

Sharing in a Ratio

Solutions

For AQA GCSE Mathematics (8300) • Foundation tier

Each question is shown in grey, followed by the working, one step per line. The final answer is in a box. *Marks* shows how the marks are usually given in the exam, and **Tip** points out a common mistake.

1 (2 marks)

A playlist has 48 songs.

The songs are pop songs or rock songs.

$$\text{pop songs} : \text{rock songs} = 5 : 3$$

How many pop songs are on the playlist?

$$\text{Total number of parts} = 5 + 3 = 8$$

$$\text{One part} = 48 \div 8 = 6 \text{ songs}$$

Pop songs are 5 parts.

$$5 \times 6 = 30$$

Answer: 30

Tip: Divide by the **total** number of parts ($5 + 3 = 8$), not by 5.

Marks: 1 mark for $48 \div 8$. 1 mark for 30.

2 (3 marks)

Divide 336 in the ratio 5 : 9

$$\text{Total number of parts} = 5 + 9 = 14$$

$$\text{One part} = 336 \div 14 = 24$$

$$5 \text{ parts} = 5 \times 24 = 120$$

$$9 \text{ parts} = 9 \times 24 = 216$$

Check: $120 + 216 = 336$ ✓

Answer: 120 : 216

Marks: 1 mark for $336 \div 14$. 1 mark for 5×24 or 9×24 . 1 mark for both answers.

3 (2 marks)

Share £210 in the ratio 3 : 4

Total number of parts = $3 + 4 = 7$

One part = $210 \div 7 = £30$

3 parts = $3 \times 30 = £90$

4 parts = $4 \times 30 = £120$

Check: $90 + 120 = 210$ ✓

Answer: £90 and £120

Marks: 1 mark for $210 \div 7$. 1 mark for both amounts.

4 (2 marks)

A café makes granola by mixing oats, nuts and dried fruit in the ratio

oats : nuts : dried fruit = 7 : 2 : 3

The café makes 1.8 kg of granola.

How many grams of nuts does the café use?

Change the mass to grams: $1.8 \text{ kg} = 1800 \text{ g}$

Total number of parts = $7 + 2 + 3 = 12$

One part = $1800 \div 12 = 150 \text{ g}$

Nuts are 2 parts: $2 \times 150 = 300$ g

Answer: 300 g

Tip: The answer is asked for in grams, so change 1.8 kg to 1800 g. Use all three parts of the ratio (12), not just $7 + 2$.

Marks: 1 mark for $1800 \div 12$ (or $1.8 \div 12$). 1 mark for 300 g.

5 (3 marks)

Divide 26 in the ratio 3 : 5

Total number of parts = $3 + 5 = 8$

One part = $26 \div 8 = 3.25$

3 parts = $3 \times 3.25 = 9.75$

5 parts = $5 \times 3.25 = 16.25$

Check: $9.75 + 16.25 = 26$ ✓

Answer: 9.75 : 16.25

Tip: The answers do not have to be whole numbers. Divide by 8 parts and keep the decimals.

Marks: 1 mark for $26 \div 8$. 1 mark for 3×3.25 or 5×3.25 . 1 mark for both answers.

6 (2 marks)

A cycling club has more than 40 members but fewer than 50 members.

Each member rides either a road bike or a mountain bike.

road bike riders : mountain bike riders = 4 : 7

How many members ride mountain bikes?

Total number of parts = $4 + 7 = 11$

So the number of members must be a multiple of 11.

Multiples of 11: 33, 44, 55, ...

The only one between 40 and 50 is 44.

$$\text{One part} = 44 \div 11 = 4$$

$$\text{Mountain bikes: } 7 \times 4 = 28$$

Answer: 28

Tip: The number of members must divide exactly into $4 + 7 = 11$ parts. Then answer the question: it asks for the mountain bike riders, not the total.

Marks: 1 mark for 44 members (or using multiples of 11). 1 mark for 28.

7 (3 marks)

A packet of wildflower seeds contains only poppy, cornflower and daisy seeds.

$$\text{poppy : cornflower : daisy} = 9 : 4 : 2$$

There are 360 seeds in the packet.

How many more poppy seeds than cornflower seeds are in the packet?

$$\text{Total number of parts} = 9 + 4 + 2 = 15$$

$$\text{One part} = 360 \div 15 = 24 \text{ seeds}$$

$$\text{Poppy: } 9 \times 24 = 216$$

$$\text{Cornflower: } 4 \times 24 = 96$$

$$\text{Difference} = 216 - 96 = 120$$

$$\text{Quicker: poppy has } 9 - 4 = 5 \text{ more parts, and } 5 \times 24 = 120.$$

Answer: 120

Marks: 1 mark for 24. 1 mark for 216 and 96 (or 5×24). 1 mark for 120.

8 (3 marks)

Elif and Bartek deliver leaflets.

leaflets Elif delivers : leaflets Bartek delivers = 4 : 5

Bartek delivers 135 leaflets.

They are paid 6p for each leaflet they deliver.

How much are they paid altogether?

Give your answer in pounds.

Bartek delivers 5 parts, and 5 parts = 135 leaflets

One part = $135 \div 5 = 27$ leaflets

Altogether they deliver $4 + 5 = 9$ parts: $9 \times 27 = 243$ leaflets

Pay = $243 \times 6 = 1458$ p

1458p = £14.58

Answer: £14.58

Tip: 135 is Bartek's share, not the total. Divide by Bartek's 5 parts, not by $4 + 5 = 9$.

Marks: 1 mark for 27. 1 mark for 243 leaflets (or Elif's 108). 1 mark for £14.58.

9 (1 mark)

The only players in a youth orchestra are string players and wind players.

string players : wind players = 13 : 20

Which of these could be the total number of players in the orchestra?

Circle your answer.

Options: 40, 52, 66, 80

Total number of parts = $13 + 20 = 33$

The number of players must be a multiple of 33.

$66 = 2 \times 33$ ✓

40, 52 and 80 are not multiples of 33.

Answer: 66

Tip: Add the parts of the ratio. 52 is a multiple of 13, but the **total** must be a multiple of $13 + 20 = 33$.

10 (4 marks)

A gardener makes potting mix by mixing compost and grit in the ratio 5 : 1 by volume.
Compost is sold in 50-litre bags. Each bag costs £6.50
Grit is sold in 20-litre bags. Each bag costs £4
She wants to make 180 litres of potting mix.

Work out the total cost of the bags she needs to buy.

Total number of parts = $5 + 1 = 6$

One part = $180 \div 6 = 30$ litres

Compost: $5 \times 30 = 150$ litres

Grit: $1 \times 30 = 30$ litres

Compost bags: $150 \div 50 = 3$ bags, costing $3 \times 6.50 = £19.50$

Grit bags: $30 \div 20 = 1.5$, so she must buy 2 bags, costing $2 \times 4 = £8$

Total: $19.50 + 8 = £27.50$

Answer: £27.50

Tip: You cannot buy part of a bag. 1.5 bags of grit means she must buy 2 bags.

Marks: 1 mark for $180 \div 6$. 1 mark for 150 litres and 30 litres. 1 mark for 3 bags of compost and 2 bags of grit. 1 mark for £27.50.
