Pearson Edexcel International GCSE

Mathematics A

Modular Unit 2

June 2022 Reconstructed Past Paper

STUDENT WORKBOOK

Adaptive working-space edition

32 adaptive question sections 100 marks

Selected from Linear Higher Papers 1H and 2H

Dr Eslam Ahmed

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L-to-M | CONVERTED MODULAR EDITION

Selected from Linear Higher papers; not an original Modular examination paper.

Assistant Lecturer, Faculty of Engineering, Cairo University

B.Sc. Electrical Engineering (2017), Distinction with Honours
M.Sc. Mathematics (2023)
PhD Candidate

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About this reconstructed paper

Each question section keeps the exact source demand beside practical working space. Source pixels are retained once; long source panels continue on numbered pages.

Ownership rule: Unit 2 owns a demand when its assessed or terminal statement is Unit 2, even if Unit 1 skills are prerequisites. This book contains the demands owned by Unit 2; the selection contains 100 marks.

This is an Elite reconstructed teaching paper selected from official Linear Higher material; it is not an official Pearson Modular examination paper. Candidate source assets are retained for private teaching use only.

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Question 01

4MA1-1H Q1 Q1(a)

MODULAR UNIT 2

2 marks

1 Here are the first five terms of an arithmetic sequence.

1 5 9 13 17

(a) Find an expression, in terms of n, for the nth term of this sequence.

.....

(2)

WORKING SPACE

Question 02

4MA1-1H Q1 Q1(b)

MODULAR UNIT 2

1 marks

The nth term of another arithmetic sequence is $3n + 5$

(b) Find an expression, in terms of m, for the $(2m)$th term of this sequence.

.....

(1)

WORKING SPACE

Question 03

4MA1-1H Q3 Q3(a)

MODULAR UNIT 2

2 marks

3 (a) Find the highest common factor (HCF) of 56 and 84
Show your working clearly.

.....

(2)

WORKING SPACE

Question 04

4MA1-1H Q3 Q3(b)

MODULAR UNIT 2

2 marks

(b) Find the lowest common multiple (LCM) of 60 and 72
Show your working clearly.

.....

(2)

WORKING SPACE

Question 05
4MA1-1H Q4 Q4

MODULAR UNIT 2
4 marks

4 The diagram shows parts of three regular polygons, **A**, **B** and **C**, meeting at a point.

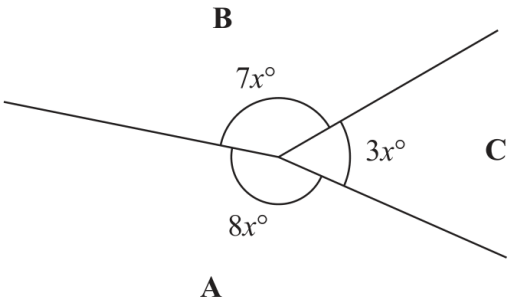


Diagram **NOT** accurately drawn

Polygon **B** has n sides.

Work out the value of n.

$n =$ .....

WORKING SPACE

Question 06

4MA1-1H Q6 Q6(a)

MODULAR UNIT 2

3 marks

6 Asha bought an apartment.

The table gives information about the value of apartments, in euros, and the annual service charge band.

Value (x euros)	Service charge band
$x \geqslant 700\,000$	A
$600\,000 \leqslant x < 700\,000$	B
$500\,000 \leqslant x < 600\,000$	C
$400\,000 \leqslant x < 500\,000$	D
$0 < x < 400\,000$	E

In 2021, the value of Asha's apartment was 634 400 euros.

The value of Asha's apartment had increased by 4% from its value in 2020

(a) Has the annual service charge band changed for Asha's apartment?
Show your working clearly.

(3)

Working space for Question 06

Continue your method

UNIT 2
3 marks

WORKING SPACE

Question 07

4MA1-1H Q6 Q6(b)

MODULAR UNIT 2

3 marks

Pam bought a boat.

In each year after Pam bought the boat, the value of the boat depreciated by 15%

(b) Work out the total percentage by which the value of the boat had depreciated by the end of the second year after Pam bought the boat.

