

Mock Set A – 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)

Write 5837 correct to the nearest hundred.

The hundreds digit is 8. The next digit (tens) is 3.

3 is less than 5, so round down: $5837 \rightarrow 5800$

Answer: 5800

Tip: Keep the place value: the answer is 5800, not 58.

2 (1 mark)

Work out $47 - 84 \div 12$

Divide before you subtract: $84 \div 12 = 7$

$47 - 7 = 40$

Answer: 40

Tip: Working left to right gives $(47 - 84) \div 12$, which is wrong. Division comes first.

3 (1 mark)

Here are five numbers.

−2 6 −9 3 −5

Write these numbers in order of size.

Start with the smallest number.

The negative numbers are smallest. The further from zero a negative number is, the smaller it is: $-9 < -5 < -2$

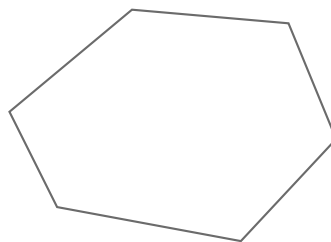
Then the positive numbers: $3 < 6$

Answer: −9, −5, −2, 3, 6

Tip: −9 is smaller than −2 even though 9 is bigger than 2.

4 (1 mark)

Here is a shape.



Write down the mathematical name of this shape.

Count the sides: the shape has 6 straight sides.

A polygon with 6 sides is a hexagon.

Answer: Hexagon

Tip: A hexagon does not have to be regular: any shape with 6 straight sides is a hexagon.

5 (1 mark)

Here are the shoe sizes of the 9 players in a netball squad.

6 5 7 6 8 5 6 4 7

Write down the mode.

The mode is the value that appears most often.

6 appears 3 times, more than any other size.

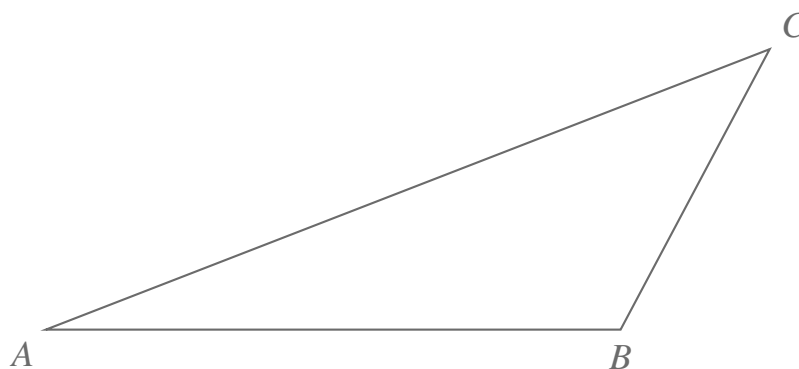
Answer: 6

Tip: The mode is a shoe size from the list, not how many times it appears (3).

6 (2 marks)

The diagram shows triangle ABC .

The diagram is accurately drawn. (*Print at 100% so that the measurements are correct.*)



(a) Measure the length of the line AB .

Line up 0 on the ruler with A and read the scale at B .

Answer: 7.6 cm

Tip: Start from 0 on the ruler, not from the end of the ruler.

(b) Measure the size of angle ABC .

Put the centre of the protractor on B with the zero line along BA .

Read from the scale that starts at 0 on BA . The angle is obtuse, so it is more than 90° .

Answer: 118°

Tip: Check your answer makes sense: angle ABC is obtuse, so an answer of 62° means you read the wrong scale.

7 (3 marks)

Kai works part-time at a cinema.

He is paid £12.80 for each hour he works from Monday to Friday.

He is paid time and a half for each hour he works on Saturday or Sunday.

The table shows the hours Kai works this week.

Day	Tuesday	Thursday	Friday	Saturday	Sunday
Hours worked	4	5	3	5	2

Work out how much Kai is paid for the hours he works this week.

