GradeMax

* 0000800000001 * DFD

Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

* 1 8 8 7 4 2 9 7 7 3 *

MATHEMATICS **0580/42**

Paper 4 Calculator (Extended) **October/November 2025**

2 hours

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a scientific calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages. Any blank pages are indicated.

DC (CJ/FC) 346752/2
© UCLES 2025

[Turn over

GradeMax

List of formulas

Area, A, of triangle, base b, height h. $A = \frac{1}{2}bh$

Area, A, of circle of radius r. $A = \pi r^2$

Circumference, C, of circle of radius r. $C = 2\pi r$

Curved surface area, A, of cylinder of radius r, height h. $A = 2\pi rh$

Curved surface area, A, of cone of radius r, sloping edge l. $A = \pi rl$

Surface area, A, of sphere of radius r. $A = 4\pi r^2$

Volume, V, of prism, cross-sectional area A, length l. $V = Al$

Volume, V, of pyramid, base area A, height h. $V = \frac{1}{3}Ah$

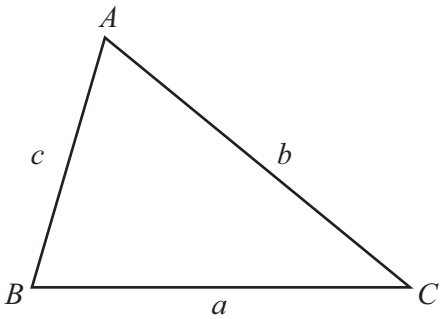
Volume, V, of cylinder of radius r, height h. $V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $V = \frac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $V = \frac{4}{3}\pi r^3$

For the equation $ax^2 + bx + c = 0$, where $a \neq 0$, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



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

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

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

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

GradeMax

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

1 Write the ratio 60 grams : 3 kilograms in the form $1 : n$.

1 : ..... [2]

2 Solve.

$8x - 17 = 27$

$x =$ ..... [2]

3 Write down the order of rotational symmetry of a regular decagon.

..... [1]

4 Pedro makes cards.

(a) He makes cards at a rate of 9 cards every 20 minutes.

Work out the number of cards he makes in 8 hours.

..... [2]

(b) Each card costs 12 cents to make.
Pedro sells each card for 50 cents.

Work out his percentage profit on each card.

.....% [2]

5 Nuwa is buying a phone.
One website sells the phone for 953 Yuan.
A different website sells the same phone for $141.
The exchange rate is 1 Yuan = $0.152 .

Calculate the difference between these phone prices.
Give your answer in dollars, correct to the nearest cent.

$ ..... [2]

6 One morning, a dentist has appointments for 10 patients.
The stem-and-leaf diagram shows the waiting time for 8 of these patients.

0	1 4
1	0 2 9
2	1 5 5

Key: 1 | 0 represents 10 minutes

The times for the two other patients, *P* and *Q*, are not shown in the stem-and-leaf diagram.

The mean waiting time of all 10 patients that morning is 16 minutes.
The range of waiting times is 26 minutes.
Patient *P* waits longer than patient *Q*.

Find the waiting time for each of patient *P* and patient *Q*.

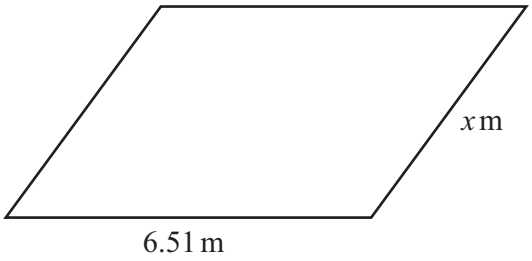
Patient *P* ..... min

Patient *Q* ..... min

[4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

7 The diagram shows a parallelogram.



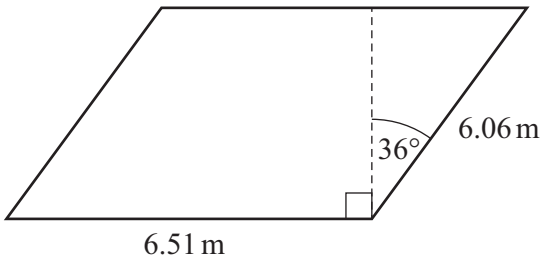
NOT TO SCALE

The parallelogram has the same perimeter as a circle with radius 4 m.

