

Q1

1

First write down the given information in ratio form:

$$R : G = 3 : 1$$

$$G : B = 2 : 1$$

[1]

Green appears in both ratios, so use that as the connecting link.

Multiply the R : G ratio by two, then join the two ratios together because the 'G' number is now 2 in both of them.

$$3 \times 2 = 6 \quad 1 \times 2 = 2$$

$$R : G = 6 : 2$$

$$R : G : B = 6 : 2 : 1$$
 [1]

Q2

2

First find what percentage of the total the 1295 males represent.

$$1295 \text{ males} = 100 - 30 = 70\%$$

[1]

Divide 1295 by 7 to find what 10% is.

$$1295 \div 7 = 185$$

[1]

Then multiply that by 3 to find what 30% is (i.e., the number of females).

$$185 \times 3 = 555$$

555 females [1]

Q3

First subtract $\frac{3}{10}$ from 1 to find what fraction of the money was left to share between Emma and Dave.
 '1' here stands for all (i.e., 100% of) the money

$$1 - \frac{3}{10} = \frac{7}{10}$$

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So Emma and Dave divided $\frac{7}{10}$ of the money.
 Now add together the ratio numbers to see how many parts that money was divided into.
 And then divide $\frac{7}{10}$ by that sum to find the size of 1 part.

$$3 + 2 = 5$$

$$\frac{7}{10} \div 5 = \frac{7}{50}$$

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Dave received 2 parts, so multiply $\frac{7}{50}$ by 2 to find Dave's share.

$$\frac{7}{50} \times 2 = \frac{7}{25}$$

$\frac{7}{25}$ of the money []

Equivalent answers, such as $\frac{14}{50}$, $\frac{28}{100}$, or 28%, will also get the mark.

Q4

4a

Katie's number in the ratio is 8, so she received 8 of the 'parts' that the sweets were divided into.
 Divide 32 by 8 to find the size of one part.

$$32 \div 8 = 4$$

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Dave received 3 parts (his number from the ratio).
 Multiply 4 by 3 to find out how many sweets Dave received.

$$4 \times 3 = 12$$

12 sweets []

4b

To find 45% of 80, multiply it by $\frac{45}{100}$.

$$80 \times \frac{45}{100} = 36$$

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36 []

Q5

5

First find 20% of £8500 by multiplying it by 0.2.
Then add that to £8500 to find the total cost of the van.

$$8500 \times 0.2 = 1700$$

$$8500 + 1700 = \text{£}10200$$

[1]

Next multiply £531.25 by 12 to find the total of her 12 payments.

$$531.25 \times 12 = \text{£}6375$$

[1]

Subtract the total of the 12 payments from the total cost of the van, to find the amount of Raya's deposit.

$$10200 - 6375 = \text{£}3825$$

[1]

Write down the ratio in its 'raw' form, being sure to get 'deposit' and 'total of 12 payments' the right way round.

$$3825 : 6375$$

[1]

$$3825 : 6375$$

[1]

Simplify the ratio.

$$3825 : 6375 = 1275 \times 3 : 1275 \times 5 = 3 : 5$$

3 : 5 [1]

1 : 1.6 (with the dot over the 6!) or $1 : \frac{5}{3}$ will also get the mark.

If you put the fraction $\frac{3825}{6375}$ into your calculator and hit '=', it will simplify it for you to $\frac{3}{5}$. That simplified fraction gives you the simplified ratio numbers.

Q6

6

'Flats' appears in both ratios, so use that as the connecting link.

Multiply the Houses : Flats ratio by two, then join the two ratios together because the 'Flats' number is now 8 in both of them.

$$\text{Houses : Flats} = 7 : 4 = (7 \times 2) : (4 \times 2) = 14 : 8$$

$$\text{Houses : Flats : Bungalows} = 14 : 8 : 5$$

[1]

The 'Bungalows' number in the combined ratio is 5, so 50 bungalows represents 5 of the 'parts' that the combined ratio divides all of the dwellings into.

Divide 50 by 5 to find the size of 1 part.

Then multiply that by 14 (the 'Houses' number in the combined ratio) to find the number of houses.

$$50 \div 5 = 10$$

$$10 \times 14 = 140$$

[1]

140 houses [1]

Q7

7

In the ratio of girls to boys, "170 girls" are two parts. Divide 170 by two to find how many children in one part.

$$170 \div 2 = 85$$

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$2 + 7 = 9$ so there are 9 parts in total in the ratio of girls to boys. Multiply 85 by 9 to find the total number of children.

$$85 \times 9 = 765$$

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This 765 represents $\frac{3}{5}$ of the people in the cinema. If $\frac{3}{5}$ of the people in the cinema are children, the remaining $\frac{2}{5}$ are adults.

So to find the number of adults, divide 765 by 3 and multiply by 2.

$$765 \div 3 = 255$$

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$$255 \times 2$$

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Answer = 510 []

Q8

8

Add up the ratio numbers to find the total number of parts that the ratio divides the \$675 into.