Weekday hours: $4 + 5 + 3 = 12$ hours

Weekday pay: $12 \times 12.80 = \text{£}153.60$

Weekend rate: $12.80 \times 1.5 = \text{£}19.20$ per hour

Weekend hours: $5 + 2 = 7$ hours

Weekend pay: $7 \times 19.20 = \text{£}134.40$

Total: $153.60 + 134.40 = \text{£}288.00$

Answer: £288

Tip: Time and a half means $1.5\times$ the normal rate, not the normal rate + £0.50. Only the Saturday and Sunday hours are paid at this rate.

Marks: 1 mark for the weekday pay or the weekend hourly rate. 1 mark for a complete method. 1 mark for £288.

8 (3 marks)

Here are the first five terms of a number sequence.

47 41 35 29 23

- (a) Write down the next term in the sequence.

Each term is 6 less than the term before.

$$23 - 6 = 17$$

Answer: 17

- (b) Write down the term-to-term rule for the sequence.

47 → 41 → 35 → 29 → 23: each step goes down by 6.

Answer: Subtract 6

Tip: Say what you do to get from one term to the next: *subtract 6*. Writing just “6” or “−6n” is not enough.

- (c) Lena says,
“2 is a term in this sequence.”

Explain why Lena is wrong.

Keep subtracting 6: ..., 17, 11, 5, −1, ...

The sequence goes from 5 straight to −1, so it never reaches 2.

(Or: every term is an odd number, and 2 is even.)

Answer: The terms go ... 11, 5, −1..., so 2 is missed out (all the terms are odd and 2 is even).

9 (3 marks)

Lucy asked 40 people how they travel to work.
The table shows information about her results.

Way of travelling	Number of people
Car	14
Tram	9
Bus	11
Cycle	6

Draw an accurate pie chart to show this information.

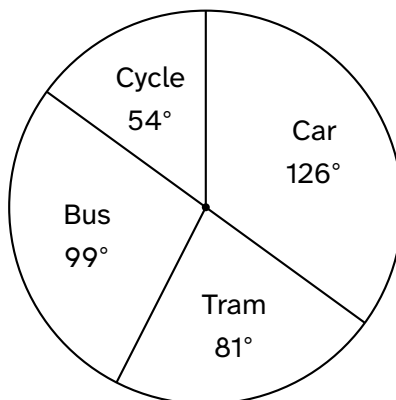
Total number of people: $14 + 9 + 11 + 6 = 40$

Each person is shown by $360^\circ \div 40 = 9^\circ$

Car: $14 \times 9 = 126^\circ$ Tram: $9 \times 9 = 81^\circ$

Bus: $11 \times 9 = 99^\circ$ Cycle: $6 \times 9 = 54^\circ$

Check: $126 + 81 + 99 + 54 = 360^\circ$



Answer: Pie chart with sectors Car 126° , Tram 81° , Bus 99° , Cycle 54° , each labelled

Tip: Work out the angles first and check they add up to 360° . Label every sector.

Marks: 1 mark for $360 \div 40$ or one correct angle. 1 mark for all four angles. 1 mark for an accurate, labelled pie chart.

10 (4 marks)

- (a) Grace drives to the coast.

She drives for 2 hours 15 minutes at an average speed of 52 mph.

Work out the distance Grace drives.

15 minutes = $\frac{15}{60}$ = 0.25 hours, so the time is 2.25 hours.

Distance = speed $\times$ time

$$52 \times 2.25 = 117$$

Answer: 117 miles

Tip: 2 hours 15 minutes is 2.25 hours, not 2.15 hours.

Marks: 1 mark for 52×2.25 (or a correct build-up). 1 mark for 117.

- (b) Ifeoma paddles a kayak along a river.

She sets off at 9.40 am and stops at 11.25 am.

She paddles 11.2 km.

Ifeoma says,

“My average speed was more than 7 km/h.”