(a) Show that $x = 6.06$ m, correct to 2 decimal places.

[4]

(b)



NOT TO SCALE

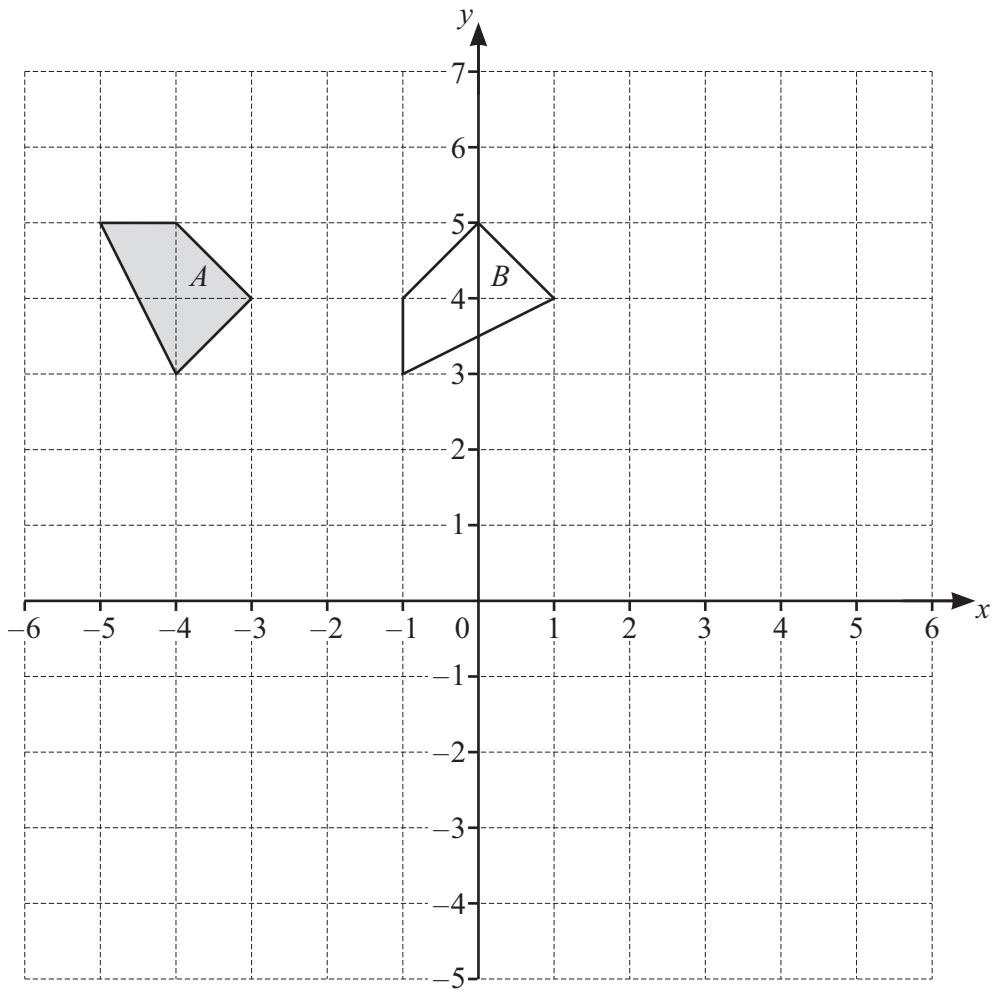
The floor of a room is in the shape of this parallelogram.
It costs \$18 per square metre to tile the floor.

Calculate the total cost of tiling the floor.

\$ ..... [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

8



(a) On the diagram, draw the image of

(i) shape A after a translation by the vector $\begin{pmatrix} 1 \\ -7 \end{pmatrix}$ [2]

(ii) shape A after a reflection in the line $y = x + 1$. [3]

(b) Describe fully the **single** transformation that maps shape A onto shape B.