..... %

(3)

WORKING SPACE

Question 08

4MA1-1H Q7 Q7

MODULAR UNIT 2

4 marks

7 A cylinder is placed on the ground.

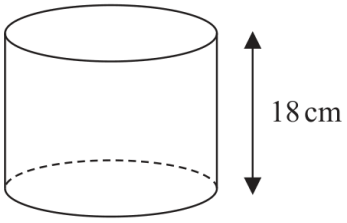


Diagram **NOT** accurately drawn

The height of the cylinder is 18 cm.

The force exerted by the cylinder on the ground is 72 newtons.
The pressure on the ground due to the cylinder is 1.4 newtons / cm^2

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the volume of the cylinder.
Give your answer correct to 3 significant figures.

..... cm^3

Working space for Question 08

Continue your method

UNIT 2
4 marks

WORKING SPACE

Question 09

4MA1-1H Q8 Q8(a)

MODULAR UNIT 2

1 marks

8 (a) Write 0.000 089 in standard form.

.....

(1)

WORKING SPACE

Question 10

4MA1-1H Q8 Q8(b)

MODULAR UNIT 2

1 marks

(b) Write 8.34×10^4 as an ordinary number.

.....

(1)

WORKING SPACE

Question 11

4MA1-1H Q10 Q10(a), Q10(b)

MODULAR UNIT 2

4 marks

10 Two circles, C_1 and C_2, are drawn on a centimetre grid, with a scale of 1 cm for 1 unit on each axis.

The centre of circle C_1 is at the point with coordinates (–1, 3) and the radius of C_1 is 13 cm.

The centre of circle C_2 is at the point with coordinates (7, 18) and the radius of C_2 is 6 cm.

(a) Work out the distance between the centre of C_1 and the centre of C_2

..... cm

(3)

(b) Explain why circle C_1 intersects circle C_2

.....

.....

(1)

Working space for Question 11

Continue your method

UNIT 2
4 marks

WORKING SPACE

Question 12

4MA1-1H Q13 Q13

MODULAR UNIT 2

5 marks

13 Antoine is going on holiday.
He makes 3 separate payments to cover the total cost of his holiday.

The following table shows how much money Antoine pays to the holiday company.

Payment	Amount paid
Payment 1	$\frac{3}{8}$ of the total cost
Payment 2	45% of the total cost
Payment 3	\$406

Work out how much Antoine has to pay for Payment 2

\$ .....

Working space for Question 12

Continue your method

UNIT 2
5 marks

WORKING SPACE

Question 13

4MA1-1H Q14 Q14(a)

MODULAR UNIT 2

1 marks

14 The function f is defined as

$$f: x \mapsto \frac{2x}{x-6} \qquad x \neq 6$$

(a) Find f(10)

.....

(1)

WORKING SPACE

Question 14

4MA1-1H Q14 Q14(b)

MODULAR UNIT 2

3 marks

14 The function f is defined as

$$f: x \mapsto \frac{2x}{x-6} \qquad x \neq 6$$

(b) Express the inverse function f^{-1} in the form $f^{-1}: x \mapsto \ldots$

$f^{-1}: x \mapsto$ .....

(3)

WORKING SPACE

Question 15

4MA1-1H Q17 Q17

MODULAR UNIT 2

5 marks

17 A particle P moves along a straight line.
The fixed point O lies on this line.

The displacement of P from O at time t seconds, $t \geqslant 1$, is s metres where

$$s = 4t^2 + \frac{125}{t}$$

The velocity of P at time t seconds, $t \geqslant 1$, is v m/s

Work out the distance of P from O at the instant when $v = 0$

..... m

WORKING SPACE

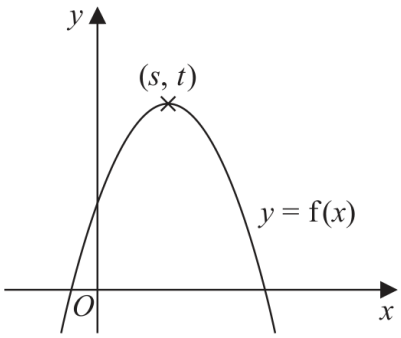
Question 16

4MA1-1H Q20 Q20(i)