Is Ifeoma correct?

You must show how you get your answer.

Time taken: 9.40 am to 11.25 am is 1 hour 45 minutes.

45 minutes = $\frac{45}{60}$ = 0.75 hours, so the time is 1.75 hours.

Speed = distance $\div$ time

$$11.2 \div 1.75 = 6.4 \text{ km/h}$$

6.4 km/h is less than 7 km/h, so Ifeoma is **not** correct.

Answer: No: her average speed was 6.4 km/h, which is less than 7 km/h

Tip: 1 hour 45 minutes is 1.75 hours, not 1.45 hours. Using 1.45 gives 7.7 km/h and the wrong decision.

Marks: 1 mark for $11.2 \div 1.75$ (or another correct way to compare with 7 km/h). 1 mark for No with 6.4 km/h.

11 (3 marks)

PQ and RS are parallel straight lines.

T is a point on PQ .

U and V are points on RS .

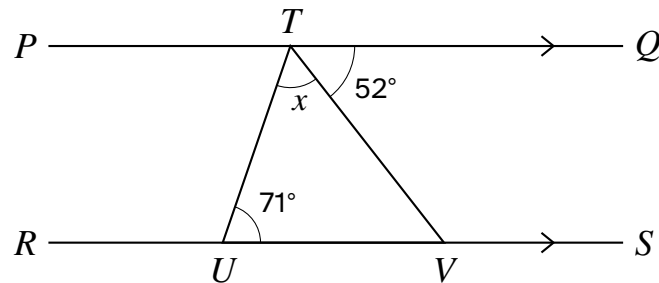


Diagram **NOT** accurately drawn

Work out the size of the angle marked x .

Give a reason for each stage of your working.

Angle $TVU = 52^\circ$, because alternate angles are equal (PQ is parallel to RS).

In triangle TUV : $x = 180 - 71 - 52$, because angles in a triangle add up to 180° .

$x = 57^\circ$

Answer: 57°

Tip: Write the reasons in full: “alternate angles are equal”, not just “alternate” or “Z angles”.

Marks: 1 mark for angle $TVU = 52^\circ$. 1 mark for 57. 1 mark for both reasons.

12 (3 marks)

(a) Simplify $6g \times 5h$

Multiply the numbers: $6 \times 5 = 30$

Then the letters: $g \times h = gh$

Answer: $30gh$

Tip: $6g \times 5h$ is not $11gh$: multiply the numbers, do not add them.

(b) $D = 5r - 3s$

Work out the value of D when $r = 4.5$ and $s = -3$

$$D = 5 \times 4.5 - 3 \times (-3)$$

$$= 22.5 - (-9)$$

$$= 22.5 + 9 = 31.5$$

Answer: 31.5

Tip: $-3 \times (-3) = +9$. Subtracting a negative number is the same as adding.

Marks: 1 mark for substituting correctly. 1 mark for 31.5.

13 (4 marks)

Two shops sell the same bottles of sun cream.

Sunny Days Pharmacy

Sun cream
£6.80 for one bottle

Offer: buy 2 bottles,
get 1 more bottle free

Coastline Stores

Sun cream
£17.50 for a pack of 3 bottles

Offer: 20% off the
price of each pack

Ruby needs 9 bottles of this sun cream.

She wants to pay as little as possible.

Should Ruby buy the 9 bottles from Sunny Days Pharmacy or from Coastline Stores?

You must show how you get your answer.

Sunny Days: buy 2, get 1 free, so Ruby pays for 2 bottles in every 3.

For 9 bottles she pays for 6: $6 \times 6.80 = £40.80$

Coastline: 20% of £17.50 = $0.2 \times 17.50 = £3.50$

One pack costs $17.50 - 3.50 = £14.00$

9 bottles is 3 packs: $3 \times 14.00 = £42.00$

£40.80 < £42.00, so Sunny Days Pharmacy is cheaper.

