

Mock Set B – Paper 2

Solutions

For Pearson Edexcel GCSE Mathematics (1MA1)

Foundation tier • Paper 2 (Calculator)

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)

Here are four numbers.

4.38 4.083 4.8 4.308

Write these numbers in order of size.

Start with the smallest number.

All four numbers start with 4, so compare the tenths: 0, 3, 3, 8

4.083 has 0 tenths, so it is the smallest. 4.8 has 8 tenths, so it is the largest.

4.308 and 4.38 both have 3 tenths. Compare the hundredths: $0 < 8$, so $4.308 < 4.38$

Answer: 4.083, 4.308, 4.38, 4.8

Tip: A number with more digits is not always bigger: 4.8 is bigger than 4.308. Compare the tenths first, then the hundredths.

2 (1 mark)

Change 8000 millilitres into litres.

1 litre = 1000 millilitres

$$8000 \div 1000 = 8$$

Answer: 8 litres

Tip: To change millilitres into litres, divide by 1000 (not by 100).

3 (1 mark)

Write 7465 correct to the nearest 10

The tens digit is 6. The next digit (units) is 5.

5 or more means round up: $7465 \rightarrow 7470$

Answer: 7470

Tip: A 5 in the next place rounds up, so 7465 becomes 7470, not 7460.

4 (1 mark)

Simplify $8 \times 3k$

Multiply the numbers: $8 \times 3 = 24$

Keep the letter: $24k$

Answer: $24k$

Tip: $8 \times 3k$ means $8 \times 3 \times k$. The answer is not $83k$ or $11k$.

5 (1 mark)

Work out the number that is halfway between -9 and 15

Add the two numbers and halve: $\frac{-9 + 15}{2} = \frac{6}{2} = 3$

Check: -9 to 3 is 12 , and 3 to 15 is 12 .

Answer: 3

Tip: The distance from -9 to 15 is 24 , so halfway is 12 on from -9 . It is not $24 \div 2 = 12$.

6 (2 marks)

The point R is shown on the grid.

(a) Write down the coordinates of the point R .

Go across first, then up or down.

R is 3 to the right and 4 down.

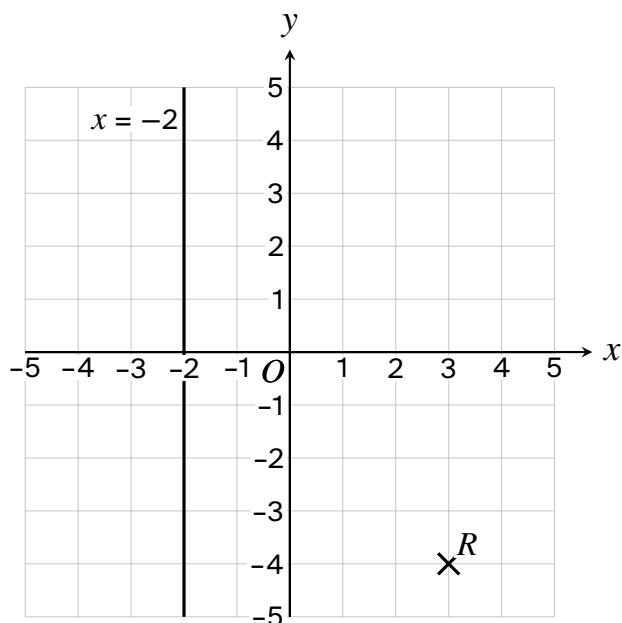
Answer: $(3, -4)$

Tip: Write the x -coordinate first. $(-4, 3)$ is a different point.

(b) On the grid, draw the line $x = -2$

Every point on the line $x = -2$ has x -coordinate -2 , for example $(-2, 0)$, $(-2, 3)$ and $(-2, -4)$.

So the line is vertical and goes through -2 on the x -axis.



Answer: A vertical line through $(-2, 0)$

Tip: $x = -2$ is a vertical line, not a horizontal one. Lines $y = \dots$ are horizontal.

7 (2 marks)

Jon will choose two different fruits from banana (B), kiwi (K), pineapple (P) and strawberry (S). List all the possible pairs of fruits Jon can choose.

Work systematically. Start with banana: BK, BP, BS

Then kiwi (with a fruit not already used with it): KP, KS

Then pineapple: PS

KB is the same pair as BK, so do not list it again.

There are 6 pairs.

Answer: BK, BP, BS, KP, KS, PS

Tip: A pair such as BK is the same as KB. Fix the first fruit and list every partner, then move on to the next fruit.

