Pearson Edexcel International GCSE

Mathematics A

Modular Unit 1

January 2022 Reconstructed Past Paper

STUDENT WORKBOOK

Adaptive working-space edition

27 adaptive question sections 76 marks

Selected from Linear Higher Papers 1H and 2H

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L-to-M | CONVERTED MODULAR EDITION

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

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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 1; the selection contains 76 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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No.	Source	Chapter	Focus	Marks	Page
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Question 01

4MA1-1H Q1 Q1(a)

MODULAR UNIT 1

1 marks

1 (a) Simplify $a^7 \times a^4$

.....

(1)

WORKING SPACE

Question 02

4MA1-1H Q1 Q1(b)

MODULAR UNIT 1

1 marks

(b) Simplify $w^{15} \div w^3$

.....

(1)

WORKING SPACE

Question 03

4MA1-1H Q1 Q1(c)

MODULAR UNIT 1

2 marks

(c) Simplify $(8x^5y^3)^2$

.....

(2)

WORKING SPACE

Question 04
4MA1-1H Q3

MODULAR UNIT 1
3 marks

3 The diagram shows triangle ABC

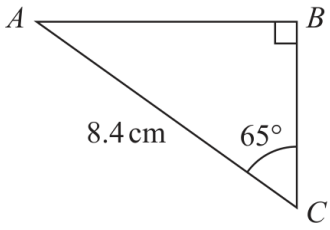


Diagram **NOT** accurately drawn

Work out the length of the side AB
Give your answer correct to 3 significant figures.

..... cm

WORKING SPACE

Question 05

4MA1-1H Q6 Q6(b)(i), Q6(b)(ii)

MODULAR UNIT 1

3 marks

(b) (i) Factorise $y^2 - 2y - 35$

.....

(2)

(ii) Hence, solve $y^2 - 2y - 35 = 0$

.....

(1)

WORKING SPACE

Question 06

4MA1-1H Q7

MODULAR UNIT 1

3 marks

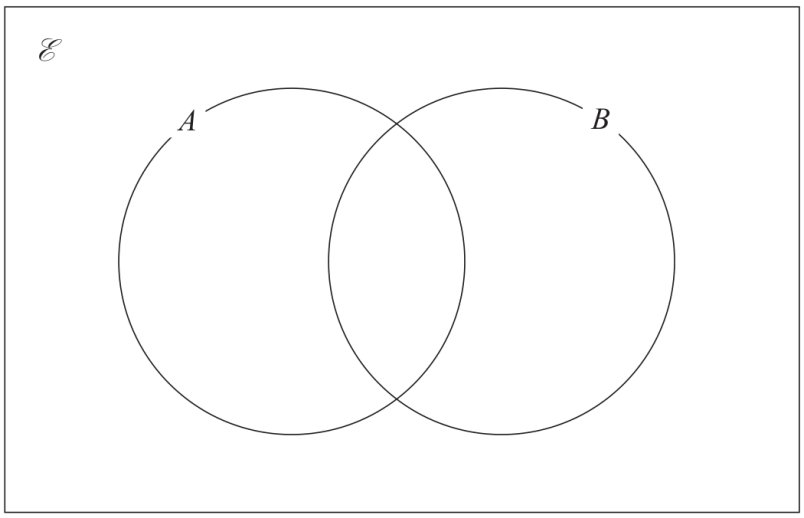
7 $\mathscr{E} = \{4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$

$A \cap B = \{5, 10, 15\}$

$B' = \{7, 8, 9, 11, 12, 13, 14\}$

$A' = \{4, 6, 7, 8, 14\}$

Complete the Venn diagram for this information.



Question 07
4MA1-1H Q9

MODULAR UNIT 1
4 marks

9 The diagram shows isosceles triangle ABC

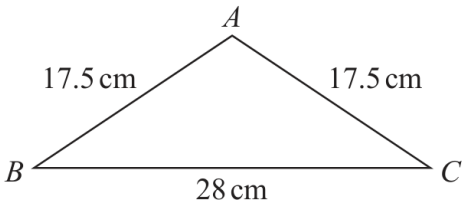


Diagram **NOT** accurately drawn

$AB = AC = 17.5$ cm $BC = 28$ cm

Calculate the area of triangle ABC

..... cm^2

WORKING SPACE

Question 08

4MA1-1H Q10 Q10(a)

MODULAR UNIT 1

2 marks

10 The straight line **L** has equation $2y + 7x = 10$

(a) Find the gradient of **L**

.....