Answer: Sunny Days Pharmacy (£40.80 compared with £42.00)

Tip: Compare the cost of the same number of bottles (9) at both shops. One pack at Coastline is only 3 bottles.

Marks: 1 mark for the cost at one shop. 1 mark for the 20% discount. 1 mark for both totals for 9 bottles. 1 mark for the correct shop with both figures.

14 (4 marks)

Mr Shah has a biased spinner for a school fair.

The spinner can land on pink, orange, purple or white.

The table shows the probability that the spinner will land on pink, on orange and on white.

Colour	pink	orange	purple	white
Probability	0.32	0.17		0.26

Mr Shah is going to spin the spinner 200 times.

Work out an estimate for how many more times the spinner will land on pink than on purple.

First find the probability of purple. The probabilities add up to 1.

$$0.32 + 0.17 + 0.26 = 0.75, \text{ so } P(\text{purple}) = 1 - 0.75 = 0.25$$

$$\text{Estimate for pink: } 0.32 \times 200 = 64$$

$$\text{Estimate for purple: } 0.25 \times 200 = 50$$

$$64 - 50 = 14$$

Answer: 14

Tip: Purple is missing from the table, so start by finding its probability: all the probabilities add up to 1. Then multiply each probability by 200.

Marks: 1 mark for the probability of purple (0.25). 1 mark for 0.32×200 or 0.25×200 . 1 mark for a complete method. 1 mark for 14.

15 (3 marks)

- (a) Use your calculator to work out $\frac{\sqrt{73.9 + 5.2^2}}{3.6^3 - 2.48}$
Write down all the figures on your calculator display.

$$\text{Top: } 73.9 + 5.2^2 = 73.9 + 27.04 = 100.94, \sqrt{100.94} = 10.04689 \dots$$

$$\text{Bottom: } 3.6^3 - 2.48 = 46.656 - 2.48 = 44.176$$

$$10.04689 \dots \div 44.176 = 0.2274286958 \dots$$

Answer: 0.2274286958

Tip: Use the fraction key, or put brackets round the whole top and the whole bottom before you divide.

Marks: 1 mark for working out the top or the bottom correctly. 1 mark for the full display.

- (b) Write your answer to part (a) correct to 2 significant figures.

The first significant figure is the first non-zero digit: 2

0.22|74 ...: the next digit is 7, so round up.

0.23

Answer: 0.23

Tip: Zeros before the first non-zero digit do not count as significant figures.

16 (5 marks)

Nadia is putting new flooring in a hall.

The diagram shows the floor of the hall. All the corners are right angles.

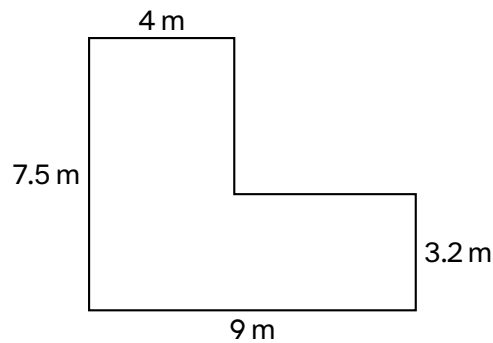


Diagram **NOT** accurately drawn

Flooring is sold in packs.

One pack covers 2.4 m^2 of floor and costs £27.85

Nadia buys the smallest number of packs she needs to cover the floor of the hall.

Work out the total cost of the packs.

Split the floor into two rectangles.

Bottom rectangle: $9 \times 3.2 = 28.8 \text{ m}^2$

Missing height of the top rectangle: $7.5 - 3.2 = 4.3 \text{ m}$

Top rectangle: $4 \times 4.3 = 17.2 \text{ m}^2$

Total area: $28.8 + 17.2 = 46 \text{ m}^2$

Packs: $46 \div 2.4 = 19.16 \dots$, so Nadia needs 20 packs (round up).

