Name	Date started	Target end date

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

VAT, discount, profit/loss and instalment plans: percentage-of-amount calculations applied to everyday purchases. Sourced from legacy WJEC GCSE Mathem

REVISE
.wales

F1.03 — VAT, discount, profit/loss & buying by instalments

Spec 1.8.2 — Unit 1 (calculator allowed)

VAT, discount, profit/loss and instalment plans: percentage-of-amount calculations applied to everyday purchases. Sourced from legacy WJEC GCSE Mathematics-Numeracy Foundation papers (3300U10/U20) and accessible content from Intermediate papers (3300U30/U40), organised for revision under the 2025 spec.

2025 SPECIFICATION

Estimated time for entire question pack: ~54 minutes

*Derived from the GCSE Higher pace of **~1.5 min/mark** (36 marks across 10 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.

Percentages of amounts 1.8.2

- Calculate percentage increases and decreases using a multiplier.
- Apply VAT at 20% and reverse-VAT calculations.
- Use multipliers (1 + r/100) consistently.

Discount 1.8.2

- Calculate sale prices from discount rates.
- Find the original price given a discounted price.
- Compare two discount offers numerically.

Profit and loss 1.8.2

- Distinguish cost, revenue and profit.
- Calculate percentage profit or loss.
- Identify when a deal is profitable.

Instalment plans 1.8.2

- Compute total cost of buying by instalments.
- Compare credit cost to outright purchase.
- Interpret a hire-purchase advert.

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 (20%)

$$\text{price} + \text{VAT} = \text{price} \times 1.20$$

To find VAT alone: VAT = price × 0.20.

Reverse VAT

$$\text{price excl. VAT} = \text{price incl. VAT} \div 1.20$$

Never just subtract 20% from the inc-VAT price — you'll be wrong.

Discount

$$\text{sale price} = \text{original} \times (1 - \text{rate})$$

15% off £80 ⇒ 80 × 0.85 = £68.

Profit / loss

$$\text{profit} = \text{revenue} - \text{cost}$$

% profit = (profit ÷ cost) × 100. Loss is the same with a negative result.

Instalment plans

$$\text{total} = \text{deposit} + \text{N} \times \text{monthly}$$

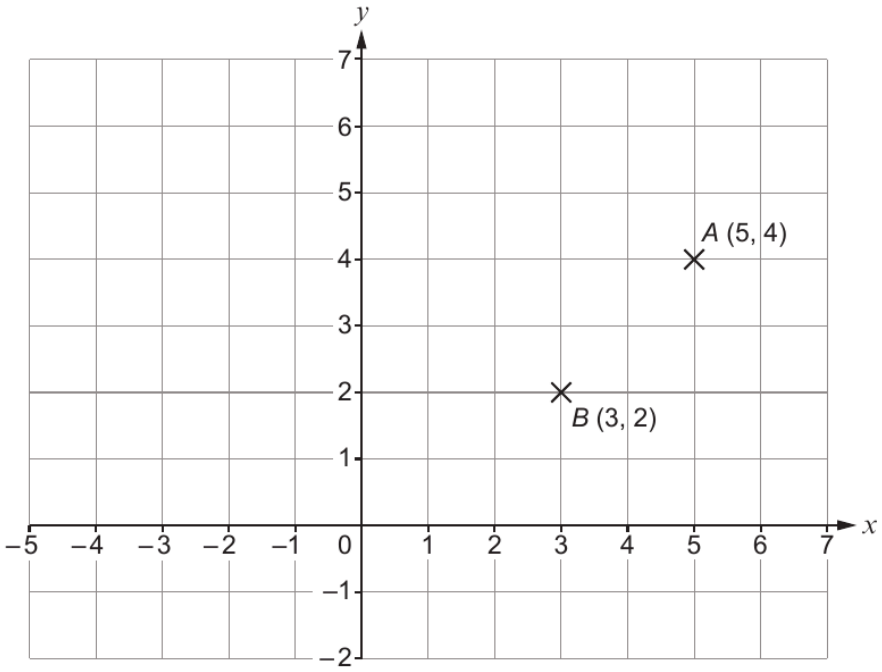
Compare to cash price: difference is the extra you pay for credit.

