Cambridge Assessment International Education

Cambridge IGCSE™

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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/42**

Paper 4 Calculator (Extended) **May/June 2025**

1 hour 30 minutes

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 graphic display calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly. You will be given marks for correct methods, including sketches, even if your answer is incorrect.
- 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 75.
- The number of marks for each question or part question is shown in brackets [ ].

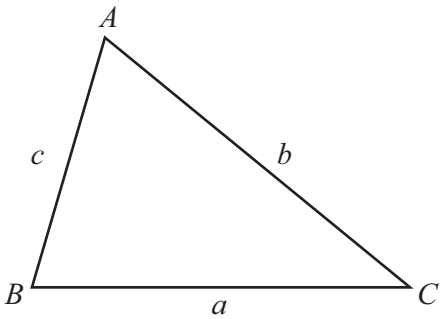
This document has **16** pages. Any blank pages are indicated.

[Turn over

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,



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

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

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

1 Write the number 13 205.172 68

(a) correct to 3 significant figures

..... [1]

(b) correct to the nearest 10.

..... [1]

2 Solve.

(a) $4x - 3 = 15$

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

(b) $1 - 2x = 11 - 4x$

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

3 Work out.

$(1.7)^2 - \sqrt{8.5}$

..... [1]

4 Work out.

$\frac{7}{12} - \frac{1}{3}$

..... [1]

5 The exchange rate between pounds (£) and Chinese yuan (¥) is £1 = ¥8.3 .

Change £549 to Chinese yuan.

¥ ..... [1]

6 $A = \frac{1}{2}(x+y)h$

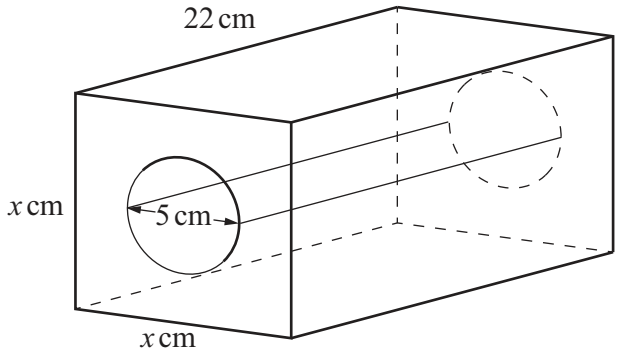
(a) Find the value of A when $x = 7$, $y = 12.5$ and $h = 6$.

$A =$ ..... [1]

(b) Rearrange the formula to write x in terms of A, y and h.

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

7



NOT TO SCALE

The diagram shows a wooden cuboid with a cylinder removed.
The cuboid has length 22 cm, width x cm and height x cm.
The cylinder has length 22 cm and diameter 5 cm.

The volume of wood remaining after the cylinder has been removed is 976 cm^3.

Find the value of x.

$x =$ ..... [3]

8 Xiong flies by plane from Manchester to Hong Kong.
The distance from Manchester to Hong Kong is 9000 km.
The flight takes 12.5 hours.

(a) Calculate the average speed of the plane.

