

Surname
First name(s)

Centre Number

Candidate Number
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REVISE
.wales

GCSE

R.WM-MNH-U1-002

MOCK PAPER B



R.WM-MNH-U1-002

**MATHEMATICS AND NUMERACY
(DOUBLE AWARD)
UNIT 1: FINANCIAL MATHEMATICS AND
OTHER APPLICATIONS OF NUMERACY
HIGHER TIER**

1 hour 45 minutes

ADDITIONAL MATERIALS

A calculator will be required for this examination.
A ruler, a protractor and a pair of compasses may be required.

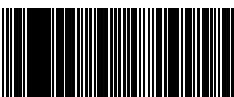
INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.
You may use a pencil for graphs and diagrams only.
Write your name, centre number and candidate number in the spaces at the top of this page.
Answer **all** the questions in the spaces provided.
If you run out of space, use the additional page at the back of the booklet. Question numbers must be given for all work written on the additional page.
Take π as 3.14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.
Unless stated, diagrams are not drawn to scale.
Scale drawing solutions will not be acceptable where you are asked to calculate.
The number of marks is given in brackets at the end of each question or part-question.
In question 6, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

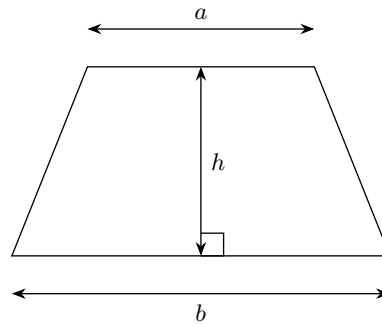
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	5	
2.	8	
3.	4	
4.	10	
5.	11	
6.	10	
7.	10	
8.	11	
9.	11	
Total	80	



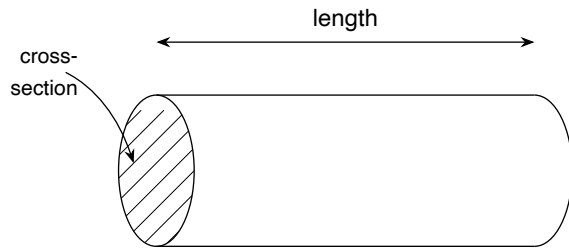
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Formula List – HIGHER TIER

Area of trapezium = $\frac{1}{2}(a + b)h$

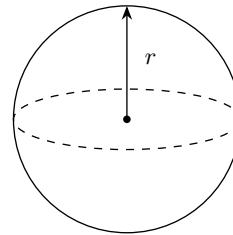


Volume of prism = area of cross-section \times length



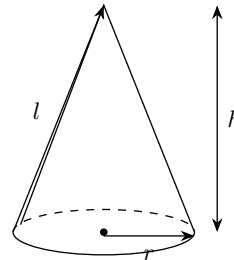
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$



Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$

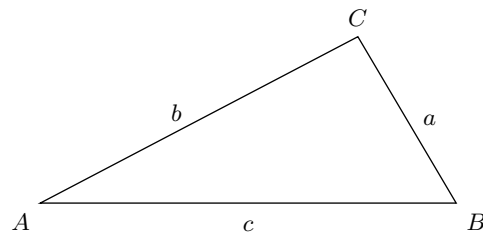


In any triangle ABC

Sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2}ab \sin C$



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Annual Equivalent Rate (AER)

AER, as a decimal, is calculated using the formula $(1 + \frac{i}{n})^n - 1$, where i is the nominal interest rate per annum as a decimal and n is the number of compounding periods per annum.

(b) Lowri wants to save up £9,000 towards a new oven. She plans to put aside a *fixed* [] amount of profit each week from the bakery into a savings pot that pays no interest.

(i) If she saves £250 per week, how many *whole* weeks will it take her to reach the [1] £9,000 target?

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Number of whole weeks = weeks

(ii) State, with a reason, whether your answer to (b)(i) is realistic given the weekly [1] profit you calculated in part (a).