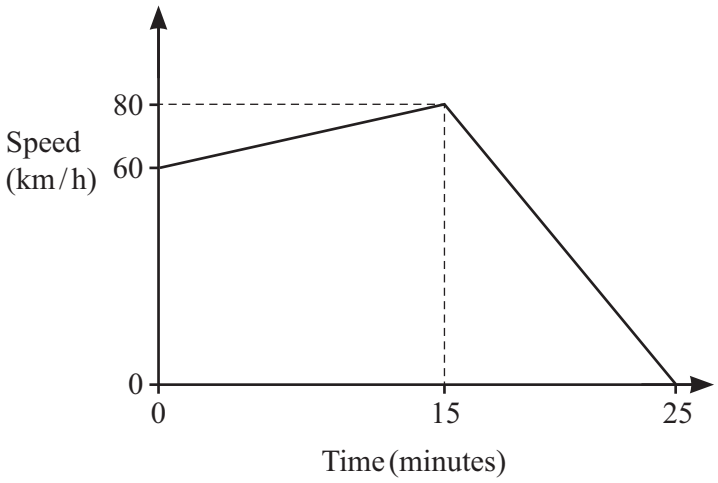
.....

..... [3]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

GradeMax

9 The diagram shows the speed–time graph for part of a car journey.



NOT TO SCALE

Find the total distance travelled in the 25 minutes.

..... km [3]

10 Find the *n*th term of each sequence.

(a) 17, 9, 1, – 7, −15, …

..... [2]