Common traps

- Subtracting 20% to reverse VAT (wrong).
- Forgetting the deposit in instalment totals.
- Using cost price instead of revenue for % profit denominator.

Examiner only

12.



(a) *B* is the midpoint of the line *AC*.
Find the coordinates of *C*. [2]

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C (..... , ...)

(b) *A* and *B* are two vertices of a right-angled triangle.
Point *D* is to be plotted on the grid above so that the triangle *ABD* is a right-angled triangle.
The x-coordinate of *D* is negative.
Give the coordinates of a possible position of the point *D* that can be plotted on the grid above. [2]

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D (..... , ...)

Examiner only

4. (a) Jenny is planning to sow grass seed in her garden.
The plan for her garden is shown below.

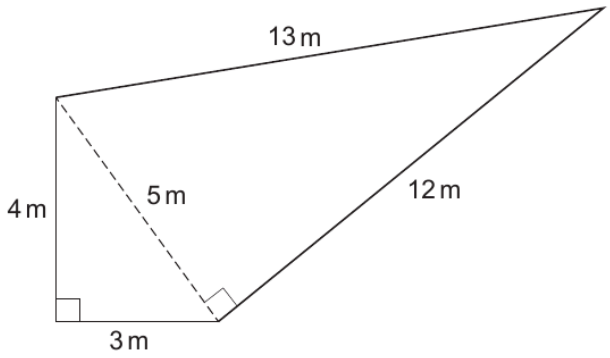

Diagram not drawn to scale

Grass seed to cover 1 m^2 costs 30p.
Calculate how much it will cost Jenny to buy the grass seed she needs. [4]

(b) (i) Jenny's neighbour, Hubert, has a quote from a gardener to landscape his garden.
The gardener will charge a total of £175, excluding VAT.
This total charge includes £55 for plants.
The remainder of the charge is for labour.

The gardener says it will take 8 hours to landscape Hubert's garden.
Calculate how much per hour the gardener is charging for labour. [2]

Examiner only

(ii) VAT at 20% is payable on the charge of £175.
Calculate the total charge of the landscaping, including the VAT. [3]

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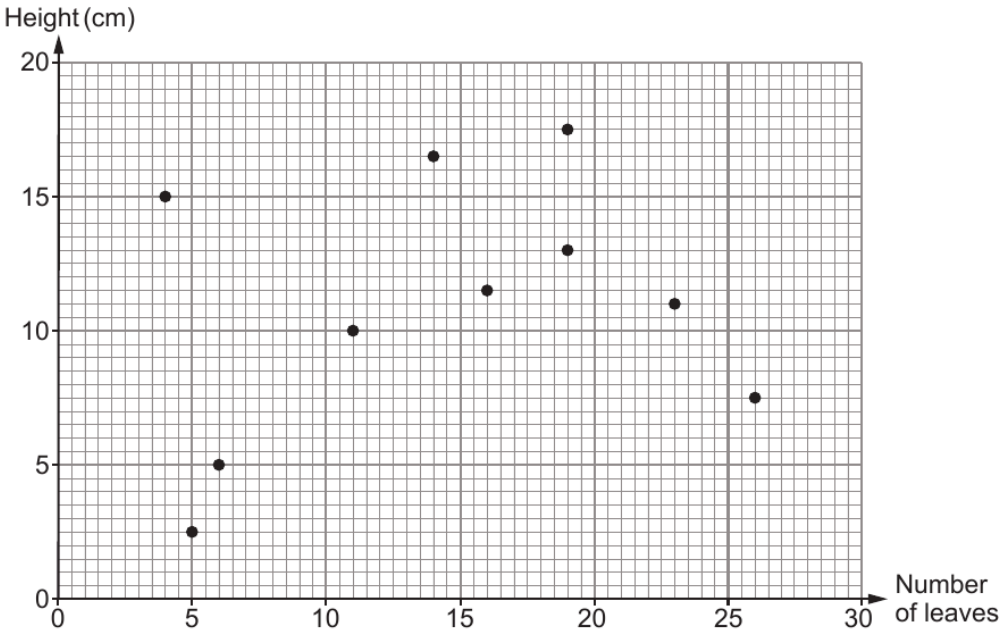
Examiner only

(c) The following summer, Hubert picked 10 different flowers from his garden.
He measured the height of each flower.
He also counted the number of leaves on each flower.
Here are his results.



