Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

8701230420

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 (Core) **May/June 2021**

1 hour 45 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 and 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 your calculator value.

INFORMATION

- The total mark for this paper is 96.
- The number of marks for each question or part question is shown in brackets [ ].

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

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Formula List

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, 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.	$A = \pi rl$
Curved 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.	$V = \frac{4}{3}\pi r^3$

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Answer **all** the questions.

1 **(a)** **(i)** Write in words 78 616.

..... [1]

(ii) Write 78 616 correct to the nearest thousand.

..... [1]

(iii) Write 78 616 correct to 3 significant figures.

..... [1]

(b) Work out.

(i) $\dfrac{2.45 + 1.474}{4.25 - 3.53}$

..... [1]

(ii) $\sqrt[3]{729}$

..... [1]

(iii) $\sqrt{2.43^2 + 1.65^2}$
Give your answer correct to 2 decimal places.

..... [2]

(c) **(i)** Write down all the factors of 12.

..... [2]

(ii) Find the highest common factor (HCF) and the lowest common multiple (LCM) of 12 and 18.

HCF .....

LCM ..... [3]

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2 Owen carried out a survey of the weather in 2020.
He randomly chose some days from each month and recorded the type of weather for each day.
The results are shown in the table.

Type of weather	Tally	Frequency
Cloud	𝍸 II	
Rain	𝍸 III	
Sun	𝍸 𝍸 𝍸 III	
Snow	II	
Fog	𝍸	

(a) Complete the frequency column of the table. [1]

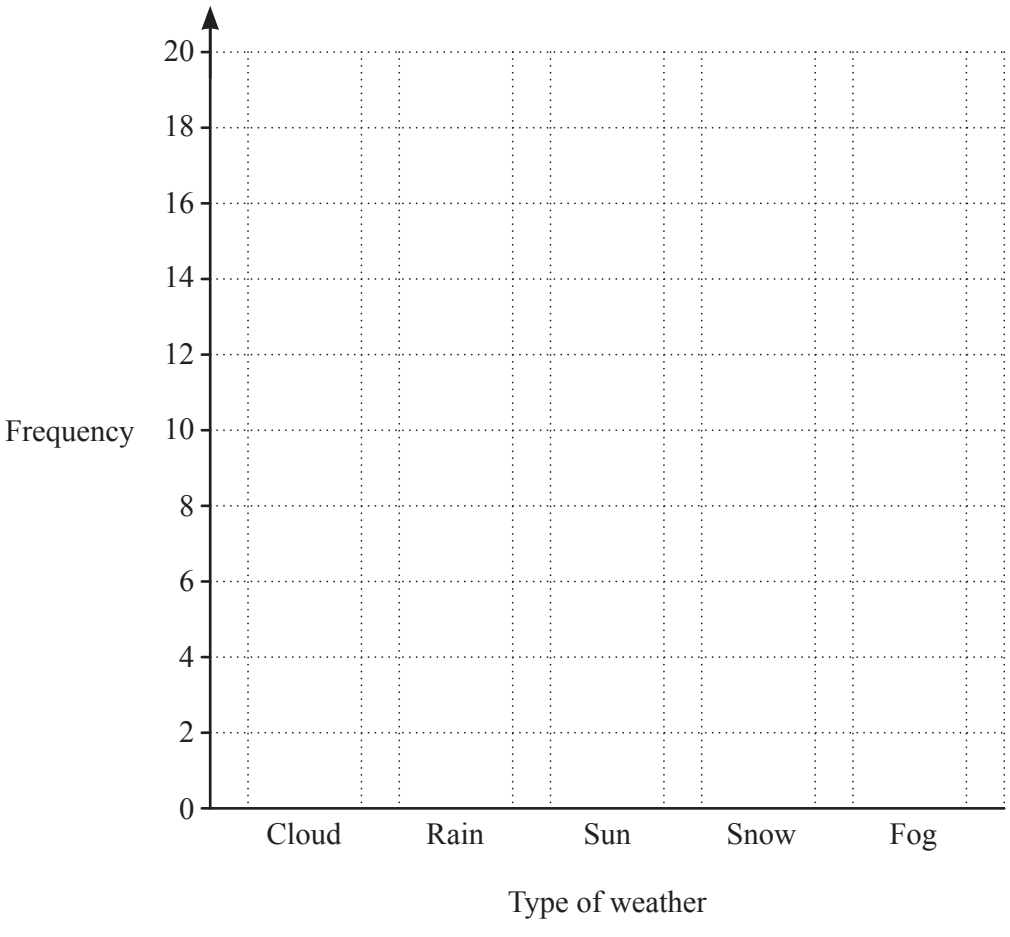
(b) Work out the total number of days Owen chose in his survey.

