Name	Date started	Target end date

WJEC GCSE Mathematics and Numeracy (Double Award) — Question Pack

VAT, discount, profit, loss and instalment plans. Sourced from legacy WJEC GCSE Mathematics-Numeracy and Mathematics Higher papers, organised for revi

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1.03 — VAT, discount, profit/loss & buying by instalments

Spec 1.8.5, 1.8.7 — Unit 1 (calculator allowed)

VAT, discount, profit, loss and instalment plans. Sourced from legacy WJEC GCSE Mathematics-Numeracy and Mathematics Higher papers, organised for revision under the 2025 spec.

2025 SPECIFICATION

Estimated time for entire question pack: ~1 hours 3 minutes

*Derived from the GCSE Higher pace of **~1.5 min/mark** (42 marks across 9 questions).*

*You are advised to **not** attempt to complete all of this in one sitting.*

ABOUT THIS QUESTION PACK

This is a **focused single-topic practice pack**, not a single mock paper. Questions are organised against the 2025 specification.

Questions are ordered chronologically by sitting, with custom-written and SAM questions at the end.

INSTRUCTIONS

Use black ink or black ball-point pen. Show all working — method marks are awarded for clear setup.

A calculator is allowed on every question in this pack (Unit 1 is the calculator-allowed paper).

VAT, discount, profit/loss & buying by instalments — what the new spec asks

WJEC GCSE Mathematics (first teaching 2025) · Unit 1: calculator-allowed.

VAT 1.8.5

- VAT at 20%: multiply by 1.20.
- VAT at 5%: multiply by 1.05.
- Reverse VAT: price-before = price-after / multiplier.

Discount 1.8.5

- % off means subtract from 100% then multiply.
- 20% off: multiplier 0.80; 30% off: multiplier 0.70.
- Reverse discount: original = sale price / multiplier.

Profit & loss 1.8.5

- Profit = selling price − cost price.
- % profit = (profit / cost) × 100.
- Mark-up applied to cost; margin applied to selling price.

Instalment plans 1.8.7

- Total paid = deposit + n × monthly payment.
- Cost of credit = total paid − cash price.
- Compare against cash price to evaluate the deal.

Crib sheet »

VAT, discount, profit/loss & buying by instalments in one page

Quick-reference notes — revisit before each question. Don't use during the questions.

VAT

VAT at 20%: price + VAT = price × 1.20.

VAT at 5%: price × 1.05.

Working backwards: price-before-VAT = price-after-VAT / multiplier.

Discount

20% off: multiplier 0.80.

30% off: multiplier 0.70.

Reverse: original = sale price / multiplier.

Profit and loss

$$\%\ \text{profit} = (\text{profit} / \text{cost}) \times 100$$

Profit = selling price − cost price.

Loss is just a negative profit.

Reverse percentage

Reduced by 15% gives £6 154 ⇒ original = 6154 / 0.85.

Always identify the multiplier first.

Instalment plans

Total cost = deposit + (number of instalments × monthly payment).

Cost of credit = total paid − cash price.

Common traps

- Adding 20% then subtracting 20% does not return the original.
- Confusing % of cost with % of selling price.
- Forgetting the deposit in instalment plans.

Examiner only

2. *(a)*

Lotty and Rafael decide to enter a prize draw.
They agree to share any money they win in the ratio 2 : 3 respectively.
After winning a total of £2000, they think again and decide that Lotty's share should be increased by 30%.

(i) Rafael thinks that his share will be reduced by 30%.
Without any calculation, explain why Rafael's thinking is incorrect. [1]

(ii) Calculate the amount of money Lotty wins after the decision is made to increase her share. [4]

Examiner only

(iii) Find the ratio that is now used to share the money between Lotty and Rafael.
Express your answer in its simplest form. [3]

Lotty's winnings : Rafael's winnings = ... : .....

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(b) In another prize draw, it was planned to give £5000 as the first prize.
To make it more popular, the organisers decide to increase this first prize by 26%.

The most efficient method of calculating the amount of the increased first prize is

$$1{\cdot}26 \times 5000.$$

The second prize was planned to be £3000, but it is now decided to decrease this prize by 6%.

Write down the most efficient method of calculating the amount of the decreased second prize.
You are not expected to work out the answer. [1]

Examiner only

3.

Stylish computer desk Made of laminate wood. Non-scratch top. **Length is exactly 2000 mm**	

Luc wants this new desk for his bedroom.

The desk is to fit on the straight wall between his wardrobe and his bookcase.