Then divide 675 by that sum to find the size of 1 part.

Finally multiply that answer by 5 (Lionel's number in the ratio) to find out how much Lionel received.

$$4 + 5 = 9$$

$$675 \div 9 = 75$$

$$75 \times 5 = 375$$

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So Lionel received \$375.

Multiply that by $\frac{3}{5}$ (or divide by 5 and then multiply by 3) to find how much money Lionel gives to his mother.

$$\frac{3}{5} \times 375 = 225$$

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\$225 []

Q9

9

Start by figuring out what percentage Kyle gets.

Then write the Joe : Kyle ratio as a ratio of their percentages.

$$\text{Kyle gets } 100 - 35 = 65\%$$

$$\text{So Joe : Kyle} = 35 : 65$$

Now you need to simplify that ratio, so that the 'Joe' number is 7 (to match the '7' in $7 : n$).

$7 \times 5 = 35$, so divide both sides of the ratio by 5.

$$35 : 65 = (35 \div 5) : (65 \div 5) = 7 : 13$$

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$7 : 13$ and $7 : n$ have to be the same ratio, so this lets you know that $n = 13$.

$n = 13$ []

Q10

'Cashews' appears in both ratios, so use that as the connecting link.

'Scale up' the Almonds : Cashews ratio by a factor of 5, and scale up the Cashews : Peanuts ratio by a factor of 3.
Then join the two ratios together because the 'Cashews' number is now 15 in both of them.

$$\text{Almonds : Cashews} = 1 : 3 = (1 \times 5) : (3 \times 5) = 5 : 15$$

$$\text{Cashews : Peanuts} = 5 : 7 = (5 \times 3) : (7 \times 3) = 15 : 21$$

$$\text{Almonds : Cashews : Peanuts} = 5 : 15 : 21$$

[1]

Now add up the ratio numbers in that combined ratio to find the number of 'parts' that the ratio divides the 1025 nuts into.
Then divide 1025 by that sum to find the size of 1 part.

$$5 + 15 + 21 = 41$$

$$1025 \div 41 = 25$$

[1]

So each part contains 25 nuts.

Multiply that by 15 (the 'Cashews' number in the triple ratio) to find the number of cashews.

$$25 \times 15 = 375$$

[1]

375 cashews [1]**Q11**

11

'Blue' appears in both ratios, so use that as the connecting link.

'Scale up' the blue : green ratio by a factor of 9.

Then join the two ratios together because the 'blue' number is now 9 in both of them.

$$\text{blue : green} = 1 : 4 = (1 \times 9) : (4 \times 9) = 9 : 36$$

$$\text{red : blue : green} = 5 : 9 : 36$$

[1]

Now add up the ratio numbers in that combined ratio to find the number of 'parts' that the ratio divides the pens into.

$$5 + 9 + 36 = 50$$

[1]

So there are 50 parts, and 9 of those parts are blue pens.

Divide 9 by 50 to find the fraction of pens that are blue.

$$9 \div 50 = \frac{9}{50}$$

[1]

And finally convert that into a percentage.

$$\frac{9}{50} \times 100 = 0.18 \times 100 = 18\%$$

18% [1]**Q12**

12

'Women' appears in both ratios, so use that as the connecting link.

'Scale up' the men : women ratio by a factor of 2.

Then join the two ratios together because the 'women' number is now 10 in both of them.

$$\text{men : women} = 4 : 5 = (4 \times 2) : (5 \times 2) = 8 : 10$$

$$\text{men : women : children} = 8 : 10 : 7$$

[1]

Now add up the ratio numbers in that combined ratio to find the number of 'parts' that the ratio divides the 250 people into. Then divide 250 by that sum to find the size of 1 part.

$$8 + 10 + 7 = 25$$

$$250 \div 25 = 10$$

[1]

So each part contains 10 people.

Multiply that by 8 (the 'men' number in the triple ratio) to find the number of men.

$$10 \times 8 = 80$$

[1]

80 men [1]**Q13**

13

'Sherberts' appears in both ratios, so use that as the connecting link.

Scale up the mints : sherberts ratio by a factor of 7.

Scale up the sherberts : toffees ratio by a factor of 3.

Then join the two ratios together because the 'sherberts' number is now 21 in both of them.

$$\text{mints : sherberts} = 2 : 3 = (2 \times 7) : (3 \times 7) = 14 : 21$$

$$\text{sherberts : toffees} = 7 : 5 = (7 \times 3) : (5 \times 3) = 21 : 15$$

$$\text{mints : sherberts : toffees} = 14 : 21 : 15$$

[1]

So sherberts are responsible for 21 parts in the combined ratio.

Divide that by the total number of parts (i.e., the sum of the three ratio numbers) to find the fraction that are sherberts.

$$\frac{21}{14 + 21 + 15}$$

[1]

 $\frac{21}{50}$ [1]