



Cambridge IGCSE™

CANDIDATE
NAME
CENTRE
NUMBER

--	--	--	--	--

CANDIDATE
NUMBER

--	--	--	--



MATHEMATICS

0580/43

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 **20** pages. Any blank pages are indicated.

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 .

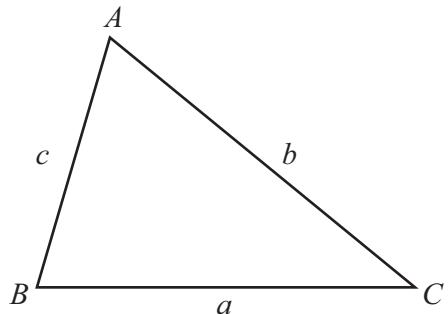
$$V = \frac{4}{3}\pi r^3$$

For the equation

$$ax^2 + bx + c = 0, \text{ where } a \neq 0,$$

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

For the triangle shown,



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

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

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



1 The n th term of a sequence is $5 - 2n$.

(a) Find the 6th term of this sequence.

..... [1]

(b) Find the greatest number in this sequence.

..... [1]

2 The stem-and-leaf diagram shows the age of each of 16 adults.

3	2	3	3	5	6	7
4	0	1	5	5	6	8
5	1	1	1			

Key: 3 | 2 represents age 32 years

(a) Find the mode.

..... years [1]

(b) Find the median.

..... years [1]

(c) Find the percentage of the 16 adults with an age of less than 38 years.

..... % [2]



3 $G = \frac{4}{5}m^2n$

Find the value of G when $m = 6$ and $n = 15$.

$G = \dots$ [1]

4 (a) The scale diagram shows the position of town A on a map.
Town B is 12 km from town A on a bearing of 080° .

Using a scale of 1 cm represents 2 km, mark the position of town B on the diagram.



Scale: 1 cm to 2 km

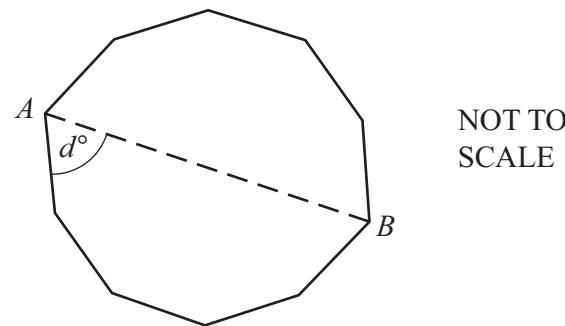
[2]

(b) The bearing of C from D is 130° .

Work out the bearing of D from C .



5 (a) The diagram shows a regular decagon.
 AB is a line of symmetry of the decagon.



Work out the value of d .

$$d = \dots \quad [3]$$

(b) The exterior angle of a regular polygon with n sides is 45° .

Work out the value of n .