(2)

WORKING SPACE

Question 09

4MA1-1H Q10 Q10(b)

MODULAR UNIT 1

1 marks

10 The straight line **L** has equation $2y + 7x = 10$

(a) Find the gradient of **L**

(b) Find the coordinates of the point where **L** crosses the y-axis.

(..... , ...)

(1)

WORKING SPACE

Question 10

4MA1-1H Q13 Q13(a)

MODULAR UNIT 1

3 marks

13 (a) Expand and simplify $5x(x + 2)(3x - 4)$

.....

(3)

3

WORKING SPACE

Question 11

4MA1-1H Q13 Q13(b)

MODULAR UNIT 1

3 marks

(b) Simplify completely $\left(\frac{16w^8}{y^{20}}\right)^{-\frac{3}{4}}$

.....

(3)

WORKING SPACE

Question 12

4MA1-1H Q14 Q14(a)

MODULAR UNIT 1

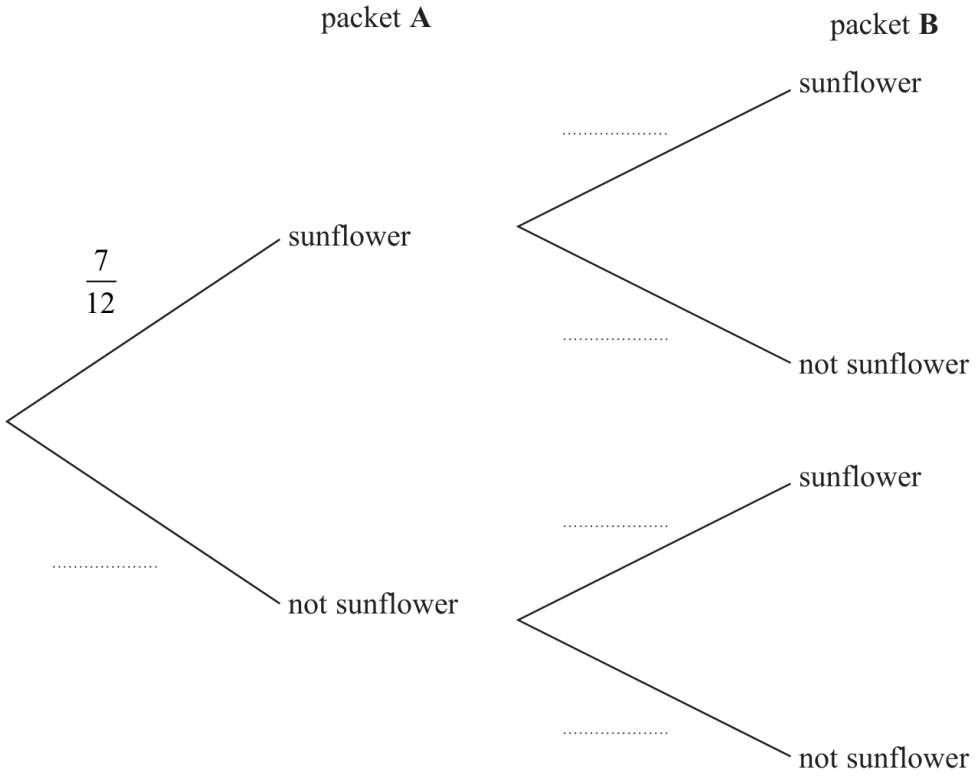
2 marks

14 Aika has 2 packets of seeds, packet **A** and packet **B**

There are 12 seeds in packet **A** and 7 of these are sunflower seeds.
There are 15 seeds in packet **B** and 8 of these are sunflower seeds.

Aika is going to take at random a seed from packet **A** and a seed from packet **B**

(a) Complete the probability tree diagram.



(2)

Question 13

4MA1-1H Q14 Q14(b)