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(iii) The supplier offers Lowri a 5% early-payment discount if she can pay the full price [2] of £9,000 up front. Lowri instead chooses to pay over 12 monthly instalments of £770.
Calculate how much more Lowri ends up paying compared with the discounted up-front price.

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Additional cost = £

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Percentage loss = %

(d) **Show that the balance in Account D more than doubles in 16 years**, without using [2] the doubling rule " $72/r$ ". Use exact arithmetic and quote at least one calculator value to enough decimal places to make the argument decisive.

Examiner only

RWMNHU1 02

(b) Hence find how much Dafydd received.

[2]

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Dafydd received £

Examiner only

RWMNHHU1 02

7. A gym chain has four branches in Wales. The current paying membership at each branch is shown in the table below.

Branch	Paying members
Cardiff	1,800
Newport	1,200
Bridgend	900
Aberystwyth	600

The chain plans to ask a stratified sample of 200 members in total, in proportion to the membership at each branch.

- (a) Explain why a stratified sample is more appropriate here than asking 200 members [2] chosen at random from just the Cardiff branch.

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- (b) Calculate the number of members that should be sampled at each branch. Round your [2] answers sensibly so that they total exactly 200.

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Cardiff =

Newport =

Bridgend =

Aberystwyth =

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Probability =

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Upper bound of mass = kg

(e) To what accuracy can the mass of water be quoted so that the answer is reliable [2]
whether the upper or lower bound is used? Justify your answer.

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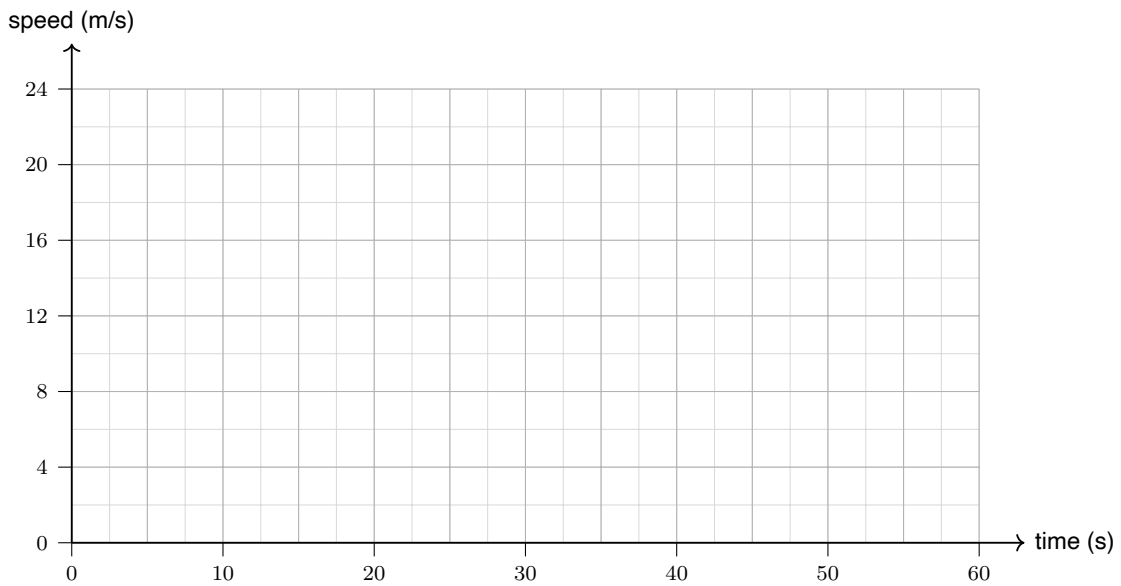
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Average speed = km/h

(c) On the grid below, sketch the speed-time graph for the car's journey, labelling the key [2] values.



(d) A grocer's shop has apples and pears in stock in the ratio 7 : 4 by count. The total [3] stock is 165 pieces of fruit.

Over one weekend:

- 21 apples are sold,
- a delivery of pears arrives, increasing the pear stock,
- no other changes occur.

After the weekend, the ratio of apples to pears in the shop is 2 : 3.
Calculate how many pears were delivered.

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Pears delivered =