(b) 3, 12, 27, 48, 75, …

..... [2]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

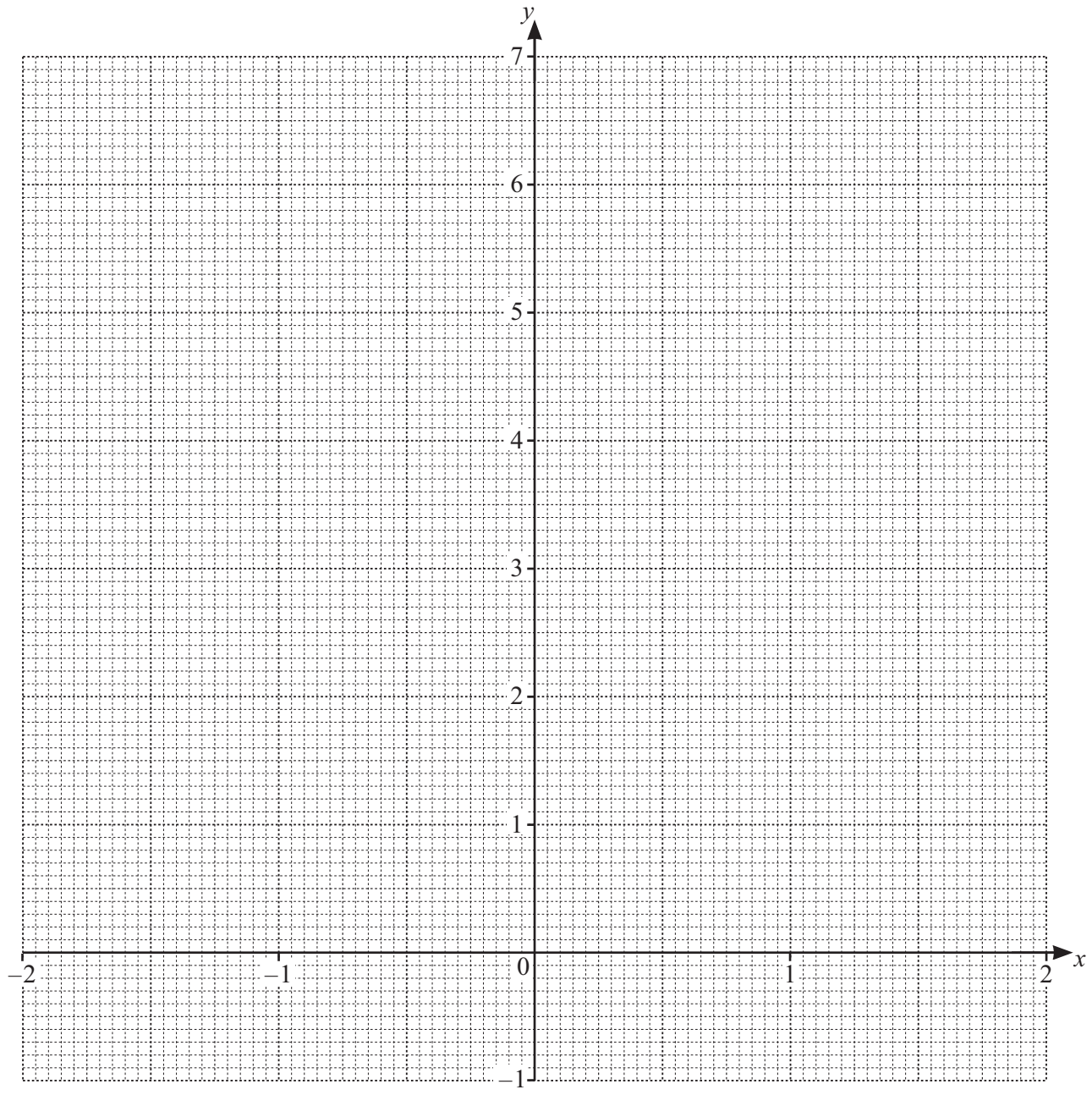
GradeMax

11 The table shows some values for $y = x^3 - 2x + 3$.
Where appropriate, values of y are given correct to 2 decimal places.

x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2
y	-1		4	3.88	3	2.13	2		7

(a) Complete the table. [2]

(b) Draw the graph of $y = x^3 - 2x + 3$ for $-2 \leqslant x \leqslant 2$.



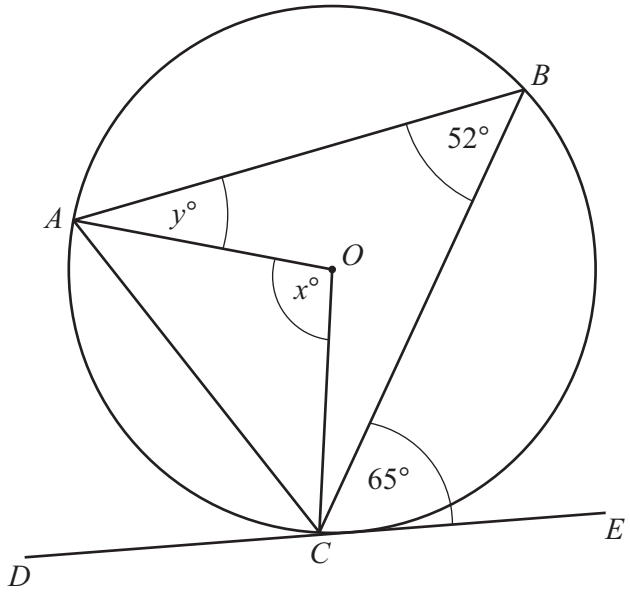
[4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

(c) By drawing a suitable straight line on the grid, solve the equation $x^3 - 2.5x + 1 = 0$.

$x =$ ..... or $x =$ ..... or $x =$ ..... [4]

12



NOT TO SCALE

A, B and C lie on a circle centre O.
DE is a tangent to the circle at C.
Angle $ABC = 52°$ and angle $BCE = 65°$.

(a) Find the value of x.
Give a geometrical reason for your answer.

$x =$ ..... because .....

..... [2]

(b) Find the value of y.

$y =$ ..... [2]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

GradeMax

13 Simplify.

$$\frac{7}{2m} + \frac{3}{8m}$$

..... [2]

14 **(a)** Carlos invests \$24 000 at a rate of 3.2% per year compound interest.

Calculate the value of his investment at the end of 4 years.