Marks: 2 marks for all 6 pairs with no repeats. 1 mark for at least 4 correct pairs.

8 (4 marks)

Jude is a care worker.

She uses her own car to visit people at their homes.

She works from Monday to Friday.

The mileage shown in her car on Monday morning and on Friday evening of one week is given below.

Monday morning

3	6	4	1	8
---	---	---	---	---

 miles

Friday evening

3	6	7	0	3
---	---	---	---	---

 miles

During the week, Jude drove 27 miles that were **not** for work.

Jude is paid 45p for each mile she drives for work.

She is also paid £3.20 for parking on each of the 5 days she works.

How much money should Jude claim for her mileage and parking this week?

Give your answer in pounds.

Miles driven this week: $36\,703 - 36\,418 = 285$ miles

Miles for work: $285 - 27 = 258$ miles

Mileage pay: $258 \times 0.45 = £116.10$

Parking: $5 \times 3.20 = £16.00$

Total: $116.10 + 16.00 = £132.10$

Answer: £132.10

Tip: Subtract the readings to find how far she drove. Take off the 27 miles that were not for work before you multiply by 45p.

Marks: 1 mark for the miles driven (285). 1 mark for the pay for the work miles. 1 mark for adding the parking money. 1 mark for £132.10.

9 (3 marks)

Max records the number of emails he gets each weekday for one week.
The table shows information about his results.

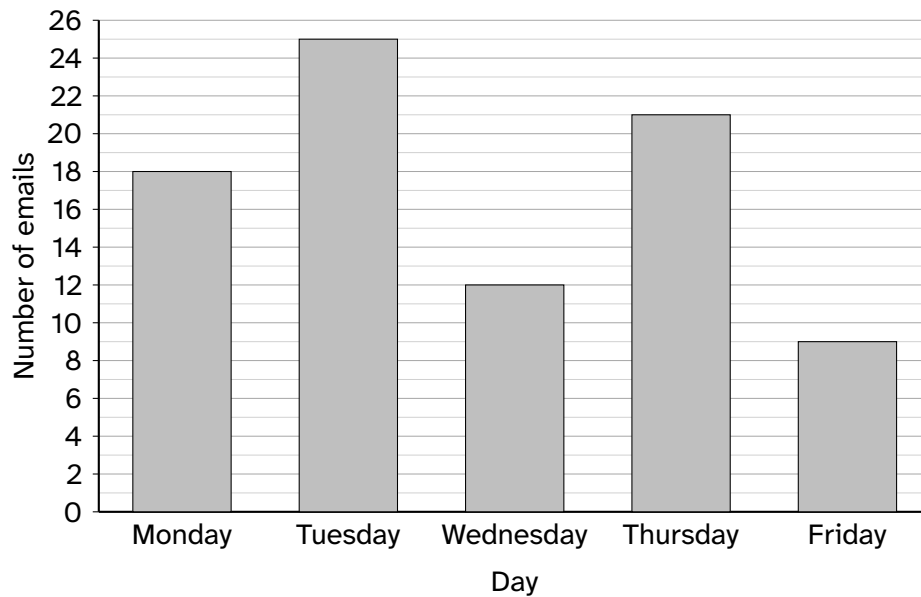
Day	Number of emails
Monday	18
Tuesday	25
Wednesday	12
Thursday	21
Friday	9

On the grid, draw a suitable bar chart to show this information.

Choose a scale that fits the grid: the largest number is 25, so going up in 2s (one square = 2 emails) works well.

Label the vertical axis “Number of emails” and the horizontal axis “Day”.

Draw 5 bars of equal width, with gaps between them, to heights 18, 25, 12, 21 and 9.



Answer: Bar chart with a linear scale from 0, labelled axes, and bars of equal width at heights 18, 25, 12, 21, 9

Tip: Number the lines on the vertical axis, not the spaces, and start at 0. Use an easy scale (such as 1 or 2 emails per square).

Marks: 3 marks for a fully correct bar chart. 2 marks if it has a labelled linear scale and 3 or 4 bars correct (or all 5 bars correct but no labels). 1 mark for a labelled linear scale or at least 2 correct bars.

10 (3 marks)

(a) Input $\rightarrow +13 \rightarrow \div 6 \rightarrow$ output. Work out the output when the input is 29

$$29 + 13 = 42$$

$$42 \div 6 = 7$$

Answer: 7

(b) A one-step number machine turns the input 6 into the output 30. Write down two different operations that could go in the box.