MODULAR UNIT 2

1 marks

20 The diagram shows a sketch of part of the curve with equation $y = f(x)$



There is one maximum point on this curve.
The coordinates of this maximum point are (s, t)

Find, in terms of s and t, the coordinates of the maximum point on the curve with equation

(i) $y = f(x - 2)$

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

(1)

Working space for Question 16

Continue your method

UNIT 2
1 marks

WORKING SPACE

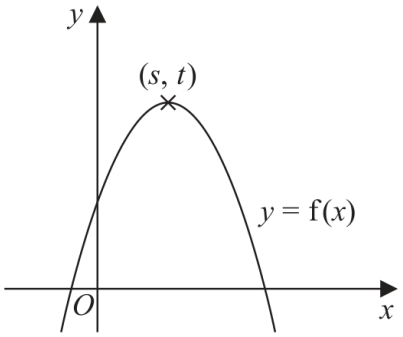
Question 17

4MA1-1H Q20 Q20(ii)

MODULAR UNIT 2

1 marks

20 The diagram shows a sketch of part of the curve with equation $y = f(x)$



There is one maximum point on this curve.
The coordinates of this maximum point are (s, t)

Find, in terms of s and t, the coordinates of the maximum point on the curve with equation

(ii) $y = 3f(x)$

(..... , ...)

(1)

Working space for Question 17

Continue your method

UNIT 2
1 marks

WORKING SPACE

Question 18

4MA1-1H Q22 Q22

MODULAR UNIT 2

5 marks

22 A solid is made from a cone and a hemisphere.

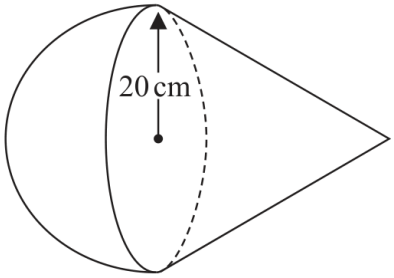


Diagram **NOT** accurately drawn

The circular plane face of the hemisphere coincides with the circular base of the cone.
The radius of the hemisphere and the radius of the circular base of the cone are both 20 cm.

The curved surface area of the cone is $580\pi\,\text{cm}^2$

The volume of the solid is $k\pi\,\text{cm}^3$

Work out the exact value of k

$k =$ .....

Working space for Question 18

Continue your method

UNIT 2
5 marks

WORKING SPACE

Question 19

4MA1-1H Q23 Q23

MODULAR UNIT 2

6 marks

23 A polygon has n sides, where $n > 5$

When arranged in order of size, starting with the largest number, the sizes of the interior angles of the polygon, in degrees, are the terms of an arithmetic sequence.

Here are the first five terms of this sequence.

177 175 173 171 169

Find the value of n
Show clear algebraic working.

Question 23 continued

$n =$ .....

WORKING SPACE

Question 20

4MA1-2H Q1 Q1

MODULAR UNIT 2

3 marks

1 Here are some integers where $a < b < c < d$

$$a \quad b \quad c \quad d \quad d \quad d$$

The mode of the integers is 9
The median of the integers is 8
The range of the integers is 4

Work out the value of a, the value of b, the value of c and the value of d

$a =$ .....

$b =$ .....

$c =$ .....

$d =$ .....

WORKING SPACE

Question 21

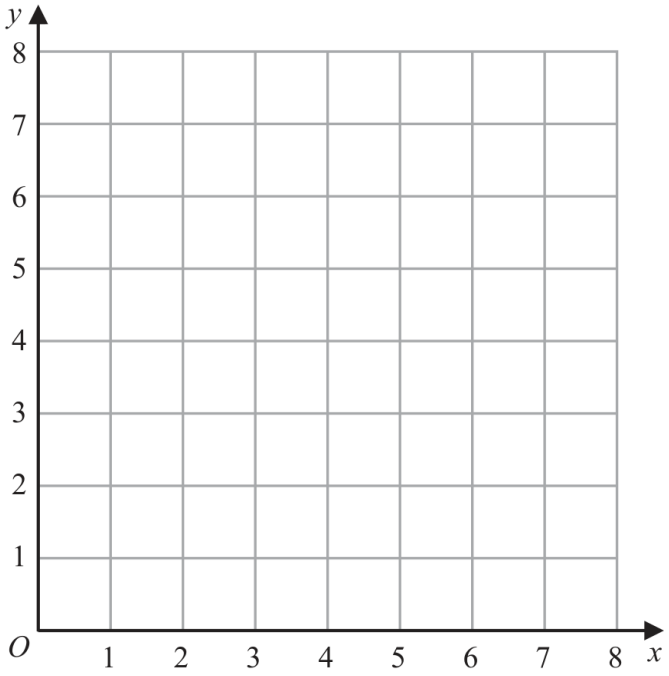
4MA1-2H Q2 Q2(a), Q2(b)