$$n = \dots \quad [1]$$

6 Simplify.

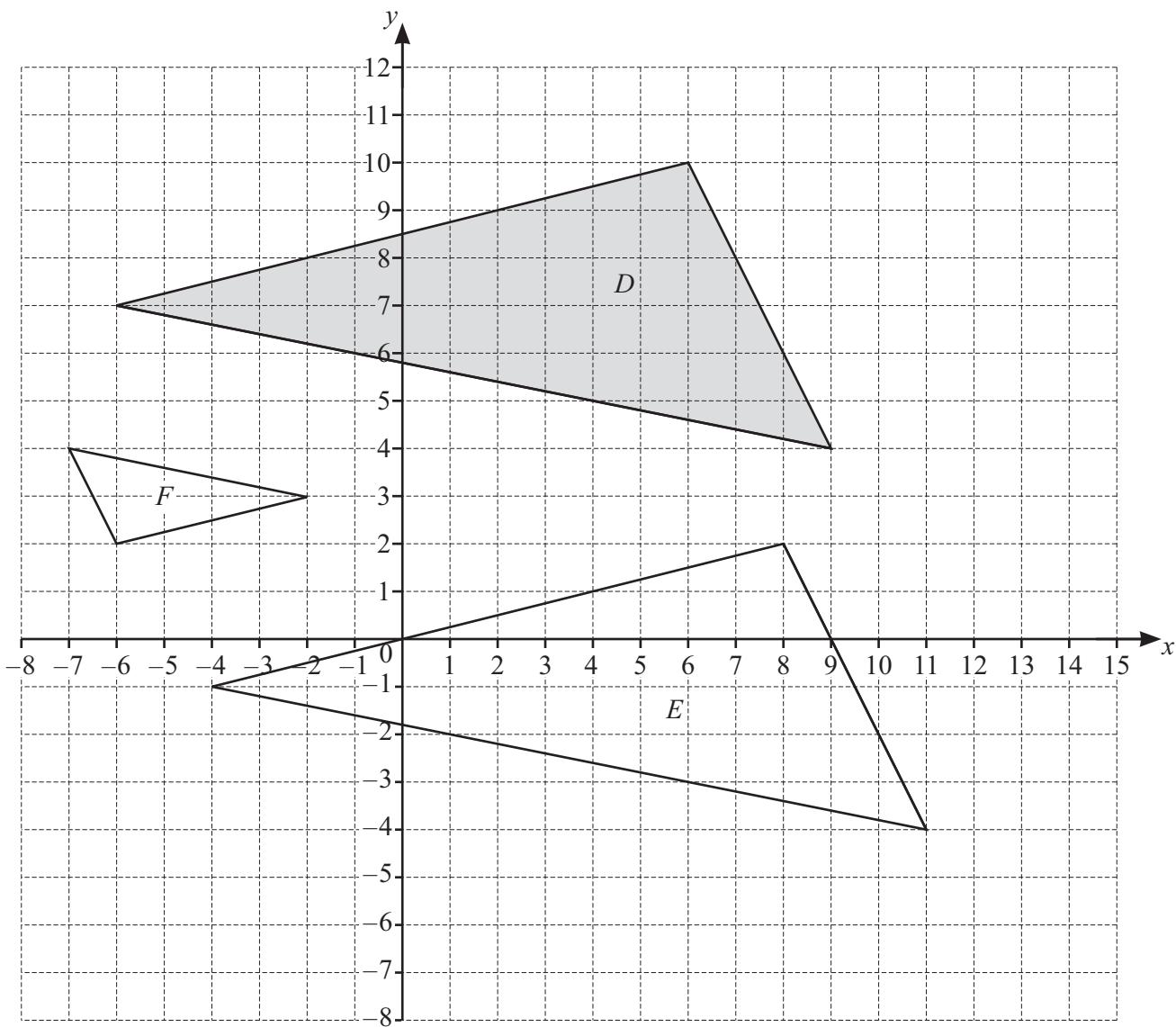
(a) $\frac{y^5}{y^2}$

$$\dots \quad [1]$$

(b) $3x^3 \times 5x^5$

$$\dots \quad [2]$$





(a) Describe fully the **single** transformation that maps triangle D onto triangle E .

.....

..... [2]

(b) Describe fully the **single** transformation that maps triangle D onto triangle F .

.....

..... [3]





8 m is a positive integer.

Write these values in order of size, starting with the smallest.

m

33% of m

$\frac{1}{3}$ of m

320% of $\frac{m}{10}$

.....,,, [2]
smallest

9 Draw a ring around the calculation that is equivalent to $n \div 2\frac{3}{5}$.

$n \times 2\frac{5}{3}$

$n \times \frac{5}{13}$

$n \times \frac{13}{5}$

$\frac{1}{n} \times \frac{13}{5}$

$\frac{1}{n} \times \frac{5}{13}$

[1]

10 Solve the simultaneous equations.

You must show all your working.

$$3x + 5y = 5$$

$$2x - 5y = 45$$

$$x = \dots$$

$$y = \dots$$

[2]

[Turn over]



11

2.89×10^{-1}	1.3×10^{12}	8.3×10^1	9×10^{11}	2.03×10^{-5}	0.3×10^{-2}
-----------------------	----------------------	-------------------	--------------------	-----------------------	----------------------

Use a number from the box to complete each statement.

The number that is not written in standard form is

The largest number is

The smallest number is

[2]

12 A vase contains flowers that are red or pink or white.

Ruth picks a flower at random from the vase.

The probability that the flower is **not** red is 0.9 .

The probability that the flower is **not** pink is 0.65 .

Find the probability that the flower is white.