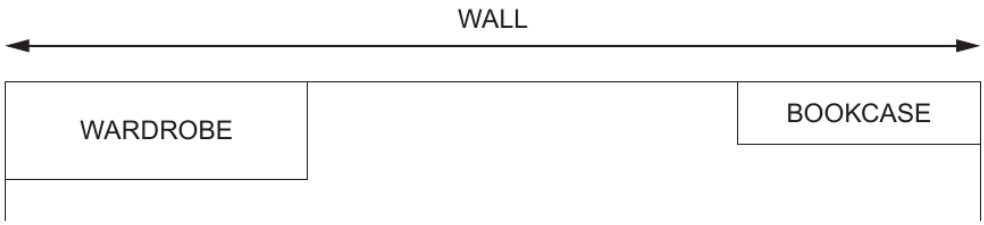


Diagram not drawn to scale

Luc has measured the length of

- the wall, which is 600 cm, correct to the nearest 10 cm,
- the bookcase, which is 147 cm, correct to the nearest 1 cm,
- the wardrobe, which is 250 cm, correct to the nearest 1 cm.

(a) What is the greatest possible length of the wall?
Circle your answer. [1]

600 cm 605 cm 645 cm 610 cm 650 cm

(b) What is the least possible length of the wardrobe?
Circle your answer. [1]

249 cm 249·45 cm 249·49 cm 249·5 cm 250 cm

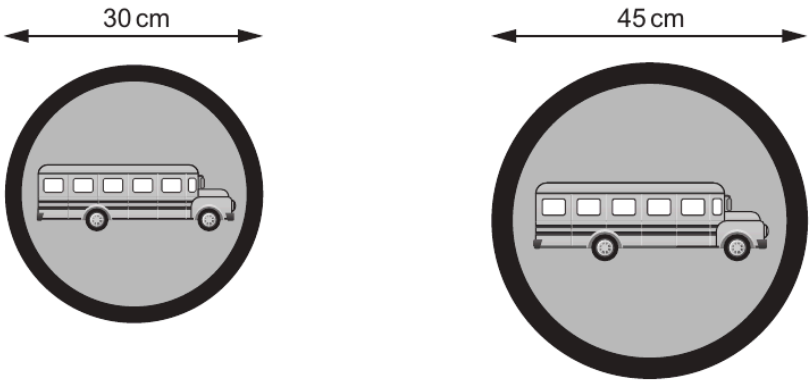
Examiner only

(c) Can Luc be certain that this desk will fit in the space available?

You must
- show all your calculations,
- give the greatest or least bounds of any measurements used in calculations or comparisons,
- give a reason for your answer. [5]

Examiner only

8. A company produces two **similar** road signs.



Diagrams not drawn to scale

(a) The cost of the paint needed for the smaller road sign is £1.60.
Calculate the cost of the paint needed for the larger sign. [4]

Examiner only

(b) The selling price of the smaller road sign is £12.00.
This selling price was calculated from the cost price by:

- adding a profit of 25%,
- then adding VAT at 20%.

Calculate the cost price of the smaller road sign.
You must show all your working. [4]

Examiner only

7. *(a)* There is a queue of 96 people waiting to buy concert tickets.

Liam has 8 vouchers to hand out, offering 20% off ticket prices.

He has decided to use a systematic sampling method to select who receives these 8 vouchers.

Liam has randomly selected the 6th person in the queue to receive the first voucher.

Use the table below to give the positions in the queue of the 8 people who would receive vouchers. [2]

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Voucher	1	2	3	4	5	6	7	8
Position in the queue	6th	.....	.....	.....	.....	.....	.....	.....

(b) Gerallt used his 20% off voucher to buy tickets.
He paid £120 for tickets using the voucher.
How much would these tickets have cost Gerallt without a voucher? [2]

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Cost without a voucher £ .....

Examiner only

3. *(a)* *Sam's Garden Centre* buys trees to sell.

Sam bought 200 trees.
Each tree cost Sam £25.

22% of the trees were not sold.
Sam sold all the other trees for £40 each.

How much profit did Sam make?

You must show all your working. [5]

(b) The trees are planted in identical pots. They each have a uniform cross-section in the shape of a regular hexagon.

Show that these pots will tessellate. [1]

Examiner only

4. Mr Jakob notices a crack in a vertical wall which stands on horizontal ground.

(a) Mr Jakob fixes two temporary supports against the wall, as shown in the diagram below.