Multiplying: $6 \times 5 = 30$, so $\times 5$ works.

Adding: $6 + 24 = 30$, so $+24$ works.

Answer: $\times 5$ and $+24$

Tip: Write the operation, not just the number: “ $\times 5$ ”, not “5”.

Marks: 1 mark for each correct operation.

11 (3 marks)

150 students in Year 9 and Year 10 each choose one after-school club.

They choose art or drama or sport.

72 of the students are in Year 10.

41 students choose sport.

19 of the students who choose sport are in Year 9.

23 Year 10 students choose art.

56 students choose drama.

How many Year 9 students choose drama?

Year 9 total: $150 - 72 = 78$

Sport: Year 10 = $41 - 19 = 22$

Year 10 drama: $72 - 23 - 22 = 27$

Year 9 drama: $56 - 27 = 29$

	Art	Drama	Sport	Total
Year 9	30	29	19	78
Year 10	23	27	22	72
Total	53	56	41	150

Check: Year 9 row $30 + 29 + 19 = 78$ and the totals add up to 150.

Answer: 29

Tip: Put each fact in the right cell first. Then use the totals: every row and every column must add up.

Marks: 1 mark for a first correct value (eg 78 or 22). 1 mark for Year 10 drama (27). 1 mark for 29.

12 (3 marks)

A sports hall is a rectangle.

The hall is 36 m long and 22 m wide.

Rhys wants to make a scale drawing of the sports hall on a sheet of paper.

The paper is a rectangle 29.7 cm long and 21 cm wide.

He uses a scale of 1:120

Will Rhys's scale drawing fit on the paper?

You must show how you get your answer.

Change the real lengths into cm: $36 \text{ m} = 3600 \text{ cm}$ and $22 \text{ m} = 2200 \text{ cm}$.

A scale of 1:120 means divide the real length by 120.

Length on the drawing: $3600 \div 120 = 30 \text{ cm}$

Width on the drawing: $2200 \div 120 = 18.3 \dots \text{ cm}$

The width fits ($18.3 < 21$), but the length does not: 30 cm is longer than 29.7 cm.

So the drawing will **not** fit on the paper.

Answer: No: the drawing would be 30 cm long, which is more than 29.7 cm

Tip: Use the same units. $36 \div 120 = 0.3$ is in metres, so it is 30 cm, not 0.3 cm.

Marks: 1 mark for changing a length to cm and dividing by 120. 1 mark for 30 cm. 1 mark for No with 30 cm compared with 29.7 cm.

13 (3 marks)

A theatre sold 520 tickets for a show.

35% of the people with tickets bought a programme.

Each of these people bought one programme.

Each programme cost £4.50

Work out the total amount of money the theatre took from selling programmes.

Number of programmes: $35\% \text{ of } 520 = 0.35 \times 520 = 182$

Money: $182 \times 4.50 = \text{£}819$

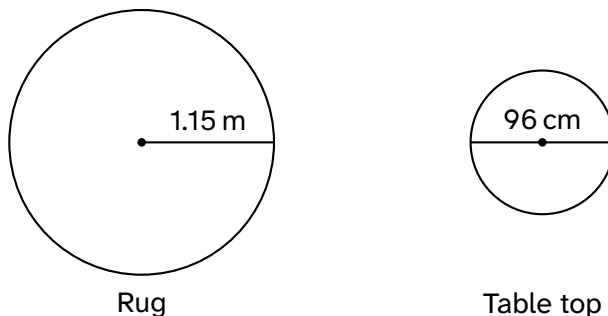
Answer: £819

Tip: Find how many programmes were sold first (35% of the people), then multiply by the price.

Marks: 1 mark for 35% of 520. 1 mark for multiplying by £4.50. 1 mark for £819.

14 (4 marks)

The diagram shows a circular rug and a circular table top.



*Diagram **NOT** accurately drawn*

- (a) The rug has radius 1.15 m.
Work out the area of the rug.
Give your answer correct to 1 decimal place.

$$\text{Area of a circle} = \pi r^2$$

$$\pi \times 1.15^2 = 4.1547 \dots$$

4.2 m² (1 d.p.)

Answer: 4.2 m²

Tip: Square the radius before you multiply by π . $\pi \times 2.3$ is the circumference, not the area.

Marks: 1 mark for $\pi \times 1.15^2$. 1 mark for 4.2.

- (b) The table top has diameter 96 cm.
Layla has 3 m of trim.
She wants to put the trim all the way around the edge of the table top.
Does Layla have enough trim?
You must show how you get your answer.