(i) Is it possible to estimate the number of leaves on a flower of height 6 cm?

Yes ☐ No ☐

You must give a reason for your answer. [1]

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(ii) How tall is the flower with the greatest number of leaves?
Circle your answer. [1]

26 cm 2·5 cm 7·5 cm 5 cm 17·5 cm

Examiner only

9. (a) (i) Hubert has a quote from a gardener to landscape his garden.
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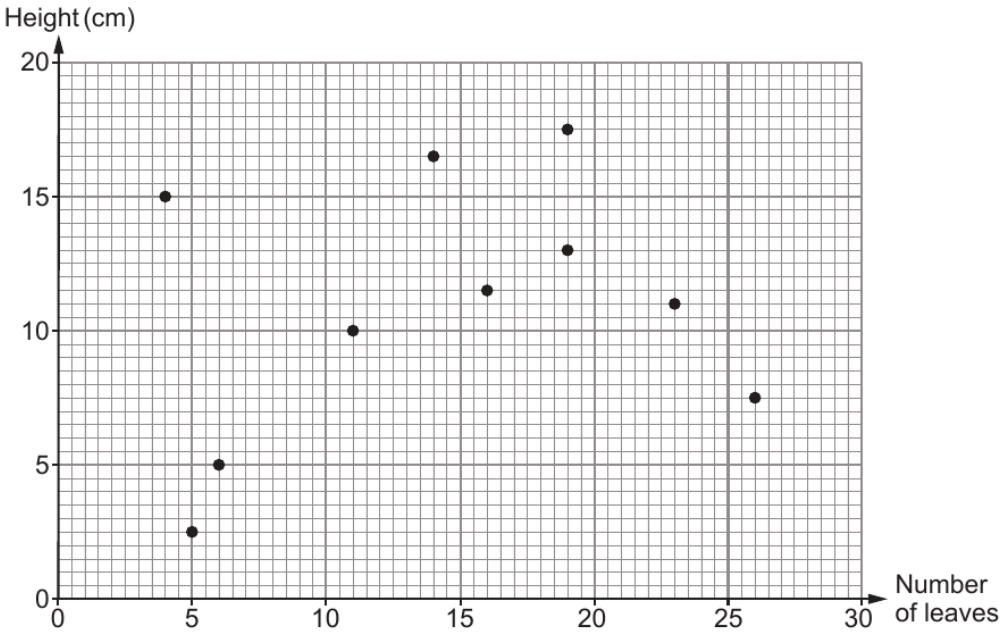

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Examiner only

(iii) There are two flowers that each have 19 leaves.
Calculate the difference in the heights of these two flowers.
You must show all your working. [2]

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Difference in the heights is ..... cm

(iv) Calculate the percentage of the flowers that have **fewer than 23 leaves**. [2]

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..... % of the flowers have **fewer than 23 leaves**.

Examiner only

4. (a) Maggie sees a Bluetooth speaker in a sale.

The price of the speaker is reduced by 18% in the sale.
The original price of the speaker was £45.

Maggie's mum says she will share the cost of buying this speaker.
The ratio of the amount Maggie's mum pays to the amount Maggie pays is 8 : 1.

Calculate the amount Maggie's mum will pay towards buying this speaker in the sale.
You must show all your working. [4]

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Examiner only

(b) The diagram below shows a flowerbed at Maggie's house.
Maggie's mum will pay her £2.50 per m^2 to weed the flowerbed.

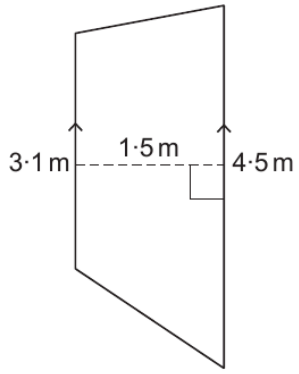

Diagram not drawn to scale

Calculate how much Maggie will get paid for the weeding. [4]

Examiner only

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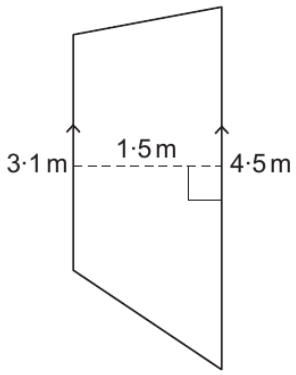