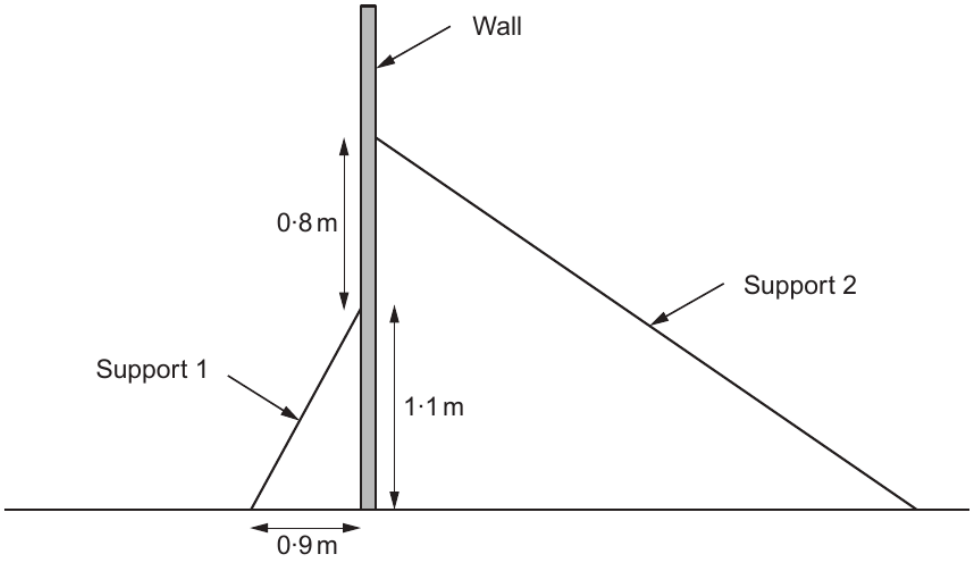

Diagram not drawn to scale

(i) Calculate the length of Support 1. [3]

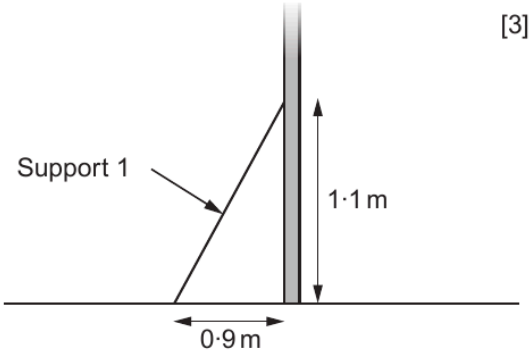

Diagram not drawn to scale

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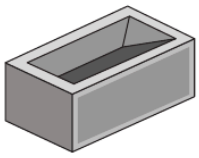
Examiner only

(ii) The length of Support 2 is 2·6 m.
Calculate the angle between the horizontal ground and Support 2. [3]

(b) Mr Jakob gets a quote of £516 for rebuilding his wall.



The quote includes:
- 8 hours' labour costs at £22.50 per hour,
- a 20% discount off the cost of the bricks.

Calculate the cost of the bricks before the discount. [3]

Examiner only

9. When a number is reduced by 15%, the answer is 6154.
What is the original number? [3]

10. $ABCD$ is a cyclic quadrilateral in a circle with centre O.
$\hat{ABC} = 126°$.

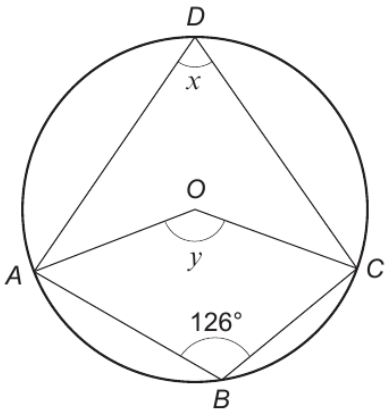


Diagram not drawn to scale

Write down the size of each of the angles x and y.
You must give a reason for each of your answers. [4]

x = ... °

Reason: .....

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y = ... °

Reason: .....