The trim goes around the edge, so find the circumference.

$$\text{Circumference} = \pi d = \pi \times 96 = 301.59 \dots \text{ cm}$$

$$3 \text{ m} = 300 \text{ cm}$$

301.6 cm is more than 300 cm, so Layla does **not** have enough trim (she is about 1.6 cm short).

Answer: No: the circumference is 301.6 cm, which is more than 300 cm

Tip: The edge of a circle is its circumference, $\pi \times$ diameter. Make the units match before you compare: 3 m = 300 cm.

Marks: 1 mark for $\pi \times 96$. 1 mark for No with 301.6 cm (or 3.016 m) compared with 300 cm (or 3 m).

15 (3 marks)

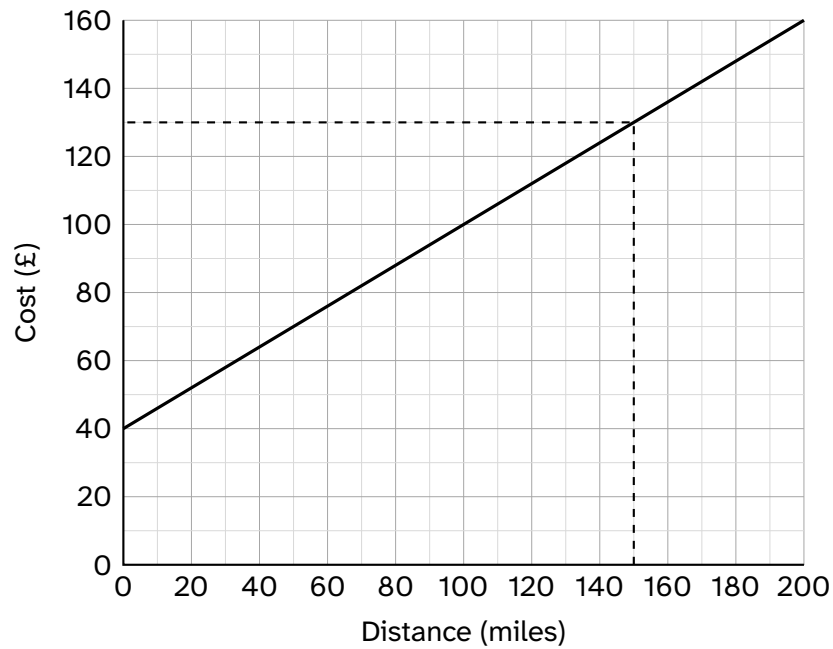
A company hires out minibuses.

You can use the graph to find the cost of hiring a minibus for a trip of up to 200 miles.

- (a) Use the graph to find the cost of hiring the minibus for a trip of 150 miles.

Go up from 150 miles to the line, then across to the cost axis.

Each small square on the cost axis is £10.



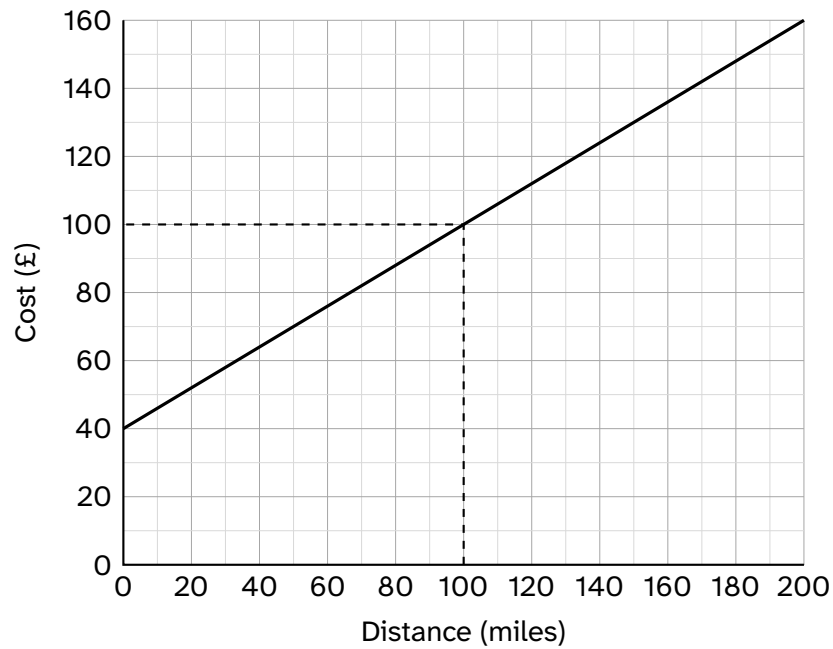
Answer: £130

Tip: Work out what one small square stands for before you read the scale: on the cost axis it is £10.

