

Surname
First name(s)

Centre Number

Candidate Number
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REVISE
.wales

GCSE

R.WM-MNH-U2-001

MOCK PAPER A



R.WM-MNH-U2-001

**MATHEMATICS AND NUMERACY
(DOUBLE AWARD)
UNIT 2: NON-CALCULATOR
HIGHER TIER**

1 hour 45 minutes

ADDITIONAL MATERIALS

The use of a calculator is not permitted in this examination.
A ruler, 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.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

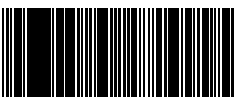
Unless stated, diagrams are not drawn to scale.

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 5, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

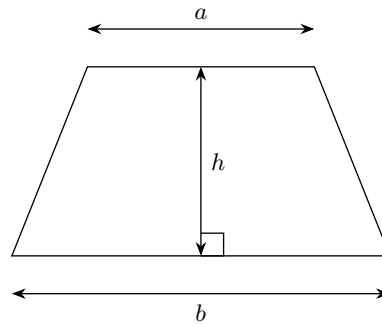
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	5	
2.	7	
3.	8	
4.	9	
5.	10	
6.	11	
7.	11	
8.	8	
9.	11	
Total	80	



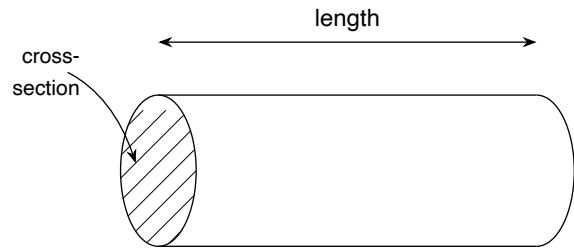
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Formula List – HIGHER TIER

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

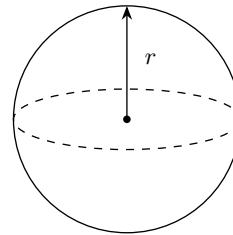


Volume of prism = area of cross-section \times length



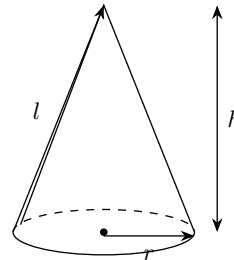
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

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

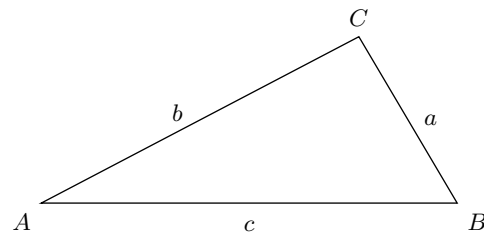


In any triangle ABC

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.

(ii) $(3^2)^4 \times 3^{-5}$

[1]

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(c) Write $\sqrt{6.4 \times 10^{-7}}$ in the form $a \times 10^n$, where $1 \leq a < 10$ and n is an integer.

[1]

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Answer =

(c) **Show that** $0.\dot{1}8\dot{3} = \frac{91}{495}$. (The digits 83 recur; the leading 1 does not.)

[3]

Examiner only

RWMNHHU2 01

(c) Factorise fully $2x^2 + 5x - 12$.

[2]

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Answer =

(d) Simplify $\frac{2x^2 + x - 6}{x^2 - 4}$ fully.

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Answer =

(c) The period T of a simple pendulum of length L is given by

[3]

$$T = 2\pi\sqrt{\frac{L}{g}},$$

where g is the gravitational acceleration. Rearrange the formula to make g the subject, giving your answer in its simplest form.

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$g =$

6. (a) Solve $x^2 - 5x - 14 = 0$ by factorisation. [2]

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$x = \dots\dots\dots$ or $x = \dots\dots\dots$

A rectangular lawn has length $(2x + 1)$ metres and width $(x - 1)$ metres. Its area is 20 m^2 .

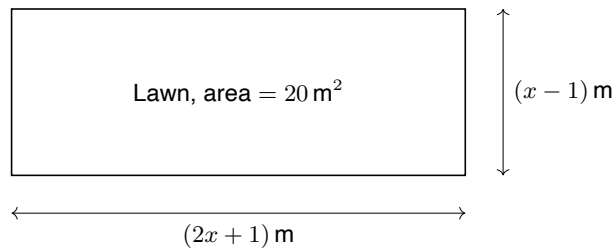


Diagram not drawn to scale

- (b) **Show that** $2x^2 - x - 21 = 0$, and hence find the length and width of the lawn. You must [4] justify any decision you make about which solution to take.