MODULAR UNIT 1

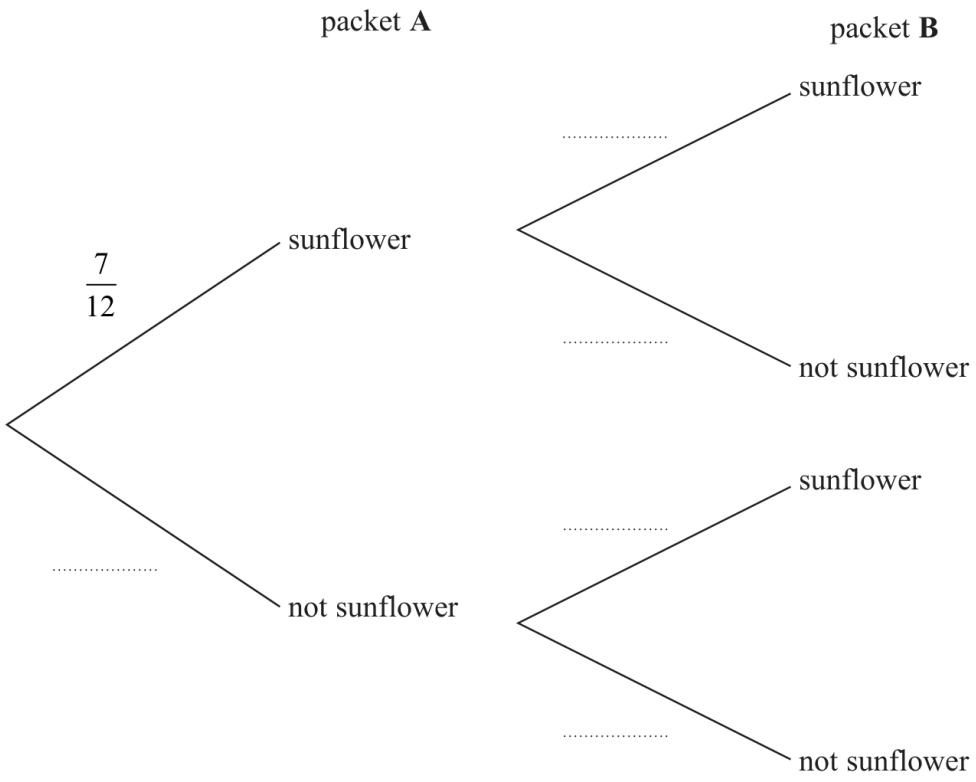
2 marks

14 Aika has 2 packets of seeds, packet **A** and packet **B**

There are 12 seeds in packet **A** and 7 of these are sunflower seeds.
There are 15 seeds in packet **B** and 8 of these are sunflower seeds.

Aika is going to take at random a seed from packet **A** and a seed from packet **B**

(a) Complete the probability tree diagram.



(b) Calculate the probability that Aika will take two sunflower seeds.

.....

(2)

Working space for Question 13

Continue your method

UNIT 1
2 marks

WORKING SPACE

Question 14
4MA1-1H Q16

MODULAR UNIT 1
4 marks

16 The diagram shows a circle with centre O

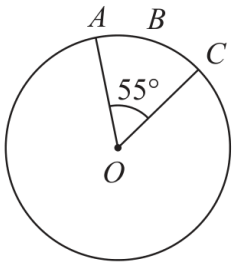


Diagram **NOT** accurately drawn

A, B and C are points on the circle so that the length of the arc ABC is 5 cm.

Given that angle $AOC = 55°$

work out the area of the circle.
Give your answer correct to one decimal place.

..... cm^2

Working space for Question 14

Continue your method

UNIT 1
4 marks

WORKING SPACE

Question 15

4MA1-1H Q18

MODULAR UNIT 1

3 marks

18 $A = w - \dfrac{x^2}{y}$

$w = 3.45$ correct to 2 decimal places.
$x = 1.9$ correct to 1 decimal place.
$y = 5$ correct to the nearest whole number.

Work out the lower bound of the value of A
Show your working clearly.

.....

WORKING SPACE

Question 16

4MA1-1H Q20 Q20(a), Q20(b)

MODULAR UNIT 1

4 marks

20 (a) Express $7 + 12x - 3x^2$ in the form $a + b(x + c)^2$ where a, b and c are integers.

.....

(3)

C is the curve with equation $y = 7 + 12x - 3x^2$
The point A is the maximum point on **C**

(b) Use your answer to part (a) to write down the coordinates of A

(..... , ...)