Diagram not drawn to scale

Calculate how much Maggie will get paid for the weeding. [4]

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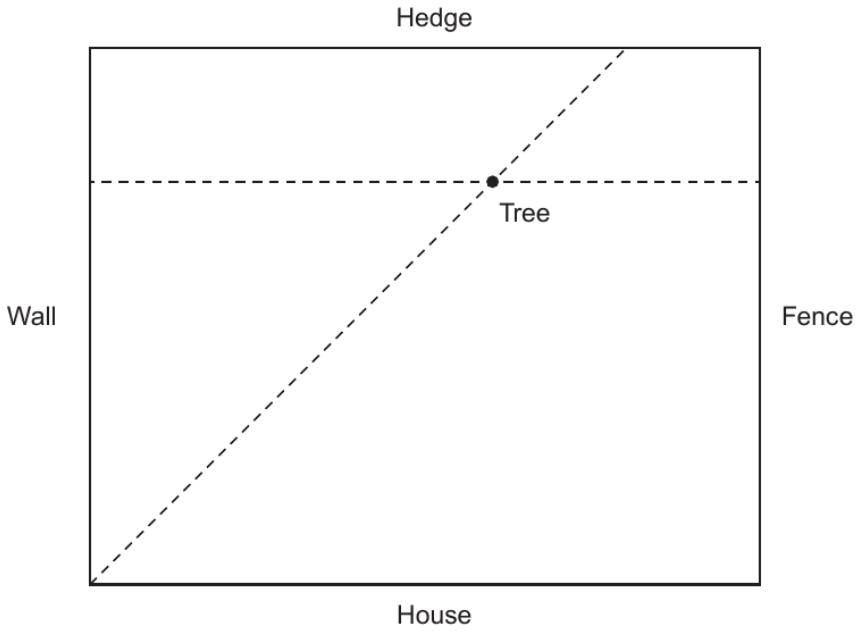
Examiner only

7. (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

Examiner only

5. Maria makes and sells individual portions of salad.

(a) The tomatoes Maria needs to make 5 portions of salad cost her £1.75.
Calculate the cost of the tomatoes she needs to make 40 portions of this salad. [3]

(b) Maria makes a salad dressing from oil and vinegar.
She uses oil and vinegar in the ratio 3 : 1.
Maria makes 280 ml of salad dressing.
Calculate the quantity of oil and the quantity of vinegar in the salad dressing. [3]

Oil ..... ml

Vinegar ..... ml

(c) It costs Maria £24 to make 40 portions of salad.
She sells all these portions of salad for 90p each.

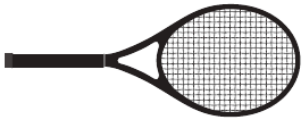
Calculate the **percentage** profit that Maria makes. [4]

Examiner only

6. Lewis buys an annual discount card to use in a sports shop.
He pays £9.95 for the discount card.

For one year, Lewis gets 15% off anything he buys in this sports shop when he shows his discount card.

During the year, Lewis buys the following three items.

Full price **before** discount		
 Trainers £55	 Tennis racket £18	 T-shirt £12

How much did Lewis save during the year by using his discount card?
Remember that Lewis had to buy his discount card.
You must show all your working. [4]

Examiner only

10. (a) Delia invests £4000 in an account that pays 3% compound interest per annum. She does not withdraw money or make any other payments into her account.

How much will Delia have in her account after **two years**? [3]

Amount in Delia's account after two years £ .....

(b) Delia bought a gold bracelet at a car boot sale a few years ago.

(i) Delia's bracelet has increased in value by 40%. Her gold bracelet is now worth £42.

Calculate how much Delia paid for the bracelet in the car boot sale. [2]

Delia paid £ .....

Examiner only

(ii) The density of the gold in Delia's bracelet is $20\,g/cm^3$.
The bracelet has a mass of 6×10^{-3} **kilograms**.

