$

$$\underline{\underline{12:28:9}}$$

(Total for question 5 is 2 marks)

6 Given that $a:c=1:6$ and $b:c=2:5$

Find the ratio $a:b:c$

Give your answer in its simplest form.

$$\begin{array}{l} a:c \\ 1:6 \\ \times 5 \downarrow \\ 5:30 \end{array} \quad \begin{array}{l} b:c \\ 2:5 \\ \times 6 \downarrow \text{Make C the Same} \\ 12:30 \end{array}$$

$$\begin{array}{l} a:b:c \\ 5:12:30 \end{array}$$

$$\underline{\underline{5:12:30}}$$

(Total for question 6 is 2 marks)

- 7 There are red sweets, blue sweets and green sweets in a bag.
 The ratio of red sweets to sweets that are not red is 2:3
 The ratio of green sweets to sweets that are not green is 6:19

Work out the ratio of red sweets to blue sweets to green sweets.

Red to Not Red

$$2:3$$

5 PARTS

$\times 5$

$$\textcircled{10}:15$$

$$R : B : G$$

$$10 : 9 : 6$$

$$\boxed{25 - 10 - 6 = 9}$$

BLUE

Green to Not Green

$$\textcircled{6}:19$$

25 PARTS

(MAKE THE NUMBER OF PARTS THE SAME.)

$$10:9:6$$

(Total for question 7 is 3 marks)

- 8 A football team plays some games in a season. Each game was a win, a draw or a loss.

The ratio of the games the won to the games they did not win was 9:7

The ratio of games they lost to games they did not lose was 1:7.

Given the team played less than 50 games, work out the highest amount of games they could have won.

win to not win

$$\textcircled{9}:7$$

(16 PARTS)

lose to not lose

$$1:7$$

(8 PARTS)

$\times 2$

$$\textcircled{2}:14$$

$$W : D : L$$

$$\boxed{\text{DRAWS}} \\ 16 - 9 - 2 = 5$$

(16) $9 : 5 : 2$

(32) $18 : 10 : 4$

(48) $27 : 15 : 6$

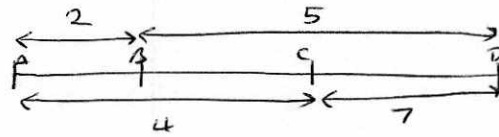
$$27$$

(Total for question 8 is 2 marks)

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

$$AB:BD = 2:5 \text{ and } AC:CD = 4:7$$

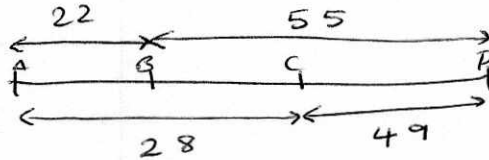
Find $AB:BC:CD$



7 PARTS $\times 11$

11 PARTS $\times 7$

MAKE THE NUMBER OF PARTS THE SAME



77 PARTS

77 PARTS

$$AB : BC : CD$$

$$22 : 6 : 49$$

$$BC = 77 - 49 - 22 = 6$$

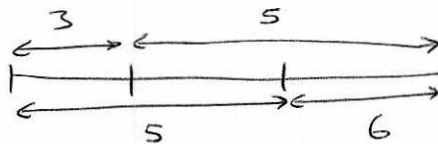
$$22 : 6 : 49$$

(Total for question 9 is 3 marks)

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

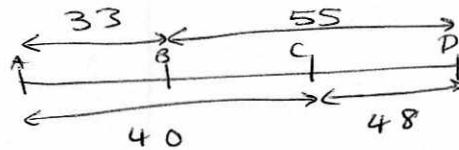
$$AB:BD = 3:5 \text{ and } AC:CD = 5:6$$

Find $AB:BC:CD$



8 PARTS $\times 11$

11 PARTS $\times 8$



$$AB : BC : CD$$

$$33 : 7 : 48$$

$$33 : 7 : 48$$

(Total for question 10 is 3 marks)

11 Andy and Bruce share some sweets in the ratio 9:4.

Andy gets A sweets

Bruce gets B sweets

Carla and David share the same amount of sweets as Andy and Bruce.

They share their sweets in the ratio 5:2.

Carla gets C sweets

David gets D sweets

$A : B$

$C : D$

Find $A:B:C:D$

9 : 4

5 : 2

13 PARTS

7 PARTS

MAKE THE NUMBER OF PARTS THE SAME

$\times 7$

$\times 13$

63 : 28

65 : 26

$A : B : C : D$

63 : 28 : 65 : 26

63 : 28 : 65 : 26

(Total for question 11 is 3 marks)

12 A and B are in the ratio 5:1

C and D are in the ratio 2:3

Given: $A + B = 2(C + D)$

Find $A:B:C:D$

$A : B$

$C : D$

5 : 1

2 : 3

6 PARTS

5 PARTS

$\times 5$

$\times 6$

25 : 5

12 : 18

$A + B = 2(C + D)$

$\div 2$

6 : 9

$A : B : C : D$

25 : 5 : 6 : 9

(Total for question 12 is 3 marks)

13 Glen and Harper share some money in the ratio 5:2.

Glen gets £G

Harper gets £H

India and Jade share the same amount of money as Glen and Harper.

They share their money in the ratio 4:7.

India gets £I

Jade gets £J

Find G:H:I:J

$$\begin{array}{rcl}
 G : H & & I : J \\
 5 : 2 & (7) & 4 : 7 \quad (11) \\
 \times 11 \downarrow & & \downarrow \times 7 \\
 55 : 22 & & 28 : 49
 \end{array}$$

$$G : H : I : J$$

$$55 : 22 : 28 : 49$$

$$\underline{\underline{55 : 22 : 28 : 49}}$$

(Total for question 13 is 3 marks)

14 A and B are in the ratio 4:3

C and D are in the ratio 1:5

Given: $3(A+B) = C+D$

Find A:B:C:D

$$\begin{array}{rcl}
 A : B & & C : D \\
 4 : 3 & (7) & 1 : 5 \quad (6) \\
 \times 6 \downarrow & & \downarrow \times 7 \\
 24 : 18 & & 7 : 35
 \end{array}$$

$$3(A+B) = C+D$$

$$8 : 6$$

$$A : B : C : D$$

$$8 : 6 : 7 : 35$$

$$\underline{\underline{8 : 6 : 7 : 35}}$$

(Total for question 14 is 3 marks)