(1)

WORKING SPACE

Question 17
4MA1-1H Q21

MODULAR UNIT 1
5 marks

21 The diagram shows the prism *ABCDEFGHJK* with horizontal base *AEFG*

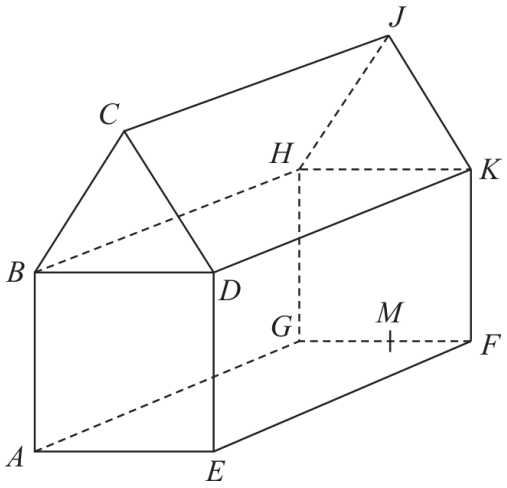


Diagram **NOT** accurately drawn

ABCDE is a cross section of the prism where
ABDE is a square
BCD is an equilateral triangle

$EF = 2 \times AE$
M is the midpoint of *GF* so that *JM* is vertical.

Angle $MAJ = y°$

Given that $\tan y° = T$

find the value of *T*, giving your answer in the form $\frac{\sqrt{p} + \sqrt{q}}{17}$ where *p* and *q* are integers.

$T =$ .....

Working space for Question 17

Continue your method

UNIT 1
5 marks

WORKING SPACE

Question 18

4MA1-2H Q1 Q1(a)

MODULAR UNIT 1

2 marks

1 (a) Expand and simplify $(y + 4)(2 - y)$

.....

(2)

WORKING SPACE

Question 19

4MA1-2H Q1 Q1(b)

MODULAR UNIT 1

2 marks

(b) Factorise fully $15b^5c - 35b^3c^9$

.....

(2)

WORKING SPACE

Question 20

4MA1-2H Q2

MODULAR UNIT 1

3 marks

2 Show that $6\frac{3}{4} \div 2\frac{4}{7} = 2\frac{5}{8}$

WORKING SPACE

Question 21

4MA1-2H Q4 Q4(a)

MODULAR UNIT 1

1 marks

4 Each side of a regular octagon has a length of 18 mm, correct to the nearest 0.5 mm

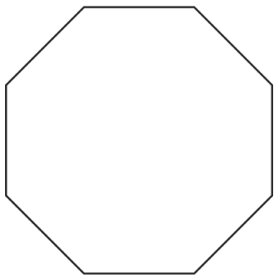


Diagram **NOT** accurately drawn

(a) Write down the lower bound of the length of each side of the octagon.

..... mm

(1)

WORKING SPACE

Question 22

4MA1-2H Q4 Q4(b)

MODULAR UNIT 1

1 marks

(b) Write down the upper bound of the length of each side of the octagon.

..... mm

(1)

WORKING SPACE

Question 23

4MA1-2H Q6

MODULAR UNIT 1

5 marks

6 A bag contains only pink sweets, white sweets, green sweets and red sweets.

The table gives each of the probabilities that, when a sweet is taken at random from the bag, the sweet will be green or the sweet will be red.

Sweet	pink	white	green	red
Probability			0.2	0.35

The ratio

number of pink sweets : number of white sweets = 2 : 1

There are 28 red sweets in the bag.

Work out the number of white sweets in the bag.

.....

WORKING SPACE

Question 24

4MA1-2H Q14

MODULAR UNIT 1

3 marks

14 A zip wire is shown as the dashed line AC in the diagram.

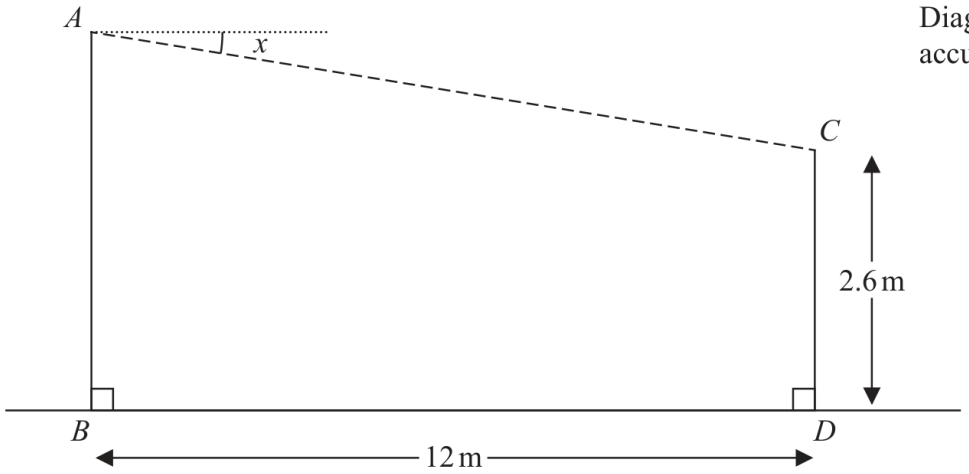


Diagram **NOT** accurately drawn

The zip wire is supported by two vertical posts AB and CD standing on horizontal ground.