Cost: $20 \times 27.85 = £557$

Answer: £557

Tip: 19.16 ... packs is not enough: you must round up to 20 whole packs.

Marks: 1 mark for the missing length or the area of one rectangle. 1 mark for the total area 46.

1 mark for dividing by 2.4. 1 mark for rounding up to 20 packs and multiplying by £27.85. 1

mark for £557.

17 (2 marks)

The length of a bridge is 138.6 metres, correct to 1 decimal place.
Let L be the length of the bridge in metres.

Complete the error interval for L .

Rounding to 1 decimal place, the length could be up to 0.05 either side of 138.6.

Lower bound: $138.6 - 0.05 = 138.55$

Upper bound: $138.6 + 0.05 = 138.65$

$138.55 \leq L < 138.65$

Answer: $138.55 \leq L < 138.65$

Tip: The upper end is 138.65, not 138.64 or 138.649: a length of exactly 138.65 would round up to 138.7, so the sign there is $<$.

Marks: 1 mark for each end of the interval.

18 (3 marks)

- (a) Theo was asked to expand and simplify $4(2x + 3) - 5(x - 2)$. His working was $8x + 12 - 5x - 10 = 3x + 2$. What mistake has Theo made?

$4(2x + 3) = 8x + 12$ is correct.

In $-5(x - 2)$, the -5 multiplies the -2 too: $-5 \times -2 = +10$, not -10 .

So it should be $8x + 12 - 5x + 10 = 3x + 22$.

Answer: He worked out -5×-2 as -10 . It should be $+10$ (so the answer is $3x + 22$).

Tip: When a bracket has a minus sign in front, the sign of every term inside the bracket changes when you expand.

- (b) Factorise fully $15y^2 + 20y$

The HCF of 15 and 20 is 5. Both terms contain y .

So the common factor is $5y$.

$15y^2 \div 5y = 3y$ and $20y \div 5y = 4$

$$15y^2 + 20y = 5y(3y + 4)$$

Answer: $5y(3y + 4)$

Tip: “Fully” means take out every common factor. $5(3y^2 + 4y)$ and $y(15y + 20)$ are not finished.

Marks: 1 mark for a correct partial factorisation. 1 mark for $5y(3y + 4)$.

19 (4 marks)

Ade runs a fruit stall at a market.

He buys a box of 60 mangoes for £42

He sells 48 of the mangoes for £1.20 each.

He sells all the other mangoes for 55p each.

Work out Ade’s percentage profit.

Give your answer correct to 1 decimal place.

Money from the first 48 mangoes: $48 \times 1.20 = £57.60$

Number of other mangoes: $60 - 48 = 12$

Money from the other 12: $12 \times 0.55 = £6.60$

Total money taken: $57.60 + 6.60 = £64.20$

Profit: $64.20 - 42 = £22.20$

Percentage profit: $\frac{22.20}{42} \times 100 = 52.857 \dots \%$

52.9% (1 d.p.)

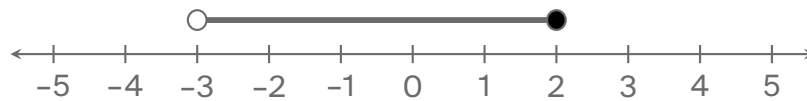
Answer: 52.9%

Tip: Percentage profit is profit $\div$ the **cost** (£42), not $\div$ the money taken. Change 55p to £0.55 before you add.

Marks: 1 mark for the money from one group of mangoes. 1 mark for the total money taken. 1 mark for profit $\div$ 42 $\times$ 100. 1 mark for 52.9.

20 (3 marks)

- (a) Write down the inequality in x shown on this number line.



Open circle at -3 : -3 is not included, so use $<$.

Filled circle at 2 : 2 is included, so use $\leq$.

Answer: $-3 < x \leq 2$

Tip: An open circle means $<$ or $>$; a filled circle means $\leq$ or $\geq$.