..... [2]

13 The point (5, 1024) lies on the curve $y = c^x$, where c is a whole number.

Find the y -coordinate of the point on the curve with x -coordinate -2 .

..... [3]



DO NOT WRITE IN THIS MARGIN

14 These expressions are all equal in value.

$$\frac{5x-2}{3}$$

$$10-x$$

$$y+11$$

Find the value of y .

$$y = \dots \quad [5]$$

DO NOT WRITE IN THIS MARGIN

15 The population of a town is 54 000.

The population is **decreasing** exponentially at a rate of 2% per year.

(a) Calculate the decrease in the population at the end of 4 years.

$$\dots \quad [3]$$

(b) Find the number of complete years it takes for the population of 54 000 to first fall below 44 000.

$$\dots \text{ years} \quad [2]$$





16 Expand and simplify.

(a) $7(x+2) + 4(3x-5)$

..... [2]

(b) $(3x-y)(5x+2y)$

..... [2]

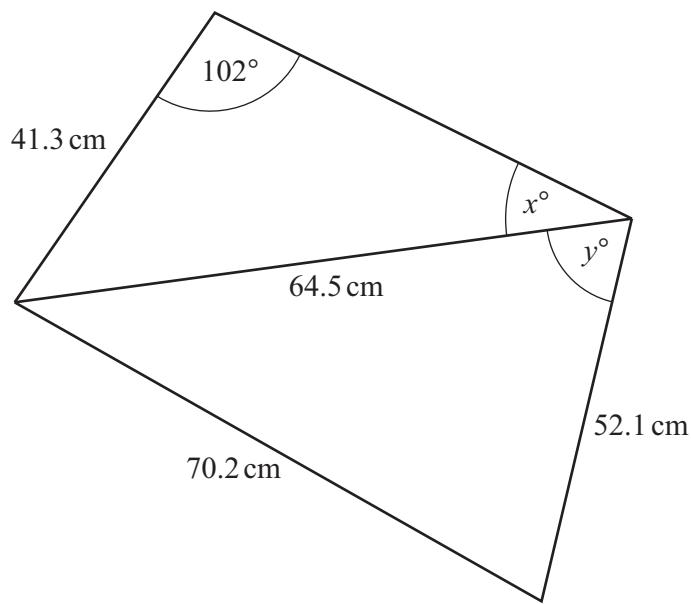
17 Make t the subject of the formula.

$$x = \frac{7t}{5-t}$$

$t =$ [3]



18

NOT TO
SCALE

(a) Calculate the value of x .

$x = \dots$ [3]

(b) Calculate the value of y .

$y = \dots$ [3]





12

19

$$f(x) = 5^x$$

$$g(x) = 3x - 2$$

$$h(x) = x^2 + 1$$

(a) Find $f(5)$.

..... [1]

(b) Find $g(8x)$.

..... [1]

(c) Find $g^{-1}(x)$.

$g^{-1}(x) = \dots$ [2]

(d) Find the positive solution of $gh(x) = 364$.

$x = \dots$ [3]

(e) Find $ff^{-1}(12)$.

..... [1]



20 $y = x^3 + 3x^2 - 13x$

(a) Find $\frac{dy}{dx}$.

..... [2]

(b) Find the gradient of the curve $y = x^3 + 3x^2 - 13x$ at the point where $x = 3$.

..... [2]

21 A dressmaker takes 75 hours to make 31 dresses.

In week 1, she takes a total of 12 hours 30 minutes to make the first 4 dresses.

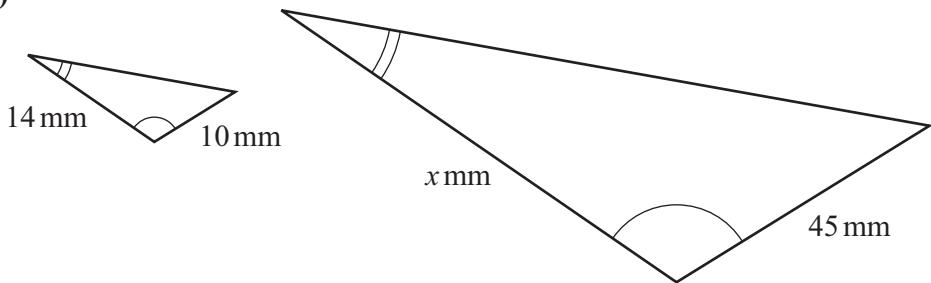
In week 2, she makes the remaining 27 dresses at a constant hourly rate.

