

Money and Financial Maths

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 (1 mark)

A laptop costs £450 plus VAT.

VAT is charged at 20%

Circle the total cost of the laptop.

Options: £470, £520, £540, £900

Find the VAT: $20\% \text{ of } £450 = 0.2 \times 450 = £90$

Add it to the price: $450 + 90 = £540$

Answer: £540

2 (3 marks)

An electric car uses 1 unit of electricity to travel 4 miles.

1 unit of electricity costs 32 pence.

Work out the cost of electricity, in pounds, to travel 300 miles.

Each unit takes the car 4 miles.

Units needed: $300 \div 4 = 75$ units

Each unit costs 32p.

Cost: $75 \times 32 = 2400\text{p}$

Change pence to pounds (divide by 100): $2400 \div 100 = \text{£}24$

Answer: £24

Tip: The question asks for pounds. £2400 would be far too much to drive 300 miles, so always change pence to pounds at the end.

Marks: 1 mark for $300 \div 4$. 1 mark for multiplying by 32 (or 0.32). 1 mark for £24.

3 (3 marks)

Mo's phone contract costs £18 per month.

This includes 300 minutes of calls.

Each extra minute costs 5p.

In March, Mo used 420 minutes of calls.

Work out Mo's bill for March.

The first 300 minutes are included in the £18.

Extra minutes: $420 - 300 = 120$

Cost of extra minutes: $120 \times 5\text{p} = 600\text{p} = \text{£}6$

Bill: $18 + 6 = \text{£}24$

Answer: £24

Marks: 1 mark for 120 extra minutes. 1 mark for $120 \times 5\text{p}$ (or 120×0.05). 1 mark for £24.

4 (3 marks)

Tomasz sells smoothies at a festival.

He pays £45 to hire a stall for the day.

The ingredients for each smoothie cost £1.35

He sells each smoothie for £3.20

Work out the smallest number of smoothies Tomasz needs to sell so that he makes a profit.

Profit on each smoothie: $3.20 - 1.35 = \text{£}1.85$

The profits must cover the £45 stall fee.

$$45 \div 1.85 = 24.32 \dots$$

24 smoothies: $24 \times 1.85 = £44.40$, which is less than £45, so no profit yet.

25 smoothies: $25 \times 1.85 = £46.25$, which is more than £45

So he must sell 25 smoothies.

Answer: 25

Tip: Round **up**, not to the nearest whole number. 24 smoothies does not quite cover the stall fee, so 24 is wrong.

Marks: 1 mark for £1.85 (or a correct trial such as $25 \times 3.20 - 25 \times 1.35 - 45$). 1 mark for $45 \div 1.85$. 1 mark for 25.

5 (3 marks)

People do not pay income tax on the first £12 570 they earn in a year.

Ollie has two jobs.

In his weekday job he earns £185 each week for 52 weeks.

In his weekend job he earns £72 each week for 40 weeks.

Will Ollie pay income tax this year?

You must show your working.

Tick one box.

Weekday job: $52 \times 185 = £9620$

Weekend job: $40 \times 72 = £2880$

Total for the year: $9620 + 2880 = £12\,500$

£12 500 is less than £12 570.

So no, Ollie will not pay income tax.

Answer: No, he earns £12 500

Tip: Use the correct number of weeks for each job. The weekend job only lasts 40 weeks, not 52.

Marks: 1 mark for £9620 or £2880. 1 mark for £12 500. 1 mark for No with £12 500.

6 (4 marks)

Joe is paid £11.44 per hour.
He works 7.5 hours each day, 5 days a week.

- (a) Work out Joe's pay for a normal week.

Hours in a week: $7.5 \times 5 = 37.5$ hours

Pay: $37.5 \times 11.44 = £429$

Answer: £429

Marks: 1 mark for $7.5 \times 5 \times 11.44$ (or 37.5 hours). 1 mark for £429.

- (b) One week Joe also works 4 hours of overtime.
Overtime is paid at time and a half.
Work out Joe's total pay for this week.

Time and a half means 1.5 times the normal rate.

Overtime rate: $11.44 \times 1.5 = £17.16$ per hour

Overtime pay: $4 \times 17.16 = £68.64$

Total: $429 + 68.64 = £497.64$

Answer: £497.64

Tip: Time and a half is 1.5× the hourly rate. It is not half of the rate.

Marks: 1 mark for £17.16 or £68.64. 1 mark for the total (follow-through from your answer to part (a)).

7 (3 marks)

Kara wants to buy a bike.

Shop A

£240 plus VAT at 20%

Shop B

£275 including VAT

Which shop is cheaper, and by how much?
You must show your working.

Shop A: add 20% VAT to £240.

$$240 \times 1.2 = \text{£}288$$

Shop B already includes VAT: £275

£275 is less than £288, so Shop B is cheaper.

$$\text{Difference: } 288 - 275 = \text{£}13$$

Answer: Shop B, by £13

Marks: 1 mark for 0.2×240 or 1.2×240 . 1 mark for £288. 1 mark for Shop B by £13.

8 (5 marks)

A youth club organises a trip to a theme park.

Coach hire costs £540

Tickets cost £32 each.

For every 10 tickets bought, the club gets 1 extra ticket free.

38 young people and 6 adult helpers go on the trip.

Each young person pays the club £45

The adult helpers do not pay.

Does the youth club make a profit or a loss on the trip?

Give the amount of the profit or loss.

You must show your working.

$$\text{Number of people going: } 38 + 6 = 44$$

Every 10 tickets bought gives 1 free, so 11 people for the price of 10.

$$44 \div 11 = 4, \text{ so the club buys 40 tickets and gets 4 free.}$$

$$\text{Cost of tickets: } 40 \times 32 = \text{£}1280$$

$$\text{Total cost: } 1280 + 540 = \text{£}1820$$

$$\text{Money paid by the young people: } 38 \times 45 = \text{£}1710$$

£1710 is less than £1820, so the club makes a loss.

Loss: $1820 - 1710 = £110$

Answer: A loss of £110

Tip: Tick off every cost as you use it, and remember the adults need tickets too even though they do not pay the club.

Marks: 1 mark for 40 tickets paid for. 1 mark for £1280. 1 mark for the total cost £1820. 1 mark for £1710. 1 mark for a loss of £110.