\$ ..... [2]

(b) Carlos buys a painting for \$$x$.
He sells the painting for \$40 870.
He makes a profit of 34%.

Calculate the value of his profit.

\$ ..... [3]

(c) Carlos also buys a car with a value of \$32 500.
The value of the car decreases exponentially by 23% each year.

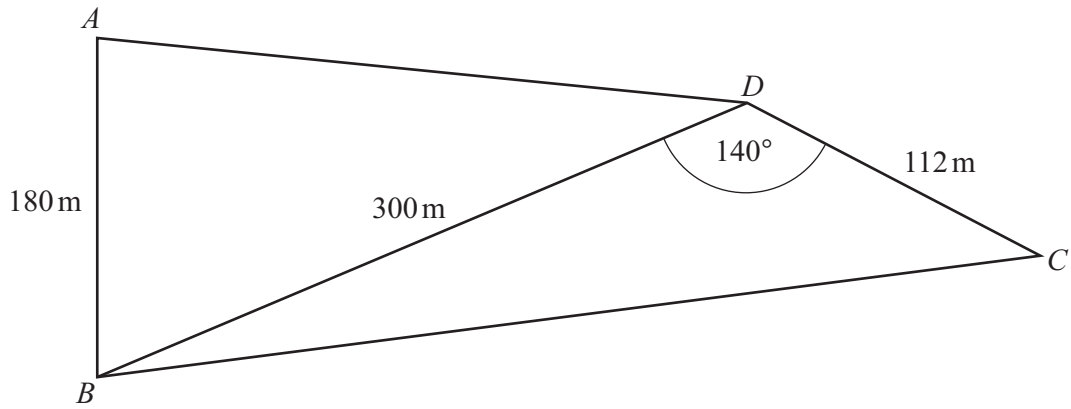
Find a formula for the value, \$$V$, of the car at the end of n years.

..... [3]

DO NOT WRITE IN THIS MARGIN

GradeMax

15



NOT TO SCALE

The diagram shows a field, *ABCD*, in the shape of a quadrilateral.
BD is a straight path across the field.

(a) Calculate *BC*.

BC = ... m [3]

(b) Calculate angle *DBC*.

Angle *DBC* = ... [3]

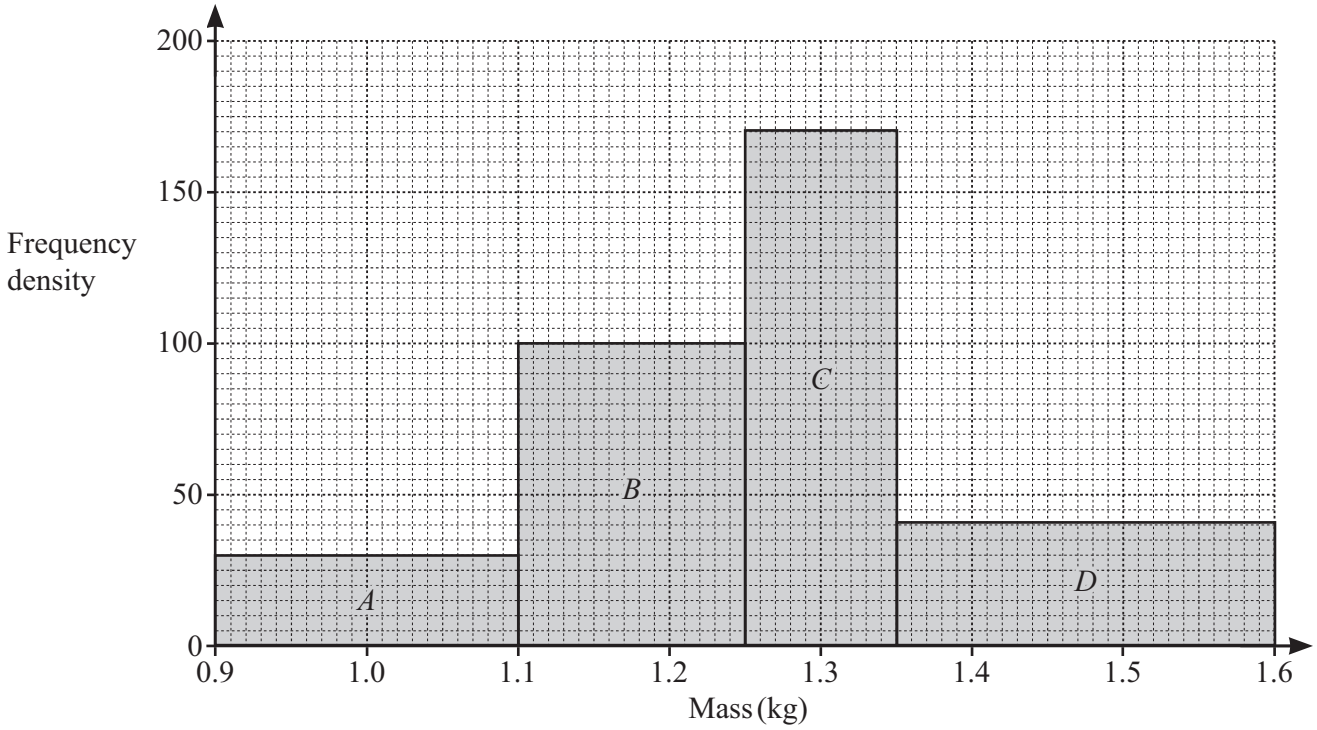
(c) The total area of the field, *ABCD*, is 35 900 m^2.