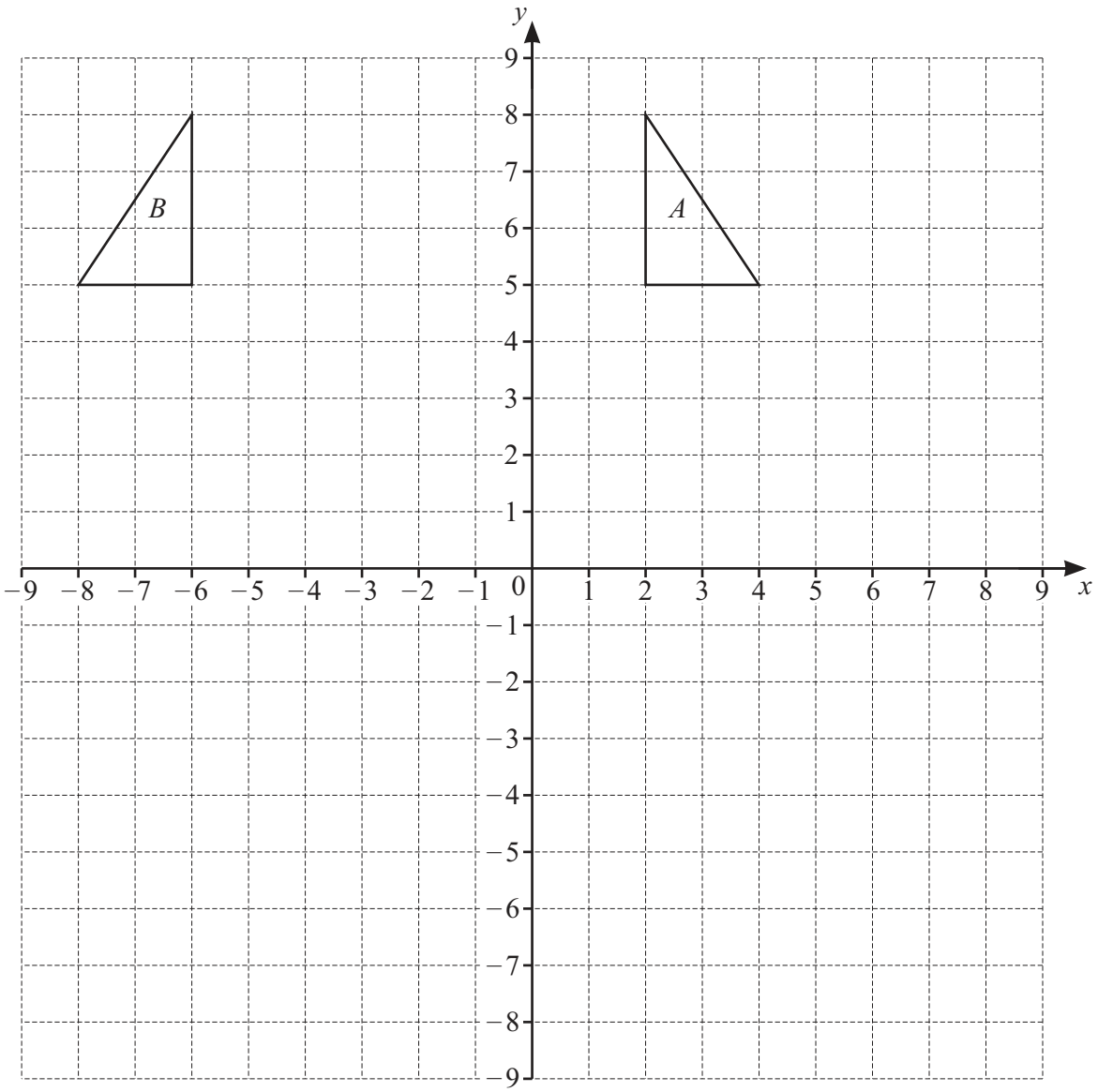
..... km/h [1]

(b) The plane leaves Manchester at 2045.
The local time in Hong Kong is 8 hours ahead of the local time in Manchester.

Find the local time in Hong Kong when the plane lands.

..... [2]

9



(a) Translate **triangle *A*** with vector $\begin{pmatrix} 0 \\ -8 \end{pmatrix}$. Label the image *C*. [2]

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

.....

..... [2]

(c) Rotate **triangle *B*** through 90° clockwise with centre of rotation $(-6, 2)$. Label the image *D*. [2]

10 The table shows the marks of each of 10 students in a physics exam and in a chemistry exam.

Physics mark (x)	9	21	33	41	55	68	75	83	89	96
Chemistry mark (y)	31	46	42	50	50	61	69	68	72	90

(a) Find the mean physics mark.

..... [1]

(b) (i) Find the equation of the regression line for y in terms of x.

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

(ii) Use your answer to **part (b)(i)** to estimate the chemistry mark when the physics mark is 46.