- (b) The graph only goes up to 200 miles.
The cost of a longer trip is worked out in the same way.
Jayden's football club hires the minibus for a trip of 320 miles.
Work out the cost of hiring the minibus for this trip.

At 0 miles the cost is £40: this is a fixed charge.

From 0 to 100 miles the cost goes up from £40 to £100, so each mile costs
 $£60 \div 100 = £0.60$



For 320 miles: $40 + 320 \times 0.60 = 40 + 192 = \text{£}232$

Answer: £232

Tip: The £40 at 0 miles is paid once only. Doubling the cost of 160 miles ($2 \times \text{£}136 = \text{£}272$) counts it twice.

Marks: 1 mark for finding the cost per mile (60p) or another correct method. 1 mark for £232.

16 (3 marks)

A shop sells rice in three sizes of bag.

Small bag	Medium bag	Large bag
750 g	2 kg	5 kg
£1.65	£4.30	£10.90

Reece wants to buy some rice.

He wants to get the best value for money.

Which size of bag gives the best value for money?

You must show how you get your answer.

Find the cost of 1 kg for each bag. 750 g = 0.75 kg.

Small: $1.65 \div 0.75 = \text{£}2.20$ per kg

Medium: $4.30 \div 2 = \text{£}2.15$ per kg

Large: $10.90 \div 5 = \text{£}2.18$ per kg

£2.15 is the lowest cost per kg, so the medium bag is the best value.

Answer: The medium bag (£2.15 per kg, compared with £2.20 and £2.18)

Tip: Compare like with like: work out the cost of the same amount (such as 1 kg or 100 g) for every bag. Change 750 g into kg first.

Marks: 1 mark for a comparable figure for one bag. 1 mark for comparable figures for all three bags. 1 mark for the medium bag with correct figures.

17 (2 marks)

Use your calculator to work out the value of $\frac{6.2^2 + 1.75}{8.4 - 3.06}$

Write down all the figures on your calculator display.

Top: $6.2^2 + 1.75 = 38.44 + 1.75 = 40.19$

Bottom: $8.4 - 3.06 = 5.34$

$$40.19 \div 5.34 = 7.526217228 \dots$$

Answer: 7.526217228

Tip: Use the fraction key, or put brackets around the whole top and the whole bottom:
 $(6.2^2 + 1.75) \div (8.4 - 3.06)$.

Marks: 1 mark for working out the top (40.19) or the bottom (5.34). 1 mark for the full display.

18 (4 marks)

Hana pays a monthly price for her broadband.

Her monthly price is £34.50

The broadband company increases the monthly price by 8%

(a) Work out Hana's new monthly price.

An increase of 8% means a multiplier of $1 + 0.08 = 1.08$

$$34.50 \times 1.08 = £37.26$$

Answer: £37.26

Tip: Add the increase on: 8% of £34.50 is £2.76, and this is not the new price.

Marks: 1 mark for 34.50×1.08 (or 8% of $34.50 = 2.76$). 1 mark for £37.26.

(b) One year later, the company reduces Hana's monthly price by 8%

Hana says,

"My monthly price will go back to £34.50"

Show that Hana is wrong.

A decrease of 8% means a multiplier of $1 - 0.08 = 0.92$

$$37.26 \times 0.92 = 34.2792, \text{ so the new price is } £34.28$$

£34.28 is not £34.50, so Hana is wrong.

(The 8% decrease is 8% of £37.26, which is more than 8% of £34.50.)

Answer: $37.26 \times 0.92 = £34.28$, which is less than £34.50

Tip: The 8% decrease is worked out on the new, bigger price, so the price falls by more than it went up.

Marks: 1 mark for 37.26×0.92 (or 8% of 37.26). 1 mark for £34.28 with a conclusion.

19 (5 marks)

(a) Expand $3y(2y - 7)$

Multiply each term in the bracket by $3y$.

$$3y \times 2y = 6y^2 \quad \text{and} \quad 3y \times (-7) = -21y$$

Answer: $6y^2 - 21y$

Tip: $3y \times 2y = 6y^2$, not $6y$: multiply the letters as well as the numbers.

(b) Factorise fully $10m^3 - 15m^2$

The HCF of 10 and 15 is 5.

