Name: Solutions

GCSE (9 - 1)

Combining Ratios

Information

The total marks for this paper is 38

The marks for each question are shown in brackets

– use this as a guide as to how much time to spend on each question.

Total Marks

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.

Instructions

Answer all questions.

Answer the questions in the spaces provided

– there may be more space than you need.

You must show all your working.

Diagrams are NOT accurately drawn, unless otherwise indicated.



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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Given that a:b = 4:7 and b:c = 3:2

Find the ratio a:b:c

Give your answer in its simplest form.

a : b : c

4 : 7

3 : 2

12 : 21 : 14

12:21:14

(2 marks)

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

Find the ratio a:b:c

Give your answer in its simplest form.

a : b : c

2 : 5

4 : 3

8 : 20 : 15

8:20:15

(2 marks)

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3 Given that a:b = 3:8 and a:c = 5:7

Find the ratio a:b:c

Give your answer in its simplest form.

a:b:c

3:8

5 7

15:40:21

15:40:21

(2 marks)

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4 Given that a:b = 4:9 and a:c = 6:7

Find the ratio a:b:c

Give your answer in its simplest form.

a:b:c

4:9

6 7

12:27:14

12:27:14

(2 marks)

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5 Alan, Belle and Carla share £124.

The amount Alan and Belle get is in the ratio 7:3

The amount Belle and Carla get is in the ratio 5:4

How much does Alan get?

A : B : C

7 : 3

5 : 4

35 : 15 : 12 (35+15+12 = 62)

70 : 30 : 24 (70+30+24 = 124)

£ 70

(3 marks)

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6 There are red sweets, blue sweets and yellow sweets in a bag.

The ratio of red sweets to sweets that are not red is 2:5

The ratio of yellow sweets to sweets that are not yellow is 3:7

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

r : b : y

2 5 — 7 parts

7 3 — 10 parts

20 50 — 70 parts

49 21 — 70 parts

LCM = 70

20 29 21

r : b : y

20:29:21

(3 marks)

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7 Della, Ella and Felix share some sweets.

The amount of sweets Della gets to the amount of sweets Ella gets is in the ratio 5:3

The amount Della gets to the amount Felix gets is in the ratio 4:5

Given Felix gets 30 more sweets than Della.

Work out how many sweets Ella gets

D : E : F

5 : 3

4 5

20 : 12 : 25

5 parts = 30

1 part = 6

120 : 72 : 150

72

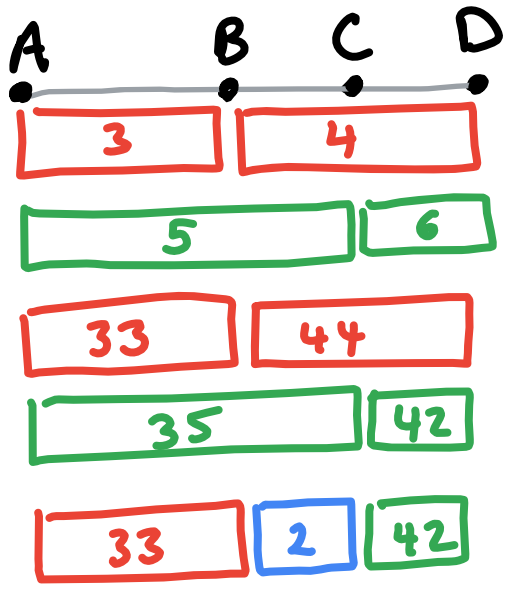
(3 marks)

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

AB:BD = 3:4 and AC:CD = 5:6

Find AB:BC:CD



7 parts

11 parts

77 parts

77 parts

LCM = 77

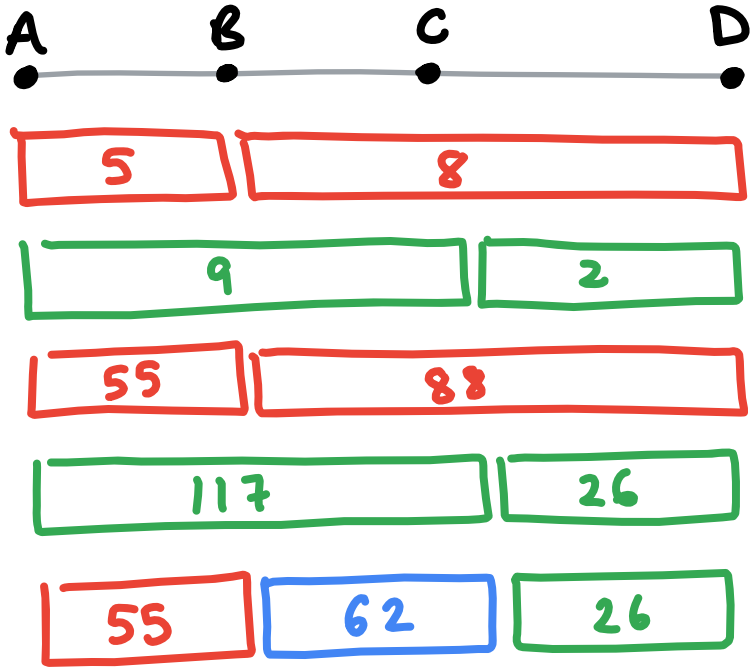
33 : 2 : 42

(3 marks)

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

AB:BD = 5:8 and AC:CD = 9:2

Find AB:BC:CD



LCM = 143

55 : 62 : 26

(3 marks)

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10 The ratio of red cars to black cars is 3:7

The ratio of black cars to white cars is 5:4

Show that less than 50% of the cars are black.

r : b : w

3 : 7

5 : 4

15 : 35 : 28 (78 parts)

$\frac{35}{78} < 50\%$

$\frac{39}{78} = 50\%$

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(3 marks)

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11 A and B are in the ratio 6:1

C and D are in the ratio 2:5

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

Find A:B:C:D

A : B

(7 parts) 6 : 1

C : D

2 : 5 (7 parts)

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

18 : 3

18 : 3 : 2 : 5

(3 marks)

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12 A and B are in the ratio 3:2

C and D are in the ratio 4:5

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

Find A:B:C:D

A : B

(5 parts) 3 : 2

(45 parts) 27 : 18

C : D

4 : 5 (9 parts)

20 : 25 (45 parts)

↓ x 2

27 : 18 : 40 : 50

27 : 18 : 40 : 50

(3 marks)

13 There is a quadrilateral, ABCD

The ratio of the size of angle A to angle B is 4:5

The ratio of the size of angle B to angle D is 15:21

The ratio of the size of angle C to angle A is 2:1

Find the difference in size between the two smallest angles in quadrilateral ABCD.

A : B : C : D

4 : 5

15 21

1 2

12 : 15 : 24 : 21 (72)

60 : 75 : 120 : 105 (360)

75 - 60 = 15

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(3 marks)

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14 Angie and Brenda share some money in the ratio 5:8

Colin and Davina share the same amount of money as Angie and Brenda.
They share their money in the ratio 3:7.

Find A:B:C:D

A : B : C : D

5 : 8 (13 parts)

3 : 7 (10 parts)

LCM = 130

50 : 80

39 : 91

50 : 80 : 39 : 91

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(3 marks)