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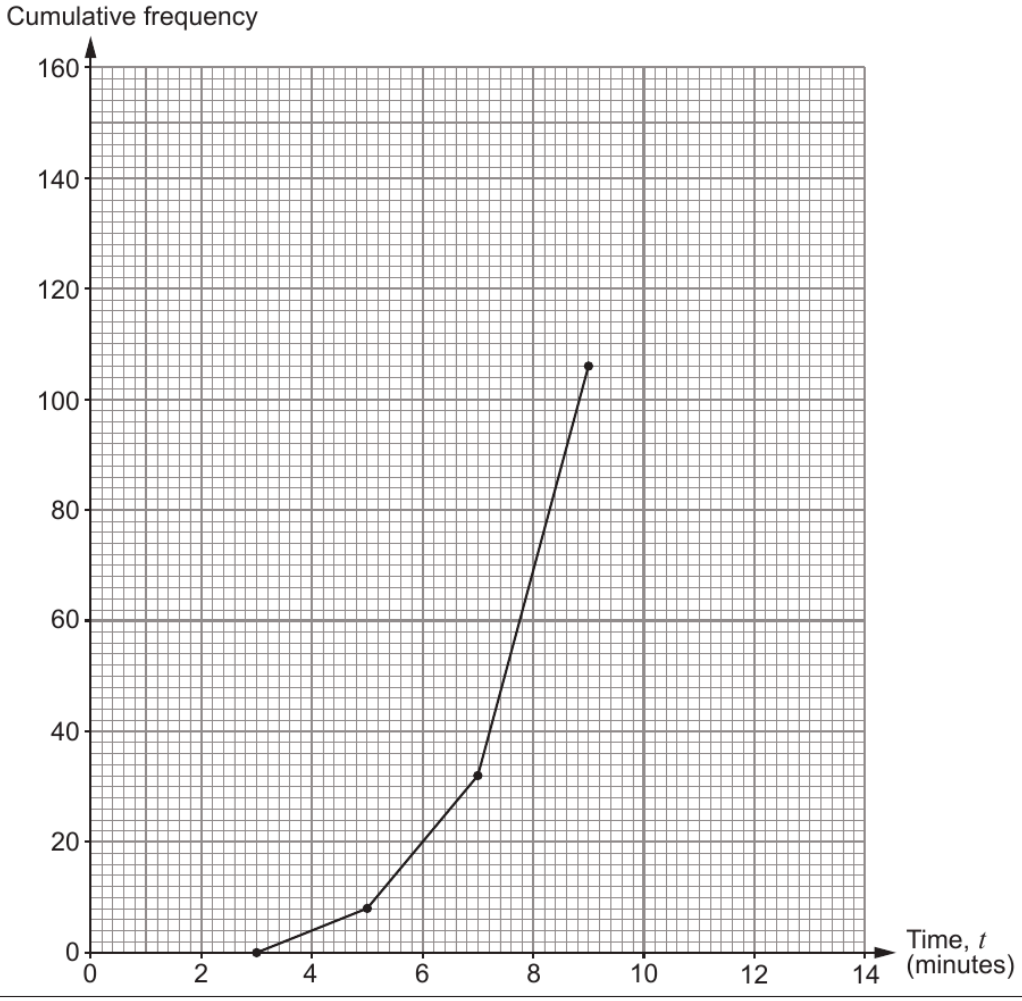
Examiner only

4. Giovanni has a takeaway pizza van. He sells whole pizzas and slices of pizza from his van.

(a) For the last 3 days, he has timed how long it takes to complete the food order for each of his customers.
Giovanni recorded his results in the table below.

(i) Complete the cumulative frequency table **and** the cumulative frequency diagram. [2]

Time, t (minutes)	Frequency	Cumulative frequency
$3 < t \leqslant 5$	8	8
$5 < t \leqslant 7$	24	32
$7 < t \leqslant 9$	74	106
$9 < t \leqslant 11$	40	.....
$11 < t \leqslant 13$	14	.....



Examiner only

Use your cumulative frequency diagram to give the best estimates for the answers to each of the following questions.

(ii) Find the median time taken to complete a food order. [1]

The median time is ..... minutes.

(iii) Giovanni is concerned that food orders are taking too long to complete.
He says,

"Only 25% of the food orders are completed in under ..... minutes."

Use **one** of the five values below to complete Giovanni's statement. [1]

6·4 6·6 7·2 8 9·6

(iv) Calculate the percentage of orders that were completed in less than 6 minutes. [2]

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(b) For the last 3 days:

- Giovanni spent £180 on ingredients
- he spent £220 on the running costs for the pizza van
- he received a total of £700 from the food orders.

Calculate Giovanni's percentage profit. [3]

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(c) Next year Giovanni intends to charge £8.40 for a basic pizza.
This is an increase of 20% from the current charge.