Work out the length of the shortest distance from *D* to *AB*.

..... m [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

16 The histogram shows information about the masses of some coconuts.
The masses are classified into four categories *A*, *B*, *C* and *D*.



(a) Show that there are 10 coconuts in category *D*.

[1]

(b) Two of the coconuts from those in category *C* and category *D* are chosen at random.

Find the probability that both are from category *D*.

..... [3]

(c) Calculate an estimate of the mean mass of the coconuts.

..... kg [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

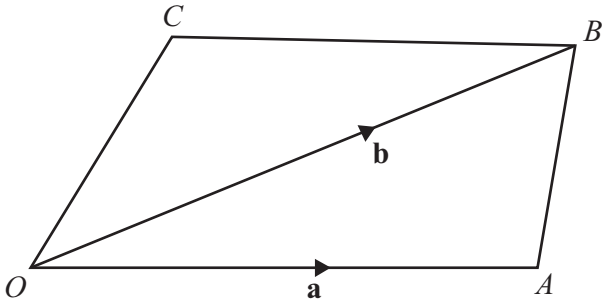
* 0000800000013 * DFD

17 Expand and simplify.

$$(x-2)(2x+3)(x+4)$$

..... [3]

18



NOT TO SCALE

In the diagram, OA is parallel to CB.
$OA : CB = 4 : 3$
$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$.

(a) Find $\overrightarrow{AB}$ in terms of **a** and **b**.

$\overrightarrow{AB} =$ ..... [1]

(b) M is the midpoint of OC.

Find $\overrightarrow{AM}$ in terms of **a** and **b**.
Give your answer in its simplest form.

$\overrightarrow{AM} =$ ..... [3]

DO NOT WRITE IN THIS MARGIN

GradeMax

19 Solve the simultaneous equations.
You must show all your working and give your answers correct to 2 decimal places.

$y = 5 - 2x$

$y = 3x^2 - 7x - 6$

$x =$ ..... $y =$ .....

$x =$ ..... $y =$ .....

[6]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

GradeMax

20 A solid metal prism has a mass of 4810 g, correct to the nearest 10 g.
The density of the metal is 7.7 g/cm^3, correct to 1 decimal place.

Calculate the lower bound for the volume of the prism.
[Density = mass ÷ volume]

..... cm^3 [3]

21 y is inversely proportional to $(x+2)^2$.
w is proportional to x.

When $y = 8$, $x = 3.5$.
When $w = 15$, $x = 90$.

Find y in terms of w.

$y =$ ..... [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

GradeMax



BLANK PAGE

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.