- (b) Solve $7x - 4 \geq 3x + 18$

Subtract $3x$ from both sides: $4x - 4 \geq 18$

Add 4 to both sides: $4x \geq 22$

Divide both sides by 4: $x \geq 5.5$

Answer: $x \geq 5.5$

Tip: Keep the inequality sign in your answer: $x = 5.5$ or just 5.5 is not the full answer.

Marks: 1 mark for getting the x terms on one side and the numbers on the other. 1 mark for $x \geq 5.5$.

21 (2 marks)

ABC is a right-angled triangle.

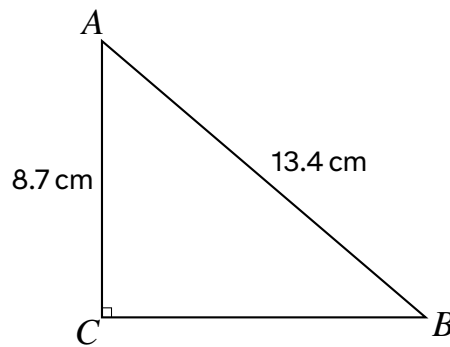


Diagram **NOT** accurately drawn

Work out the length of BC .

Give your answer correct to 3 significant figures.

AB is the hypotenuse (opposite the right angle).

$$BC^2 = 13.4^2 - 8.7^2$$

$$BC^2 = 179.56 - 75.69 = 103.87$$

$$BC = \sqrt{103.87} = 10.1916 \dots$$

$$BC = 10.2 \text{ cm (3 s.f.)}$$

Answer: 10.2 cm

Tip: To find a shorter side, subtract the squares. Adding them gives 15.97 ..., which is longer than the hypotenuse.

Marks: 1 mark for $13.4^2 - 8.7^2$. 1 mark for 10.2.

22 (3 marks)

A 250 g jar of coffee costs £8.40 in Leeds.

A 150 g jar of the same coffee costs €5.90 in Lisbon.

The exchange rate is £1 = €1.16

Callum says,

“The coffee is cheaper in Lisbon than in Leeds.”

Is Callum correct?

You must show how you get your answer.

Change the Lisbon price into pounds: $5.90 \div 1.16 = £5.086 \dots$ for 150 g

Lisbon price for 100 g: $5.086 \dots \div 150 \times 100 = £3.39$

Leeds price for 100 g: $8.40 \div 250 \times 100 = £3.36$

$£3.36 < £3.39$, so the coffee is cheaper in Leeds.

Callum is **not** correct.

Answer: No: 100 g costs £3.36 in Leeds and about £3.39 in Lisbon

Tip: Compare the same amount of coffee in the same currency. To change euros into pounds, divide by 1.16.

Marks: 1 mark for changing a price into the other currency. 1 mark for prices for the same amount of coffee. 1 mark for No with correct figures.

23 (3 marks)

Gemma puts £3600 into a savings bond for 3 years.

The bond pays 2.4% compound interest each year.

Gemma says,

“After 3 years I will get more than £260 in interest.”

Is Gemma correct?

You must show how you get your answer.

Multiplier for a 2.4% increase: $1 + 0.024 = 1.024$

Value after 3 years: $3600 \times 1.024^3 = 3865.4705 \dots$

Interest: $3865.47 - 3600 = £265.47$

£265.47 is more than £260, so Gemma is correct.

Answer: Yes: the interest is £265.47, which is more than £260

Tip: Compound interest is not $3 \times$ the first year's interest: $3 \times 86.40 = £259.20$ would give the wrong decision here. Each year the interest is worked out on the new amount.

Marks: 1 mark for 3600×1.024^3 (or year-by-year working). 1 mark for the interest, 265.47. 1 mark for Yes with the correct figure.

24 (4 marks)

ABC is an isosceles triangle with $AB = AC$.

The perimeter of the triangle is 62 cm.