Calculate how much Giovanni currently charges for a basic pizza. [2]

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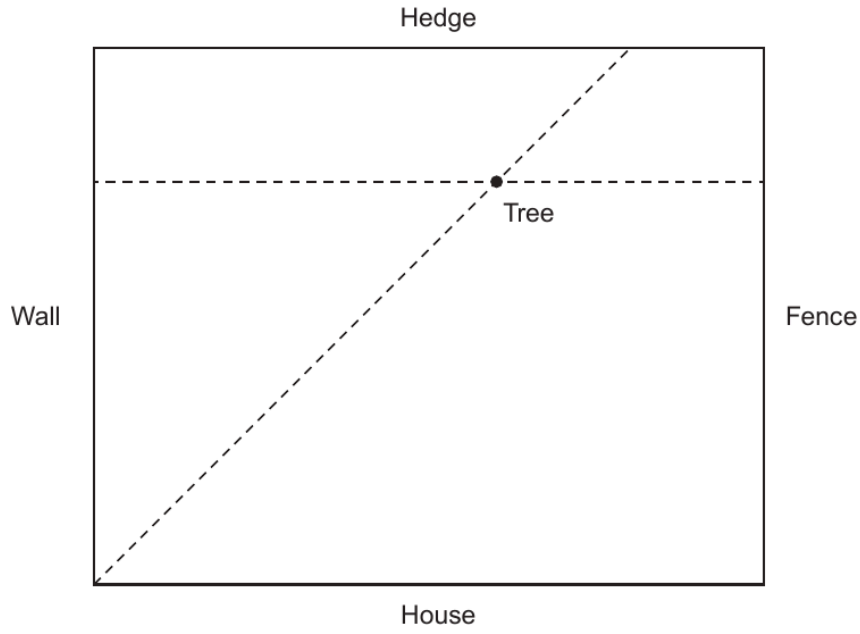
Examiner only

3. (a) Josif produces a scale drawing to show where he wants a tree planted in his garden.

Scale: 1 cm represents 0·5 m



He writes out instructions to show where the tree is to be planted.

Which **two** of the following instructions describe where the tree is to be planted?

A. The tree must be 2 m from the hedge.
B. The tree must be 1 m from the hedge.
C. The tree must be 6 m from the hedge.
D. The tree must be 3 m from the hedge.
E. The tree must be 1 m from the wall.

F. The tree must be equidistant from the hedge and the fence.
G. The tree must be equidistant from the hedge and the wall.
H. The tree must be equidistant from the wall and the house.
I. The tree must be equidistant from the hedge and the house.
J. The tree must be equidistant from the wall and the fence. [2]

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The two instructions are ..... and .....

Examiner only

(b) A garden centre buys trees from a grower for £30 each.
The garden centre sells the trees for £42 each.

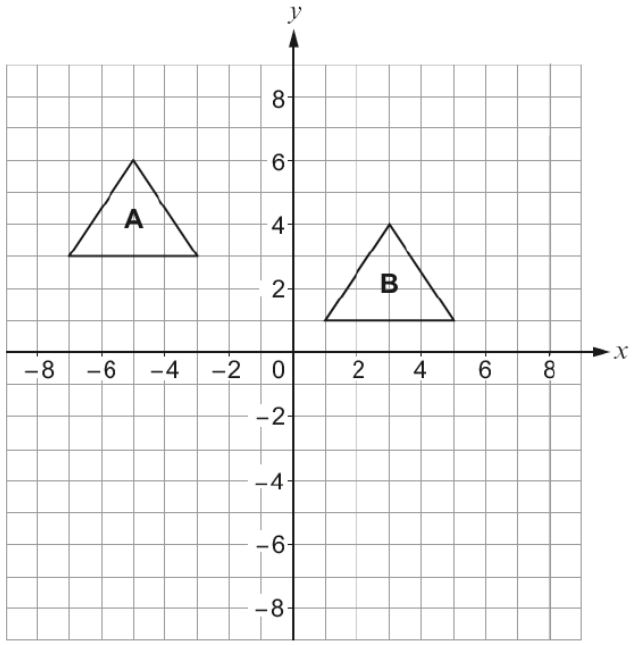
(i) Calculate the percentage profit the garden centre makes from buying and selling one tree. [2]

(ii) The garden centre buys 10 of these trees to sell.
One of the trees gets damaged and cannot be sold.
The other 9 trees are sold.

Calculate the overall percentage profit or loss the garden centre makes from selling these trees.
You must state whether your answer is a profit or a loss.
You must show all your working. [4]

(iii) Of the 10 trees bought by the garden centre, what is the minimum number that need to be sold to ensure that the garden centre makes a profit?
Circle your answer. [1]

5 6 7 8 9



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