MODULAR UNIT 2

4 marks

2 (a) On the grid, draw and label with its equation the straight line with equation

(i) $y = 1$ (ii) $x = 2$ (iii) $x + y = 7$



(3)

(b) Show, by shading on the grid, the region that satisfies **all three** of the inequalities

$y \geqslant 1$ $x \geqslant 2$ $x + y \leqslant 7$

Label the region **R**.

(1)

Question 22

4MA1-2H Q8 Q8

MODULAR UNIT 2

5 marks

8 Behnaz makes 300 celebration cards so that

$$\text{number of birthday cards} : \text{number of anniversary cards} : \text{number of congratulations cards} = 7:5:3$$

$\frac{2}{5}$ of the birthday cards have numbers on them.

36% of the anniversary cards have numbers on them.

None of the congratulations cards have numbers on them.

Work out what fraction of the 300 cards have numbers on them.

Give your answer in its simplest form.

.....

WORKING SPACE

Question 23

4MA1-2H Q9 Q9

MODULAR UNIT 2

3 marks

9 Pasha invests 50 000 dollars in a savings account for 4 years.
He gets 1.3% per year compound interest.

Work out how much money Pasha will have in his savings account at the end of 4 years.
Give your answer correct to the nearest dollar.

..... dollars

WORKING SPACE

Question 24

4MA1-2H Q10 Q10

MODULAR UNIT 2

3 marks

10 Solve the simultaneous equations

$$7x + 3y = 3$$
$$3x - y = 7$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

WORKING SPACE

Question 25

4MA1-2H Q12 Q12

MODULAR UNIT 2

3 marks

12 Larry is a delivery man.

He has 7 parcels to deliver.
The mean weight of the 7 parcels is 2.7 kg

Larry delivers 3 of the parcels.
Each of these 3 parcels has a weight of W kg

The mean weight of the other 4 parcels is 3.3 kg

Work out the value of W

$W =$ .....

WORKING SPACE

Question 26

4MA1-2H Q13 Q13(a), Q13(b), Q13(c), Q13(d)

MODULAR UNIT 2

7 marks

13 The table gives information about the ages, in years, of 80 people in a train carriage.

Age (a years)	Frequency
$0 < a \leqslant 20$	7
$20 < a \leqslant 30$	25
$30 < a \leqslant 40$	20
$40 < a \leqslant 50$	14
$50 < a \leqslant 60$	8
$60 < a \leqslant 70$	6

(a) Complete the cumulative frequency table.

Age (a years)	Cumulative frequency
$0 < a \leqslant 20$	
$0 < a \leqslant 30$	
$0 < a \leqslant 40$	
$0 < a \leqslant 50$	
$0 < a \leqslant 60$	
$0 < a \leqslant 70$	

(1)

(b) On the grid opposite, draw a cumulative frequency graph for your table.

Question 26 (continued)

4MA1-2H Q13 Q13(a), Q13(b), Q13(c), Q13(d)