Work out the percentage increase in her hourly rate of making dresses from week 1 to week 2.

..... % [4]



22 (a)



The diagram shows two mathematically similar triangles.

Find the value of x .

$$x = \dots \quad [2]$$

(b) The surface areas of two mathematically similar containers are 124 cm^2 and 279 cm^2 .
 The capacity of the smaller container is 56 ml.

Find the capacity of the larger container.

$$\dots \text{ ml} \quad [3]$$



23 The table shows some information about the mass of each of 200 oranges.

Mass (m grams)	$180 < m \leq 200$	$200 < m \leq 210$	$210 < m \leq 215$	$215 < m \leq 230$
Frequency	32	64	74	30

(a) Calculate an estimate of the mean mass of an orange.

..... g [4]

(b) Sarah draws a histogram to show this information.

The table shows the height of one of the bars for this histogram.

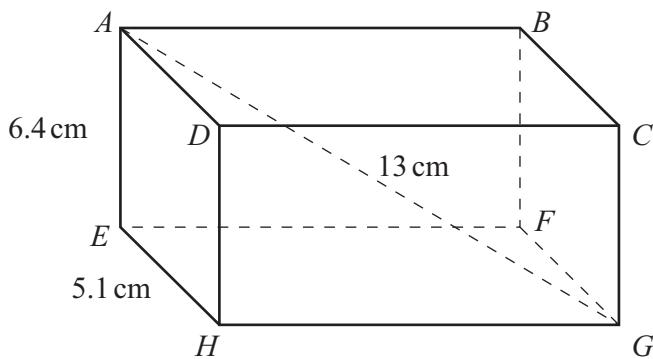
Complete the table.

Mass (m grams)	$180 < m \leq 200$	$200 < m \leq 210$	$210 < m \leq 215$	$215 < m \leq 230$
Height of bar (cm)			7.4	

[3]



24

NOT TO
SCALE

The diagram shows a cuboid $ABCDEFGH$.
 $AE = 6.4 \text{ cm}$, $EH = 5.1 \text{ cm}$ and $AG = 13 \text{ cm}$.

(a) Calculate EF .

$$EF = \dots \text{ cm} \quad [3]$$

(b) Calculate the angle between the line AG and the base $EFGH$ of the cuboid.

..... [3]





25 Jenna has a length of wire measuring 68 cm, correct to the nearest cm.

From this wire she cuts off two smaller pieces

- a piece of length 4.7 cm, correct to the nearest mm
- a piece of length 10.0 cm, correct to the nearest mm.

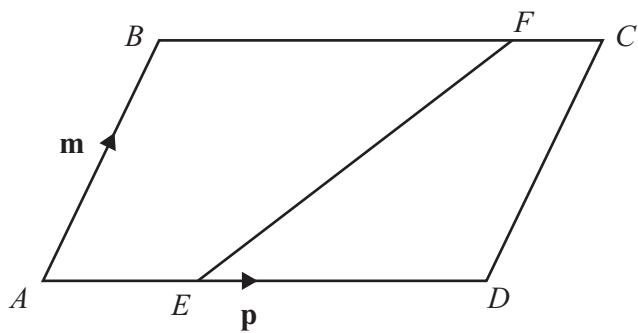
Work out the lower bound and the upper bound for the length of the wire remaining.

Lower bound = cm

Upper bound = cm

[3]





$ABCD$ is a parallelogram.

$\overrightarrow{AB} = \mathbf{m}$ and $\overrightarrow{AD} = \mathbf{p}$.

F is a point on BC and $BF = 4FC$.

E is a point on AD and $AE : ED = 1 : 2$.

(a) Find \overrightarrow{EF} , in terms of \mathbf{m} and \mathbf{p} , in its simplest form.

..... [3]

(b) EF and DC are extended to meet at the point G .

Find \overrightarrow{CG} , in terms of \mathbf{m} and/or \mathbf{p} , in its simplest form.

..... [2]



BLANK PAGE

DO NOT WRITE IN THIS MARGIN





BLANK PAGE

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.