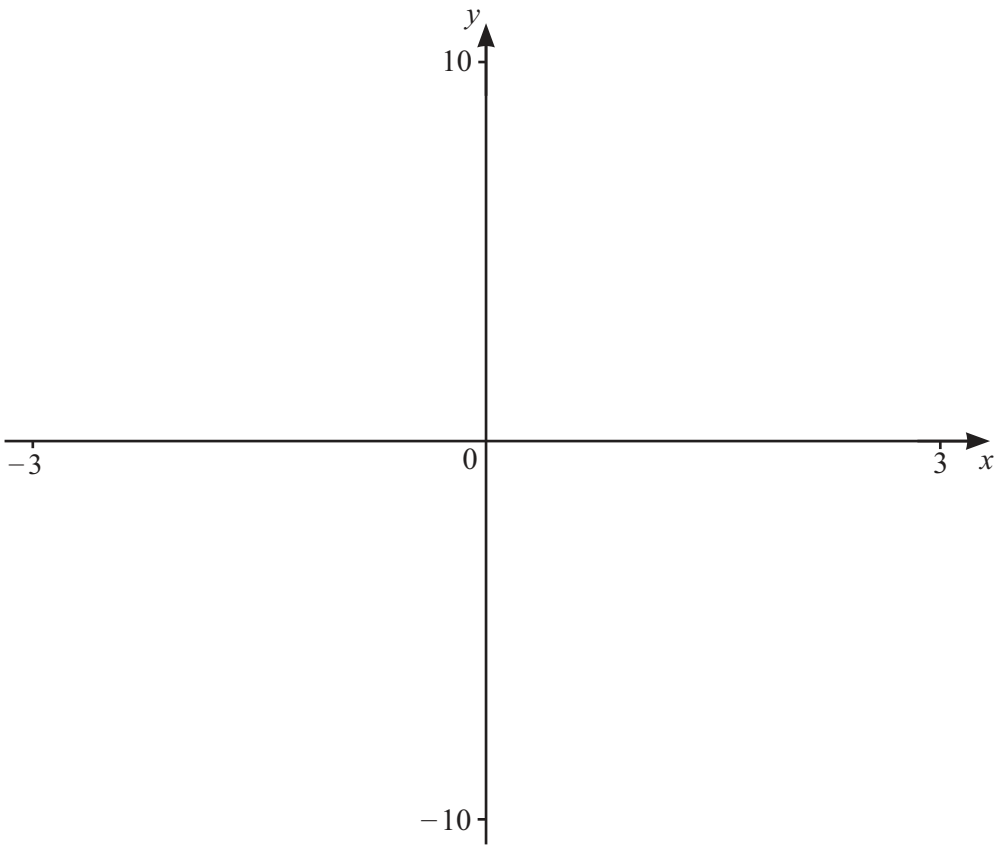
..... [1]

(c) Two of the students who scored more than 35 in the physics exam are chosen at random.

Find the probability that they both scored more than 65 in the chemistry exam.

..... [3]

11



$$f(x) = \frac{4x-3}{2x+1}$$

(a) **(i)** Sketch the graph of $y = f(x)$ for values of x between -3 and 3. [3]

(ii) Write down the equations of the 2 asymptotes of the graph of $y = f(x)$.

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

(iii) Write down the coordinates of the points where the graph crosses the axes.

(..... , ...)

(..... , ...)

[2]

(b) Solve the inequality.

$$\frac{4x-3}{2x+1} > 2-x$$

..... [4]

12 Paula bought a house on 1 January 2023.
On 1 January 2024 the value of the house increased by 10%.
On 1 January 2025 the value of the house increased by 6% of its value on 1 January 2024.

The value of the house on 1 January 2025 was $215 710.

(a) Calculate the amount Paula paid for the house in 2023.

$ ..... [3]

(b) From 2025 the value of the house increases exponentially at the rate of 6% each year.
The value of the house on 1 January 2025 was $215 710.

Find the year in which the value of the house on 1 January will first be greater than $400 000.