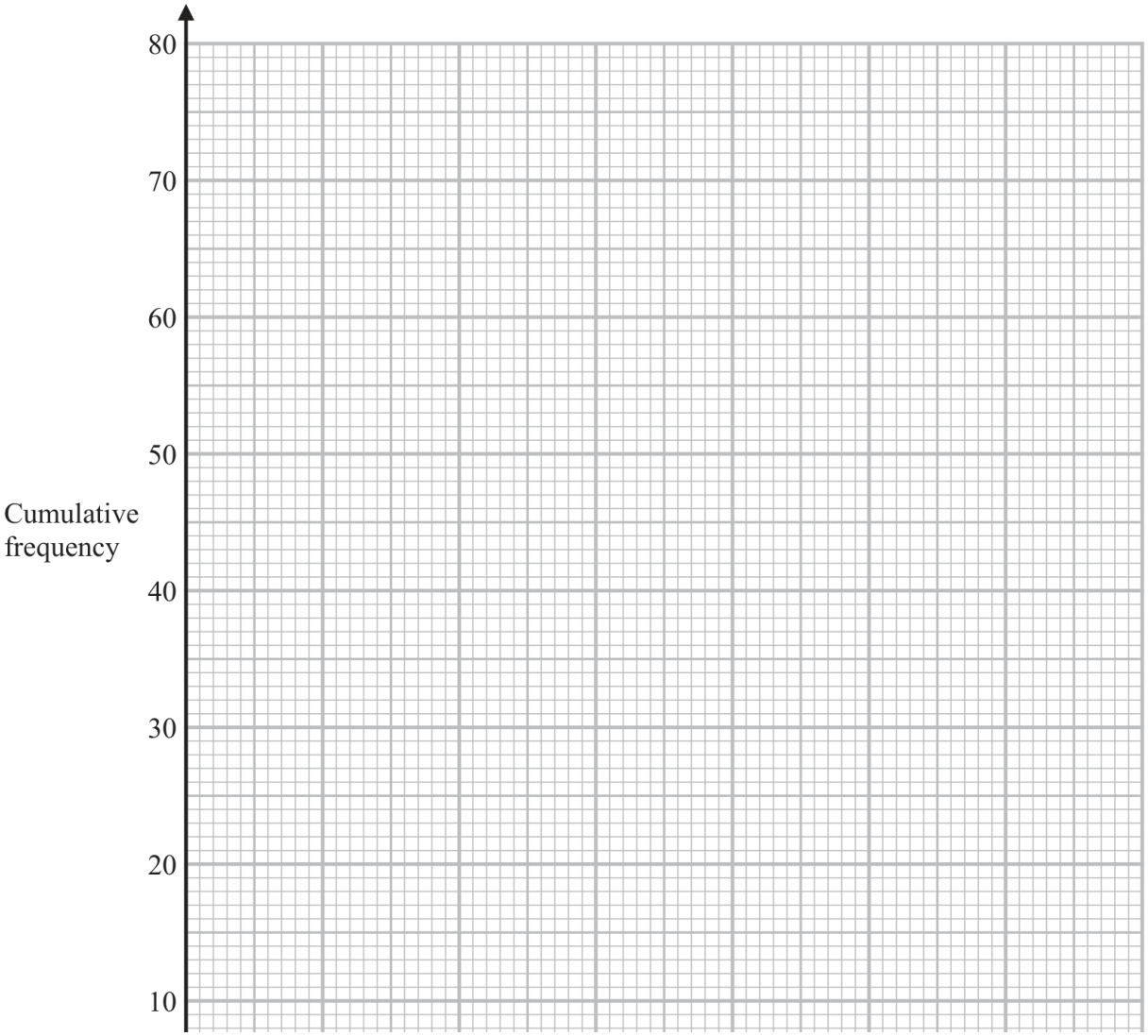
MODULAR UNIT 2
7 marks

(2)

(c) Use your graph to find an estimate for the median age of the 80 people.

..... years

(1)

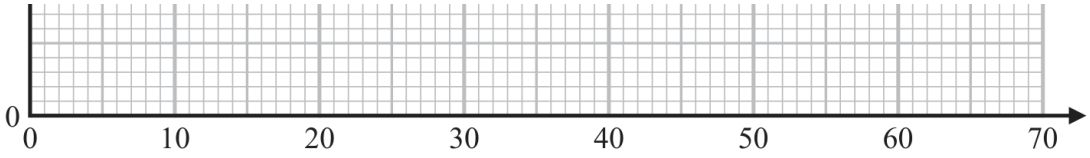


Question 26 (continued)

4MA1-2H Q13 Q13(a), Q13(b), Q13(c), Q13(d)

MODULAR UNIT 2

7 marks



Age (years)

Of the people in the train carriage, 60% of those who are aged between 18 and 65 are going to work. None of the other people in the train carriage are going to work.