..... [1]

(c) Write down the most common type of weather in Owen's survey.

..... [1]

(d) On the grid, draw a bar chart to show the information in the table.



[2]

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(e) One of these days is chosen at random.

Work out the probability that the type of weather on this day is Sun.

..... [1]

(f) Use the information in the table to estimate how many days in one year (365 days) will have Rain.

..... [2]

(g) Owen makes a pie chart using the information in the table.

Work out the sector angle for Cloud.

..... [2]

3 **(a)** These are the first four terms of a sequence.

800 400 200 100

For this sequence, write down

(i) the next two terms,

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

(ii) the rule for continuing the sequence.

..... [1]

(b) These are the first six terms of a different sequence.

−5 −3 −1 1 3 5

Find the nth term of this sequence.

..... [2]

(c) The nth term of another sequence is $6n + 5$.

(i) Work out the first three terms of this sequence.

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

(ii) Rearrange the formula $P = 6n + 5$ to make n the subject.

$n =$ ..... [2]

4 **(a)** A packet of breakfast cereal costs \$2.80 .

(i) Work out the greatest number of these packets that can be bought with \$20.

..... [2]

(ii) Work out how much of the \$20 is left.

\$ ..... [1]

(b) The breakfast cereal contains only grain, fruit and nuts.
The ratio, by mass, is

grain : fruit : nuts = 16 : 7 : 2.

Work out the mass of each ingredient in a box containing 500 g of cereal.

Grain ..... g

Fruit ..... g

Nuts ..... g [3]

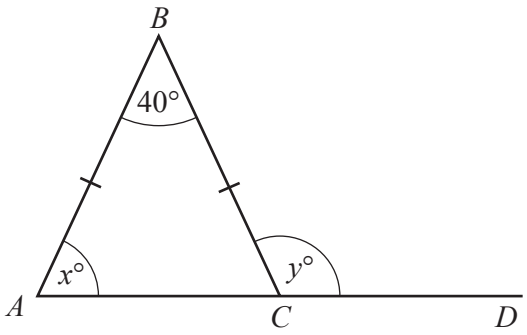
(c) A box of the cereal normally contains 500 g.
In a special offer, the mass of cereal in a box is increased by 12%.

Work out the total mass of cereal in a special offer box.

..... g [2]

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5 (a)



NOT TO SCALE

ABC is an isosceles triangle and *ACD* is a straight line.

(i) Find the value of x and the value of y.

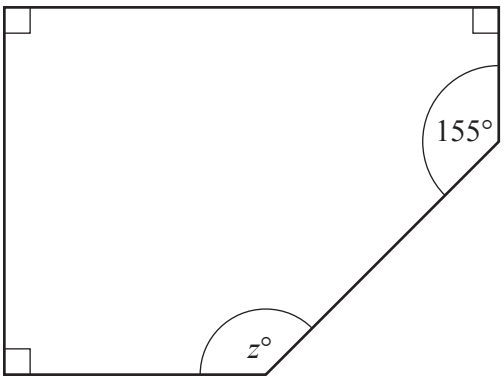
$x =$ .....

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

(ii) Find the size of the reflex angle at *B*.

..... [1]

(b)



NOT TO SCALE

Find the value of z.