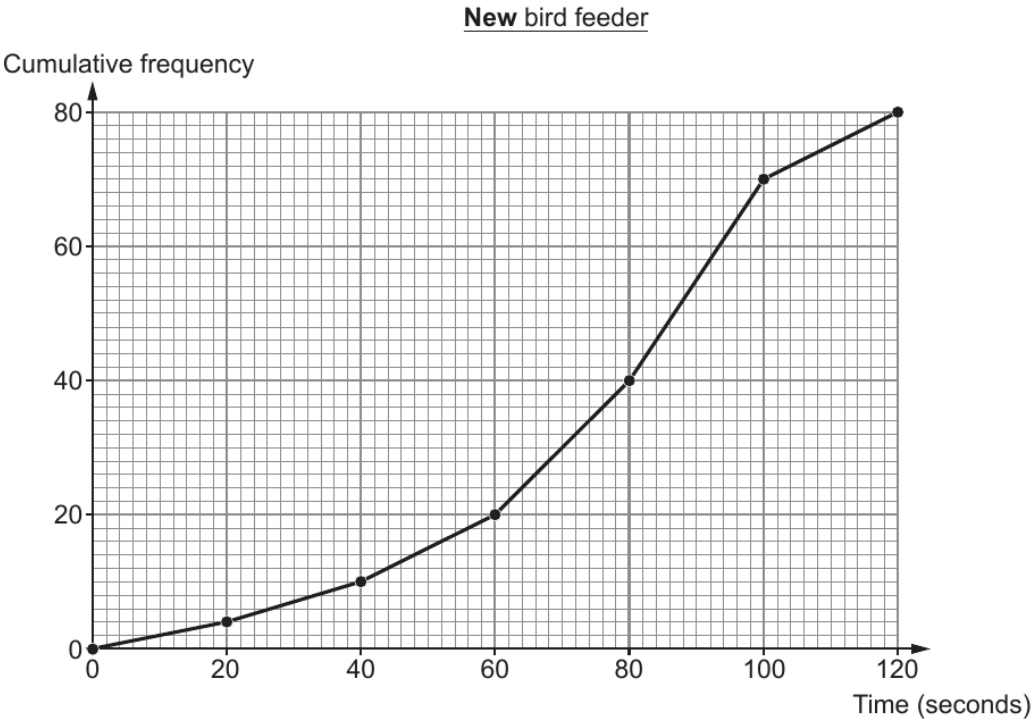
Calculate the volume of Delia's bracelet.
Give your answer in cm^3. [3]

10. Aderyn is a company that makes bird feeders.

Squirrels often try to steal food from bird feeders.

To make this more difficult, Aderyn has designed a **new** bird feeder. Aderyn tests its new feeder to check how long it takes squirrels to reach the food inside.

The results are displayed in the cumulative frequency diagram below.



(a) Aderyn has the following information about the time it took squirrels to reach the food in its **original** bird feeder.

Original bird feeder	
Modal group	60 to 80 seconds
Median time	75 seconds
Interquartile range	20 seconds

Examiner only

Aderyn compared the times squirrels take to reach the food in the original bird feeder and the times they take to reach food in the new bird feeder.

(i) Complete this sentence:

'The modal group for the new bird feeder is between ..... and ..... seconds.'

Does the modal group for the new bird feeder imply that there is an improvement in the times? [1]

Yes ☐ No ☐

(ii) Use the cumulative frequency diagram and the table to give the best estimate to complete each of the following sentences.

I. 'The difference between the median times is ..... seconds.' [1]

.....

II. 'The difference between the interquartile ranges of the times is ..... seconds.' [2]

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(b) Use the cumulative frequency diagram to give the best estimate to complete the following sentence. [3]

'20% of the squirrels took ..... seconds or more to reach the food in the new bird feeder.'

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Examiner only

(c) The population density of grey squirrels in forests depends on the variety of tree that grows there.

Variety of tree	Typical population density of grey squirrels **per km^2**
Oak	1200
Chestnut	100
Pine	45

Rhian says,

I know that Maesgwyn forest has only one variety of tree: oak, chestnut or pine.

Maesgwyn forest covers an area of 21 500 m^2.
There are 24 grey squirrels living in Maesgwyn forest.

From this information, which variety of tree is most likely to be found in Maesgwyn forest?

You must show working to support your answer. [3]

Oak ☐ Chestnut ☐ Pine ☐

END OF PAPER