All lengths are in centimetres.

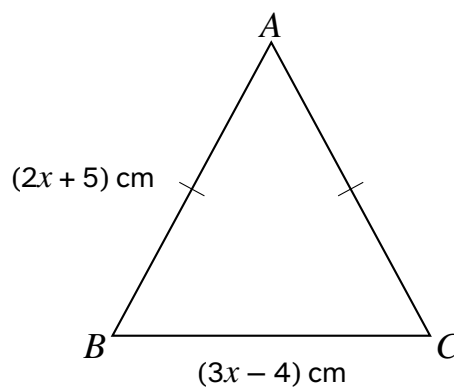


Diagram **NOT** accurately drawn

Ewan says,

“ BC is the longest side of the triangle.”

Is Ewan correct?

You must show how you get your answer.

$AB = AC$, so $AC = (2x + 5) \text{ cm}$ too.

Perimeter: $(2x + 5) + (2x + 5) + (3x - 4) = 62$

$$7x + 6 = 62$$

$$7x = 56$$

$$x = 8$$

$$AB = AC = 2 \times 8 + 5 = 21 \text{ cm}$$

$$BC = 3 \times 8 - 4 = 20 \text{ cm}$$

BC is 20 cm, which is shorter than AB and AC (21 cm). So Ewan is **not** correct: BC is the shortest side.

Answer: No: $x = 8$, so $AB = AC = 21$ cm and $BC = 20$ cm. BC is the shortest side.

Tip: Two sides are marked equal, so $(2x + 5)$ is used twice. Finding $x = 8$ is not the end: work out the lengths of the sides and compare them.

Marks: 1 mark for an expression for the perimeter. 1 mark for setting it equal to 62 and starting to solve. 1 mark for $x = 8$. 1 mark for No with the side lengths 21 and 20.

25 (4 marks)

The table shows information about the masses of 80 parcels at a sorting office.

Mass (m kg)	Frequency
$0 < m \leq 2$	14
$2 < m \leq 4$	23
$4 < m \leq 6$	19
$6 < m \leq 8$	16
$8 < m \leq 10$	8

(a) Halima says,

“The modal class is $8 < m \leq 10$ because it has the heaviest parcels.”

Is Halima correct?

Give a reason for your answer.

The modal class is the class with the highest **frequency**, not the class with the heaviest parcels.

The highest frequency is 23, so the modal class is $2 < m \leq 4$.

Halima is **not** correct.

Answer: No: the modal class is the class with the highest frequency, $2 < m \leq 4$ (23 parcels)

Tip: Mode means *most common*. Look for the biggest number in the frequency column, then give its class.

- (b) Work out an estimate for the mean mass of the parcels.

Use the midpoint of each class for x and work out $f \times x$.

Mass (m kg)	Frequency f	Midpoint x	$f \times x$
$0 < m \leq 2$	14	1	14
$2 < m \leq 4$	23	3	69
$4 < m \leq 6$	19	5	95
$6 < m \leq 8$	16	7	112
$8 < m \leq 10$	8	9	72
Total	80		362

$$\text{Estimate of the mean} = \frac{\text{total of } f \times x}{\text{total frequency}} = \frac{362}{80}$$

$$= 4.525 \text{ kg}$$

Answer: 4.525 kg

Tip: Divide by the total frequency (80), not by the number of classes (5). Your answer must be between 0 and 10 kg.

Marks: 1 mark for using the midpoints. 1 mark for dividing the total by 80. 1 mark for 4.525.

26 (2 marks)

LMN is a right-angled triangle.

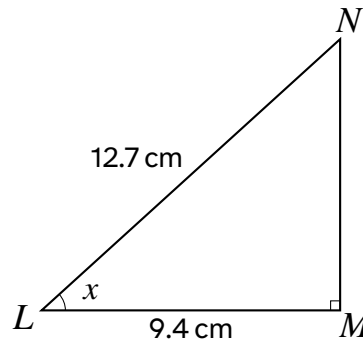


Diagram **NOT** accurately drawn

Calculate the value of x .