Both terms contain m^2 ($m^3 = m^2 \times m$).

So the common factor is $5m^2$.

$$10m^3 \div 5m^2 = 2m \quad \text{and} \quad 15m^2 \div 5m^2 = 3$$

$$10m^3 - 15m^2 = 5m^2(2m - 3)$$

Answer: $5m^2(2m - 3)$

Tip: "Fully" means take out every common factor. $5(2m^3 - 3m^2)$ and $5m(2m^2 - 3m)$ are not finished: m^2 is still a common factor.

Marks: 1 mark for a correct partial factorisation. 1 mark for $5m^2(2m - 3)$.

(c) Make t the subject of the formula $P = 3r + 4t$

Subtract $3r$ from both sides: $P - 3r = 4t$

Divide both sides by 4: $t = \frac{P - 3r}{4}$

Answer: $t = \frac{P - 3r}{4}$

Tip: Undo the $+3r$ first, then the $\times 4$. Divide the **whole** of $P - 3r$ by 4.

Marks: 1 mark for $P - 3r = 4t$. 1 mark for the correct formula.

20 (3 marks)

- (a) Find the reciprocal of 0.32

The reciprocal of a number is $1 \div$ the number.

$$1 \div 0.32 = 3.125$$

Answer: 3.125

Tip: The reciprocal is $1 \div 0.32$, not $0.32 \div 1$ and not -0.32 .

- (b) The mass of a lorry is 6300 kg correct to 2 significant figures. Complete the error interval for m .

To 2 significant figures, 6300 is rounded to the nearest 100.

Half of 100 is 50.

Lower bound: $6300 - 50 = 6250$

Upper bound: $6300 + 50 = 6350$

$$6250 \leq m < 6350$$

Answer: $6250 \leq m < 6350$

Tip: The second significant figure of 6300 is the hundreds digit, so the mass was rounded to the nearest 100 kg, not the nearest 10.

Marks: 1 mark for each end of the interval.

21 (3 marks)

- (a) Write 76 as a product of its prime factors.

$$76 = 2 \times 38$$

$$38 = 2 \times 19$$

19 is prime.

$$76 = 2 \times 2 \times 19 = 2^2 \times 19$$

Answer: $2^2 \times 19$

Tip: A product means multiply: write $2 \times 2 \times 19$, not 2, 2, 19 or $2 + 2 + 19$.

Marks: 1 mark for a correct method (eg a factor tree with at least two correct steps). 1 mark for $2^2 \times 19$.

- (b) $A = 2^3 \times 3 \times 5$
 $B = 2 \times 3^2 \times 5$

Fraser says,

“The lowest common multiple (LCM) of A and B is $2 \times 3 \times 5$ ”

Explain why Fraser is wrong.

$2 \times 3 \times 5 = 30$ uses the lowest power of each prime. That is the **HCF**.

30 is not a multiple of $A = 120$, so it cannot be a common multiple.

The LCM uses the highest power of each prime: $2^3 \times 3^2 \times 5 = 360$

Answer: He has found the HCF. 30 is not a multiple of A ($= 120$); the LCM is $2^3 \times 3^2 \times 5 = 360$

Tip: For the LCM take the highest power of every prime in either number. For the HCF take the lowest power of the primes in both.

22 (3 marks)

Keira is a window cleaner.

She uses a ladder that is 6.5 m long.

She stands the ladder on horizontal ground with its bottom end 1.6 m from a vertical wall of a house.

The top of the ladder rests against the wall.

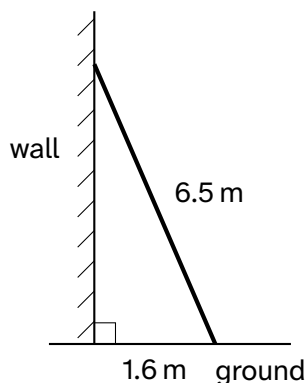


Diagram **NOT** accurately drawn

Keira needs the top of the ladder to reach a window sill.

The window sill is 6.4 m above the ground.

Will the top of the ladder reach the window sill?

You must show how you get your answer.

The wall, the ground and the ladder make a right-angled triangle. The ladder is the hypotenuse.

$$\text{Height up the wall: } h^2 = 6.5^2 - 1.6^2 = 42.25 - 2.56 = 39.69$$

$$h = \sqrt{39.69} = 6.3 \text{ m}$$

6.3 m is less than 6.4 m, so the ladder will **not** reach the window sill.

