

Multi-Step Worded Problems

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)

Lily is 4 years older than Sam.

Sam is twice as old as Max.

Max is 7 years old.

Work out the total of their three ages.

Max is 7.

Sam is twice as old as Max: $2 \times 7 = 14$

Lily is 4 years older than Sam: $14 + 4 = 18$

Total: $7 + 14 + 18 = 39$

Answer: 39

Marks: 1 mark for Sam = 14 or Lily = 18. 1 mark for 39.

2 (2 marks)

Mia has £20

She wants to buy 3 books at £4.75 each and 2 pens at £1.99 each.

Does Mia have enough money? Tick a box.

You must show your working.

Books: $3 \times 4.75 = £14.25$

Pens: $2 \times 1.99 = £3.98$

Total: $14.25 + 3.98 = £18.23$

£18.23 is less than £20, so yes, she has enough.

Answer: Yes, the total is £18.23

Marks: 1 mark for £14.25 or £3.98. 1 mark for Yes with £18.23.

3 (2 marks)

185 students and 14 teachers go on a school trip.
Each coach holds 52 people.

Work out the least number of coaches needed.

Remember to count the teachers too.

Number of people: $185 + 14 = 199$

$199 \div 52 = 3.8 \dots$

3 coaches only hold $3 \times 52 = 156$ people, which is not enough.

So round **up** to 4 coaches.

Answer: 4

Tip: You cannot have part of a coach. If some people would be left behind, round up.

Marks: 1 mark for $199 \div 52$ (or $52 \times 4 = 208$). 1 mark for 4.

4 (3 marks)

A school buys 7 boxes of pencils.
Each box contains 144 pencils.
The pencils are shared equally between 36 classes.

How many pencils does each class get?

Total pencils: $7 \times 144 = 1008$

Share between 36 classes: $1008 \div 36 = 28$

Answer: 28

Marks: 1 mark for 7×144 . 1 mark for dividing by 36. 1 mark for 28.

5 (3 marks)

Ravi is cooking a chicken for a family dinner.
The chicken needs 1 hour 45 minutes in the oven.
When it comes out of the oven, it must rest for 20 minutes.
Ravi then needs 15 minutes to carve and serve it.
Dinner must be served at 19:15

What is the latest time Ravi can put the chicken in the oven?

Work backwards from 19:15.

Take off the 15 minutes to carve and serve: $19:15 - 15 \text{ min} = 19:00$

Take off the 20 minutes resting: $19:00 - 20 \text{ min} = 18:40$

Take off the 1 hour 45 minutes cooking: $18:40 - 1 \text{ hour} = 17:40$

$17:40 - 45 \text{ min} = 16:55$

Answer: 16:55 (4:55 pm)

Tip: There are 60 minutes in an hour, not 100. Count back in steps rather than subtracting times like ordinary decimals. Write 16:55 or 4:55 pm, never “16:55 pm”.

Marks: 1 mark for 2 hours 20 minutes in total, or for one correct step back (e.g. 19:00). 1 mark for a second correct step (e.g. 18:40). 1 mark for 16:55.

6 (3 marks)

A farmer collects 500 eggs.
He puts them into boxes of 6
He sells only the full boxes, for £1.85 each box.

How much money does the farmer get?

$500 \div 6 = 83 \text{ remainder } 2$

So there are 83 full boxes (the 2 spare eggs are not sold).

Money: $83 \times 1.85 = \text{£}153.55$

Answer: £153.55

Tip: Here you round **down**. The farmer only sells full boxes, so 83.3 boxes means 83 boxes.

Marks: 1 mark for $500 \div 6$. 1 mark for 83×1.85 . 1 mark for £153.55.

7 (3 marks)

Ali wants to buy a bike that costs £249

He already has £60

He saves £15 each week.

How many weeks will it take Ali to save enough money?

Money he still needs: $249 - 60 = \text{£}189$

Weeks: $189 \div 15 = 12.6$

After 12 weeks he has saved $12 \times 15 = \text{£}180$, which is not enough.

So he needs 13 weeks.

Answer: 13 weeks

Marks: 1 mark for £189. 1 mark for dividing by 15. 1 mark for 13.

8 (4 marks)

Rob is going to paint a wall.

The wall is a rectangle 5 m long and 3.2 m high.

He will paint two coats on the wall.

One tin of paint covers 12 m^2

Each tin costs £8.99

Work out the cost of the paint.

Area of the wall: $5 \times 3.2 = 16 \text{ m}^2$

Two coats means painting it twice: $2 \times 16 = 32 \text{ m}^2$

Tins: $32 \div 12 = 2.66 \dots$

2 tins are not enough, so he needs 3 tins.

Cost: $3 \times 8.99 = \text{£}26.97$

Answer: £26.97

Marks: 1 mark for the area, 16 m^2 . 1 mark for 32 m^2 . 1 mark for dividing by 12 and rounding up to 3 tins. 1 mark for £26.97.

9 (4 marks)

Rhea is going to cover a rectangular lawn with turf.

The lawn is 6.5 m long and 4 m wide.

Turf is sold in rectangular rolls.

Each roll is 60 cm wide and 2.5 m long.

Each roll costs £3.40

Rhea has £60

Does Rhea have enough money to buy the turf she needs? Tick a box.
You must show your working.

Change the width of a roll to metres: $60 \text{ cm} = 0.6 \text{ m}$

Area of one roll: $0.6 \times 2.5 = 1.5 \text{ m}^2$

Area of the lawn: $6.5 \times 4 = 26 \text{ m}^2$

Rolls: $26 \div 1.5 = 17.3 \dots$

17 rolls are not enough, so she needs 18 rolls.

Cost: $18 \times 3.40 = \text{£}61.20$

£61.20 is more than £60, so no, she does not have enough.

Answer: No, 18 rolls cost £61.20

Tip: Put all the lengths in the same units first: 60 cm is 0.6 m, not 60 m. Then round the number of rolls **up**, because 17 rolls would not cover the whole lawn.

Marks: 1 mark for the area of one roll, 1.5 m^2 (or $15\,000 \text{ cm}^2$). 1 mark for the lawn area, 26 m^2 . 1 mark for 18 rolls. 1 mark for No with £61.20.