Give your answer correct to 1 decimal place.

From angle x : $LM = 9.4$ is the adjacent side and $LN = 12.7$ is the hypotenuse.

So use cos: $\cos x = \frac{9.4}{12.7}$

$$x = \cos^{-1}\left(\frac{9.4}{12.7}\right) = 42.255 \dots$$

$$x = 42.3^\circ \text{ (1 d.p.)}$$

Answer: 42.3

Tip: Label the sides from angle x first (opposite, adjacent, hypotenuse). Make sure your calculator is in degrees.

Marks: 1 mark for $\cos x = 9.4 \div 12.7$. 1 mark for 42.3.

27 (5 marks)

A hot tub is in the shape of a cylinder.
The hot tub is full of water.

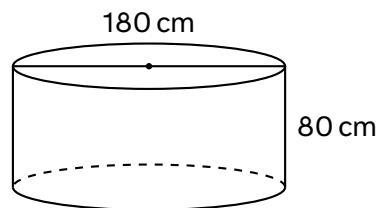


Diagram **NOT** accurately drawn

Water is pumped out of the hot tub at a rate of 1500 litres per hour.
The pump is switched on at 7.15 pm.

Jasmine says,

“The hot tub will be empty before 8.45 pm.”

Is Jasmine correct?

You must show how you get your answer.

$$1 \text{ litre} = 1000 \text{ cm}^3$$

The radius is half the diameter: $180 \div 2 = 90 \text{ cm}$.

$$\text{Volume of a cylinder} = \pi r^2 h$$

$$\pi \times 90^2 \times 80 = 2\,035\,752.0 \dots \text{ cm}^3$$

$$\text{In litres: } 2\,035\,752.0 \dots \div 1000 = 2035.75 \dots \text{ litres}$$

$$\text{Time: } 2035.75 \dots \div 1500 = 1.357 \dots \text{ hours}$$

$$0.357 \dots \text{ hours} = 0.357 \dots \times 60 = 21.4 \dots \text{ minutes, so the time is about 1 hour 21 minutes.}$$

$$7.15 \text{ pm} + 1 \text{ hour } 21 \text{ minutes} = 8.36 \text{ pm}$$

8.36 pm is before 8.45 pm, so Jasmine is correct.

Answer: Yes: it takes about 1 hour 21 minutes (81.4 minutes), so the hot tub is empty at about 8.36 pm, which is before 8.45 pm

Tip: The diagram gives the diameter, so halve it to get the radius. 1.357 hours is not 1 hour 35.7 minutes: multiply 0.357 by 60.

Marks: 1 mark for the volume (using radius 90). 1 mark for changing to litres. 1 mark for dividing by 1500. 1 mark for the time (1 h 21 min, 81 minutes or 8.36 pm). 1 mark for Yes with correct figures.

28 (3 marks)

Some identical printers are used to print copies of a school magazine.
5 of the printers would take 48 minutes to print all the copies.
The 5 printers start printing the copies.
After 16 minutes, 3 more printers of the same type start printing too.

Work out the total time taken to print all the copies.

5 printers take 48 minutes, so the whole job is $5 \times 48 = 240$ printer-minutes.

In the first 16 minutes, 5 printers do $5 \times 16 = 80$ printer-minutes.

Work left: $240 - 80 = 160$ printer-minutes

Now there are $5 + 3 = 8$ printers: $160 \div 8 = 20$ minutes

Total time: $16 + 20 = 36$ minutes

Answer: 36 minutes

Tip: More printers means less time: this is inverse proportion. Remember to add the first 16 minutes at the end.

Marks: 1 mark for 5×48 (or the fraction of the job done in 16 minutes). 1 mark for the time with 8 printers. 1 mark for 36.