Answer: No: the ladder reaches 6.3 m up the wall, which is less than 6.4 m

Tip: The ladder is the longest side, so subtract the squares. Adding them gives 6.69, which is longer than the ladder itself.

Marks: 1 mark for $6.5^2 - 1.6^2$. 1 mark for 6.3. 1 mark for No with 6.3 compared with 6.4.

23 (3 marks)

The number of members of a running club increased by 15% from 2025 to 2026.
In 2026 the club had 253 members.

Work out the number of members the club had in 2025.

The 2026 number is $100\% + 15\% = 115\%$ of the 2025 number.

115% is 253, so 1% is $253 \div 115 = 2.2$

100% is $2.2 \times 100 = 220$

(Or: $253 \div 1.15 = 220$.)

Check: $220 \times 1.15 = 253$

Answer: 220

Tip: Do not take 15% off 253: the 15% was worked out on the 2025 number, not on 253.
Divide by 1.15.

Marks: 1 mark for $115\% = 253$ (or 1.15). 1 mark for $253 \div 1.15$. 1 mark for 220.

24 (3 marks)

Arjun buys a new laptop for £680

The value of the laptop decreases by 12% each year.

Work out the value of the laptop at the end of 3 years.

Give your answer correct to the nearest penny.

A decrease of 12% means a multiplier of $1 - 0.12 = 0.88$

After 3 years: 680×0.88^3

$= 680 \times 0.681472 = 463.40096$

£463.40 (nearest penny)

Answer: £463.40

Tip: The value goes down by 12% of a smaller amount each year, so do not just take off $3 \times 12\% = 36\%$ (that gives £435.20).

Marks: 1 mark for 0.88 (or the value after 1 year, £598.40). 1 mark for 680×0.88^3 . 1 mark for £463.40.

25 (4 marks)

Sadia has a biased dice.

The table shows some of the probabilities that the dice will land on each number.

Number on dice	1	2	3	4	5	6
Probability	0.15		0.2	0.12		0.25

The probability that the dice will land on 2 is the same as the probability that the dice will land on 5

Sadia is going to roll the dice 300 times.

Work out an estimate for the number of times the dice will land on an even number.

The probabilities add up to 1.

Given probabilities: $0.15 + 0.2 + 0.12 + 0.25 = 0.72$

So the two missing probabilities add up to $1 - 0.72 = 0.28$

They are equal, so each is $0.28 \div 2 = 0.14$

$P(\text{even}) = P(2) + P(4) + P(6) = 0.14 + 0.12 + 0.25 = 0.51$

Estimate: $0.51 \times 300 = 153$

Answer: 153

Tip: Two numbers have missing probabilities. They are equal, so halve what is left over. The even numbers are 2, 4 and 6.

Marks: 1 mark for $1 - 0.72 = 0.28$. 1 mark for 0.14. 1 mark for a complete method. 1 mark for 153.

26 (5 marks)

Yusra runs a farm shop.

Last month she sold 840 litres of milk.

20% of the milk was goat's milk.

The rest of the milk was whole milk and semi-skimmed milk in the ratio
amount of whole milk : amount of semi-skimmed milk = 3:4

She sells the semi-skimmed milk for £1.15 per litre.

Yusra says,

"I took less than £450 from selling semi-skimmed milk last month."

Is Yusra correct?

You must show how you get your answer.

Goat's milk is 20%, so whole and semi-skimmed milk make up 80%.

$$0.8 \times 840 = 672 \text{ litres}$$

Ratio 3:4 has $3 + 4 = 7$ parts: $672 \div 7 = 96$ litres per part

Semi-skimmed milk: $4 \times 96 = 384$ litres

Money: $384 \times 1.15 = £441.60$

£441.60 is less than £450, so Yusra is correct.

Answer: Yes: she took £441.60 from semi-skimmed milk, which is less than £450

Tip: Take off the goat's milk first: the ratio 3:4 is only for the other 80%. Then share 672 litres into 7 parts.

Marks: 1 mark for the 80% (672 litres). 1 mark for dividing in the ratio 3 : 4. 1 mark for multiplying by £1.15. 1 mark for £441.60. 1 mark for Yes with £441.60.

27 (2 marks)

PQR is a right-angled triangle.

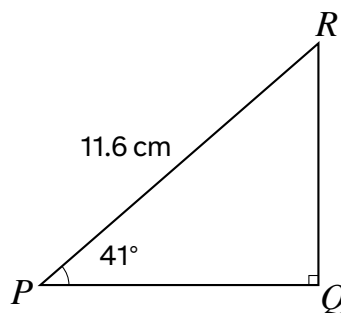


Diagram **NOT** accurately drawn

Work out the length of QR .