$CD = 2.6\,\text{m}$ $BD = 12\,\text{m}$

The zip wire makes an angle x with the horizontal, as shown in the diagram.
The design of the zip wire requires the angle x to be at least 5°

Work out the least possible height of the post AB
Give your answer correct to 3 significant figures.

..... m

Working space for Question 24

Continue your method

UNIT 1
3 marks

WORKING SPACE

Question 25
4MA1-2H Q17

MODULAR UNIT 1
3 marks

17 Show that $\dfrac{\sqrt{12}}{\sqrt{3}+2}$

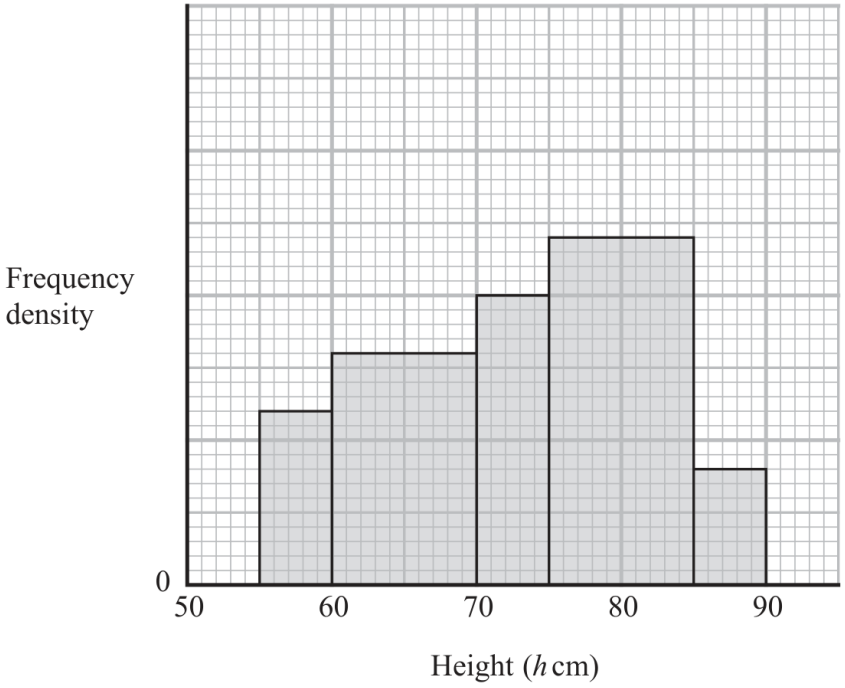
can be written in the form $a+\sqrt{b}$ where a and b are integers.

WORKING SPACE

Question 26
4MA1-2H Q20

MODULAR UNIT 1
4 marks

20 The histogram gives information about the heights, h cm, of some tomato plants.



There are 12 tomato plants for which $75 < h \leqslant 85$
One of the tomato plants is selected at random.

Find an estimate for the probability that this tomato plant has a height greater than 82.5 cm

.....

Working space for Question 26

Continue your method

UNIT 1
4 marks

WORKING SPACE

Question 27
4MA1-2H Q23

MODULAR UNIT 1
6 marks

23 The diagram shows triangle PQR

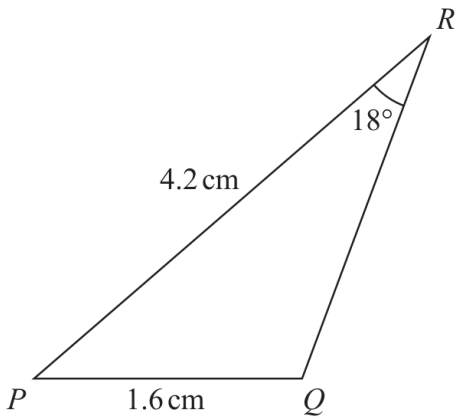


Diagram **NOT** accurately drawn

$PQ = 1.6\,\text{cm}$ $PR = 4.2\,\text{cm}$ Angle $PRQ = 18°$

Given that angle PQR is obtuse,

work out the area of triangle PQR
Give your answer correct to 3 significant figures.

..... cm^2

Working space for Question 27

Continue your method

UNIT 1
6 marks

WORKING SPACE