(d) Use your graph to find an estimate for the number of people in the train carriage who are going to work.

.....

(3)

Question 27

4MA1-2H Q14 Q14(b)

MODULAR UNIT 2

4 marks

(b) Make c the subject of $g = \dfrac{c+3}{4+c} - 7$

.....

(4)

WORKING SPACE

Question 28

4MA1-2H Q15 Q15(b)

MODULAR UNIT 2

3 marks

(b) Solve the inequality $2y^2 - 7y - 30 \leqslant 0$
Show your working clearly.

.....

(3)

WORKING SPACE

Question 29

4MA1-2H Q17 Q17

MODULAR UNIT 2

4 marks

17 M varies directly as the cube of h
$M = 4$ when $h = 0.5$

Find the value of h when $M = 500$

.....

WORKING SPACE

Question 30

4MA1-2H Q21 Q21

MODULAR UNIT 2

5 marks

21

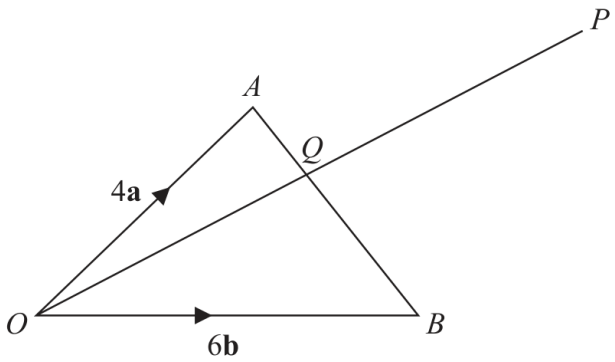


Diagram **NOT** accurately drawn

OAB is a triangle.
Q is the point on AB such that OQP is a straight line.

$\overrightarrow{OA} = 4\mathbf{a}$ $\overrightarrow{OB} = 6\mathbf{b}$ $\overrightarrow{AP} = 2\mathbf{a} + 8\mathbf{b}$

Using a vector method, find the ratio $AQ : QB$

$AQ : QB =$ .....

Working space for Question 30

Continue your method

UNIT 2
5 marks

WORKING SPACE

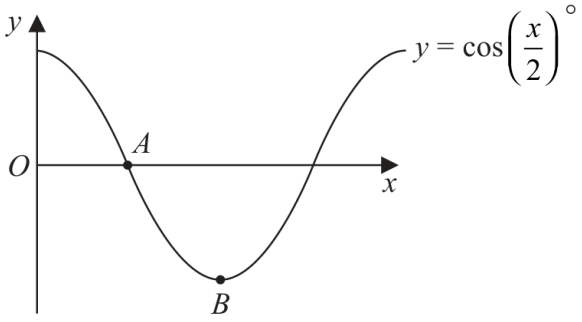
Question 31

4MA1-2H Q23 Q23(i)

MODULAR UNIT 2

1 marks

23 The diagram shows a sketch of the graph of $y = \cos\left(\frac{x}{2}\right)^\circ$



(i) Find the coordinates of the point A

(..... , ...)

(1)

WORKING SPACE

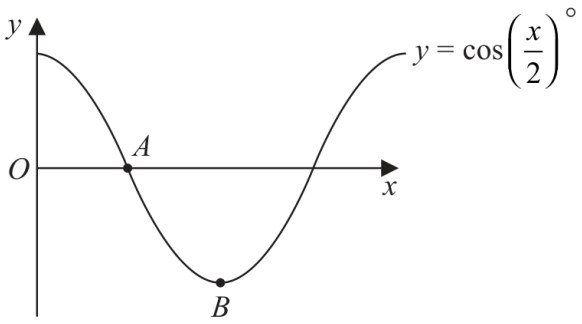
Question 32

4MA1-2H Q23 Q23(ii)

MODULAR UNIT 2

1 marks

23 The diagram shows a sketch of the graph of $y = \cos\left(\frac{x}{2}\right)^\circ$



(ii) Find the coordinates of the point B

(..... , ...)

(1)

Working space for Question 32

Continue your method

UNIT 2
1 marks

WORKING SPACE