Give your answer correct to 3 significant figures.

From the 41° angle: QR is the opposite side and $PR = 11.6$ cm is the hypotenuse.

$$\text{So use sin: } \sin 41^\circ = \frac{QR}{11.6}$$

$$QR = 11.6 \times \sin 41^\circ = 7.6102 \dots$$

$$QR = 7.61 \text{ cm (3 s.f.)}$$

Answer: 7.61 cm

Tip: Label the sides from the given angle first: opposite, adjacent, hypotenuse. Check your calculator is in degrees.

Marks: 1 mark for $11.6 \times \sin 41^\circ$. 1 mark for 7.61.

28 (2 marks)

A bee has a mass of 8.4×10^{-2} grams.

A grain of pollen has a mass of 2.4×10^{-8} grams.

How many times heavier is the bee than the grain of pollen?

Give your answer in standard form.

Divide the bigger mass by the smaller mass.

$$(8.4 \times 10^{-2}) \div (2.4 \times 10^{-8})$$

$$8.4 \div 2.4 = 3.5 \text{ and } 10^{-2} \div 10^{-8} = 10^{-2-(-8)} = 10^6$$

$$= 3.5 \times 10^6$$

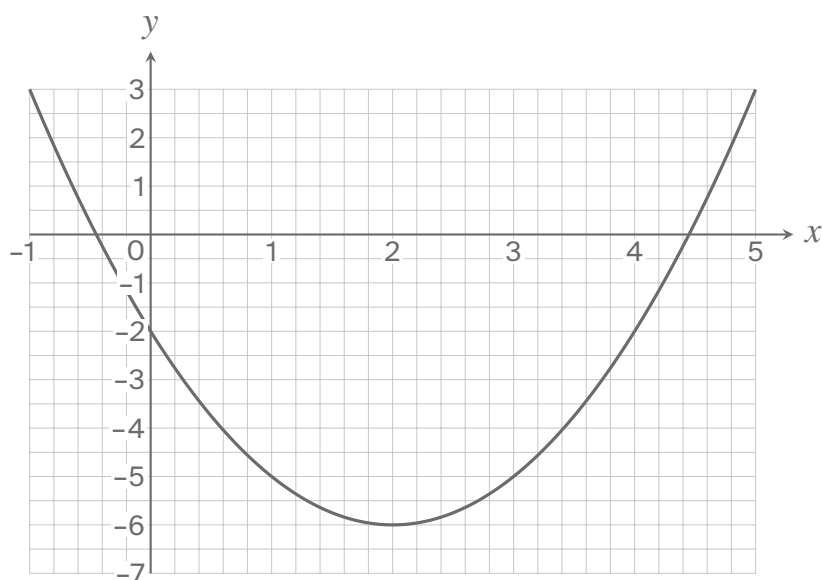
Answer: 3.5×10^6

Tip: Use the $\times 10^x$ key on your calculator and put brackets round each number. 3 500 000 is right but is not in standard form.

Marks: 1 mark for dividing the masses (or 3 500 000). 1 mark for 3.5×10^6 .

29 (3 marks)

Here is the graph of $y = x^2 - 4x - 2$ for values of x from -1 to 5



- (a) Write down the coordinates of the turning point of the graph.

The turning point is the lowest point of the curve.

It is at $x = 2$, $y = -6$.

Answer: $(2, -6)$

Tip: Give both coordinates, with x first: $(2, -6)$, not $(-6, 2)$.

- (b) Use the graph to find estimates for the solutions of $x^2 - 4x - 2 = 0$

The solutions are where $y = 0$, so read off where the curve crosses the x -axis.

$x \approx -0.45$ and $x \approx 4.45$ (any values from -0.5 to -0.4 and from 4.4 to 4.5 are fine)

Answer: -0.45 and 4.45

Tip: There are two solutions, one on each side of the turning point. Give both.

(c) Tia says,

“There is a value of x for which $x^2 - 4x - 2 = -7$ ”

Is Tia correct?

Give a reason for your answer.

The lowest point of the graph is the turning point, where $y = -6$.

So $y = x^2 - 4x - 2$ is never less than -6 .

The line $y = -7$ does not meet the curve, so Tia is **not** correct.

Answer: No: the lowest value of $x^2 - 4x - 2$ is -6 (at the turning point), so it can never equal -7

Tip: Use the turning point: it tells you the smallest value y can take on this graph.