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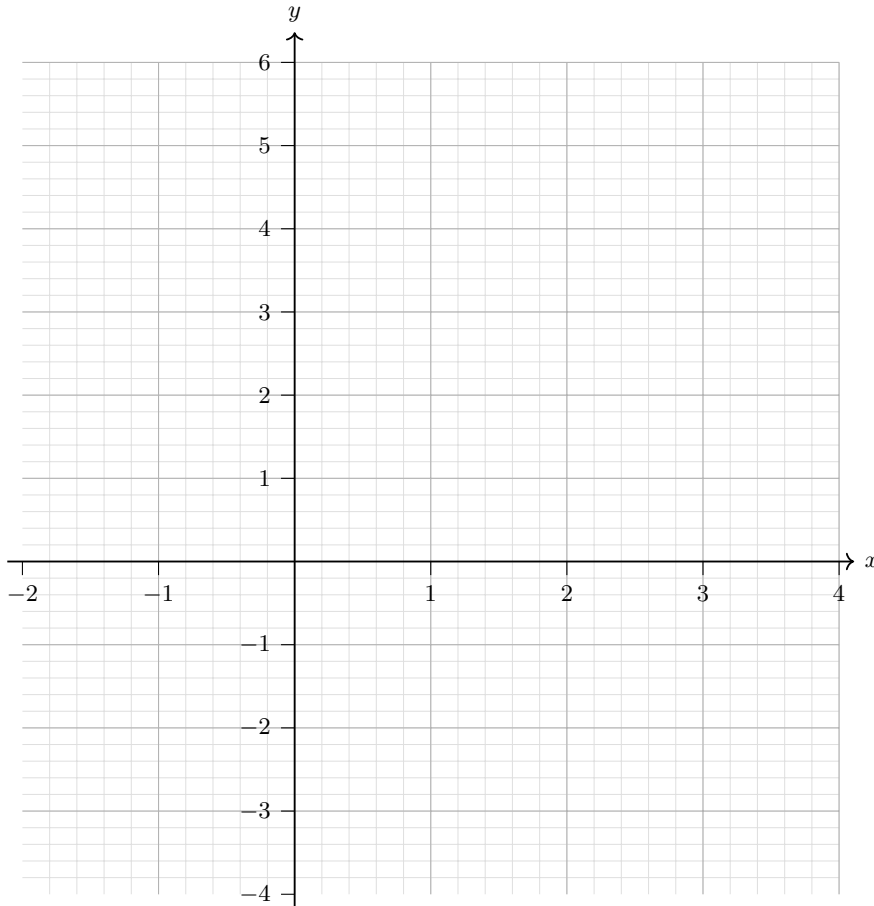
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Length = m

Width = m

(c) Complete the table of values for $y = x^2 - 2x - 3$, then draw its graph on the grid provided [5] for $-2 \leq x \leq 4$. By drawing a suitable straight line on the same grid, use your graph to solve the equation $x^2 - 2x = 0$.

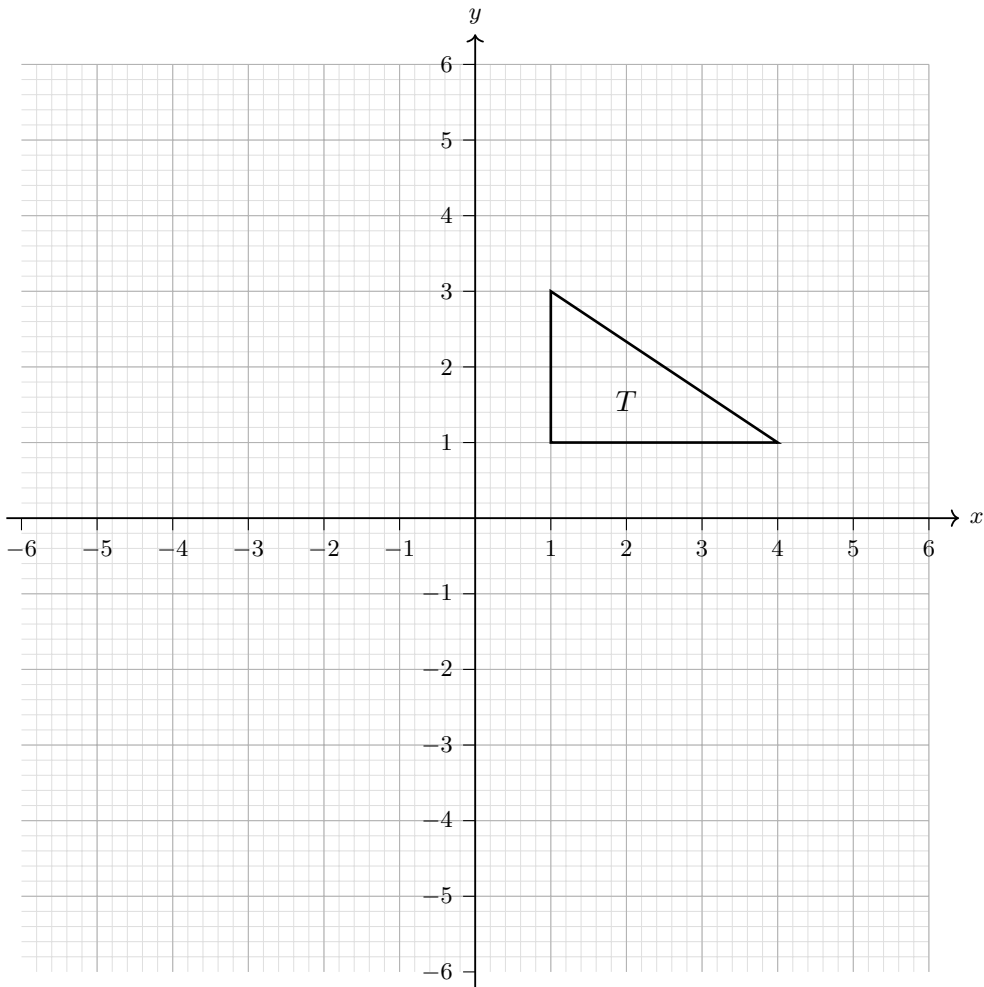
x	-2	-1	0	1	2	3	4
y	5	0	-3	?	?	0	?



Line drawn: $y = \dots\dots\dots$

Solutions of $x^2 - 2x = 0$: $\dots\dots\dots$

8. Triangle T is drawn on the coordinate grid below.



(a) On the grid above, draw the image of triangle T after a reflection in the line $y = 1 - x$. [2]
Label the image A .

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