..... [4]

13 Use a graphical method to solve

$$5 \times 0.8^x = 2x + 7.$$

Give your answer correct to 2 decimal places.

$x =$ ..... [3]

14 y varies inversely as the square root of $(x-1)$.
$y = 1$ when $x = 5$.

(a) Find y in terms of x.

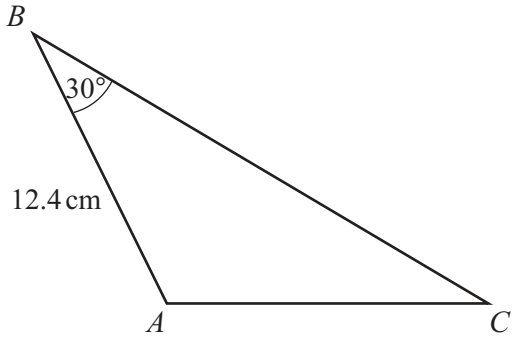
$y =$ ..... [2]

(b) w varies directly as y^2.
$w = 45$ when $y = 3$.

Use your answer to **part (a)** to find w in terms of x.
Give your answer in the form $w = p(x-1)^q$, where p and q are constants.

$w =$ ..... [4]

15



NOT TO SCALE

The area of triangle ABC is $74.4\,\text{cm}^2$.
$AB = 12.4\,\text{cm}$ and angle $ABC = 30°$.

(a) Show that $BC = 24\,\text{cm}$.

[2]

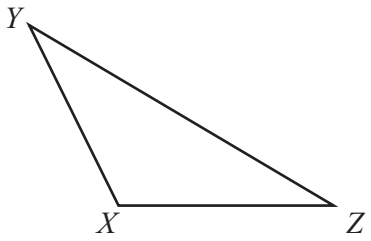
(b) Find AC.

$AC =$ ..... cm [3]

(c) Find obtuse angle CAB.

Angle CAB = ... [3]

(d)



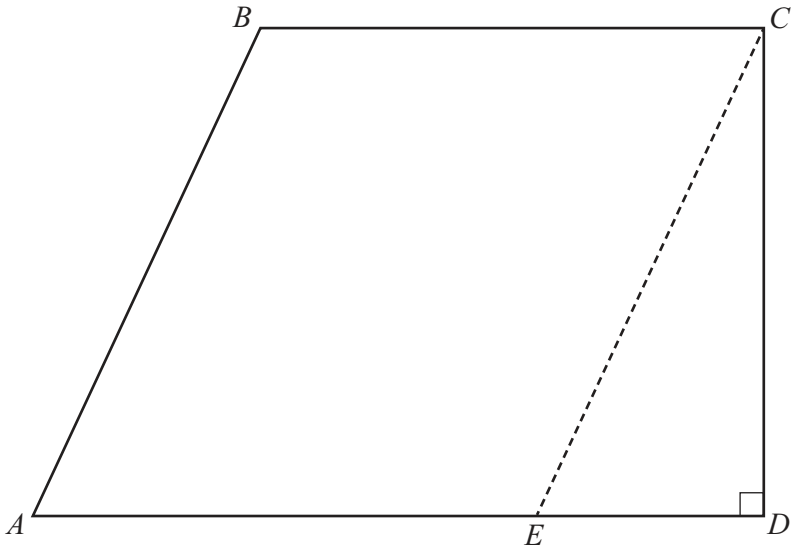
NOT TO SCALE

Triangle XYZ is similar to triangle ABC.
The area of triangle XYZ is 62 cm^2.

Find YZ.

YZ = ... cm [3]

16 In this question, all lengths are in centimetres.



NOT TO SCALE

The diagram shows a quadrilateral $ABCD$.
$ABCE$ is a rhombus and CDE is a right-angled triangle.
$AC = (2\sqrt{3})x$ and $BE = 2x$.

(a) Show that $AE = 2x$.

[2]

(b) Find, in terms of x, the perimeter of $ABCD$.

..... [4]

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