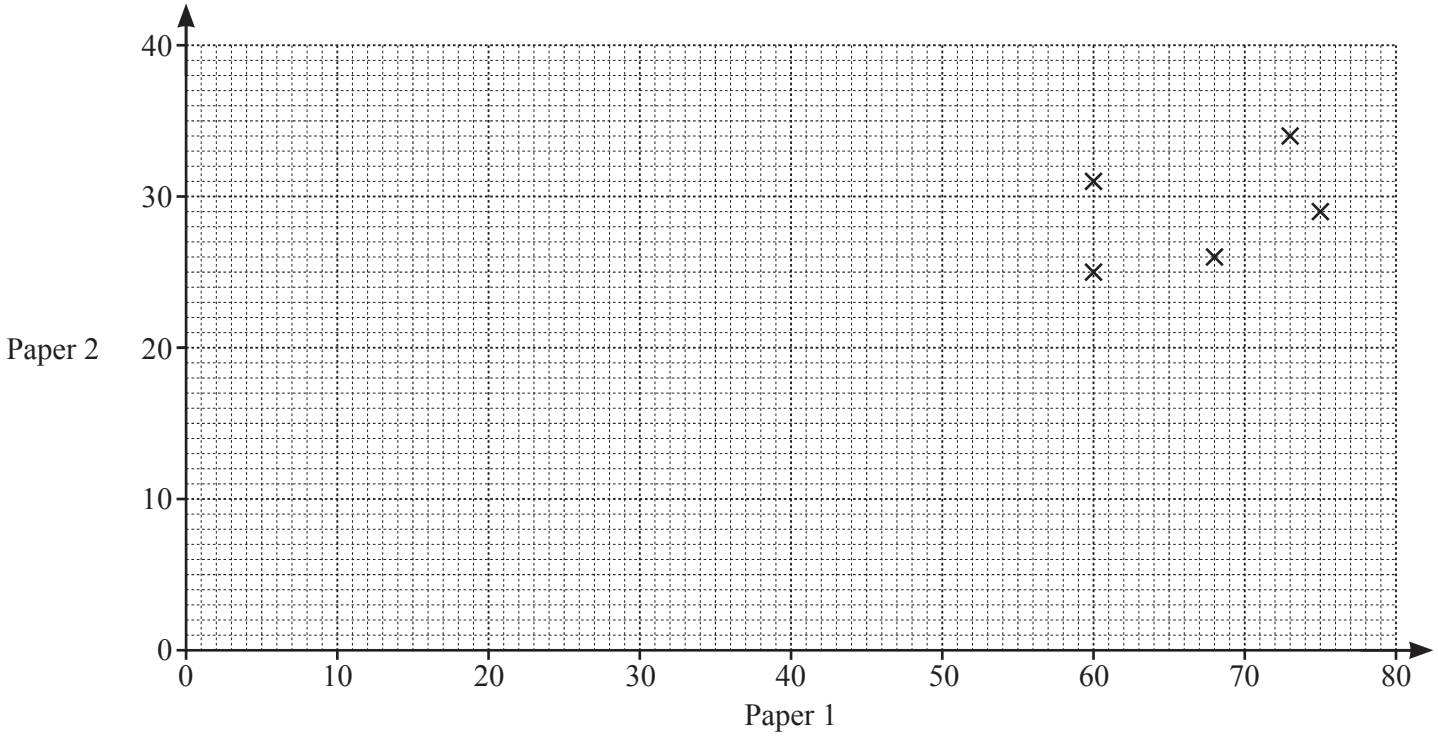
$z =$ ..... [3]

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6 An examination consists of two papers, Paper 1 and Paper 2.
The scores for each of nine candidates are shown below.

Paper 1	75	73	68	60	60	55	47	33	15
Paper 2	29	34	26	31	25	19	20	17	6

(a) Complete the scatter diagram.
The first five points have been plotted for you.



[2]

(b) What type of correlation is shown in the scatter diagram?

..... [1]

(c) **(i)** Work out the mean of the Paper 1 scores and the mean of the Paper 2 scores.

Mean Paper 1 = ...

Mean Paper 2 = ... [2]

(ii) On the scatter diagram, draw a line of best fit. [2]

(d) Sajid scored 22 on Paper 2.

Use your line of best fit to estimate his score on Paper 1.

..... [1]

7 **(a)** Simplify.

$2x + 3y + 4x - y$

..... [2]

(b) Solve.

$4x - 3 = 9$

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

(c) Multiply out the brackets.

$3x(2x^2 - 5x)$

..... [2]

(d) Write as a single fraction in its simplest form.

(i) $\frac{3y^2}{8} \div \frac{2y}{5}$

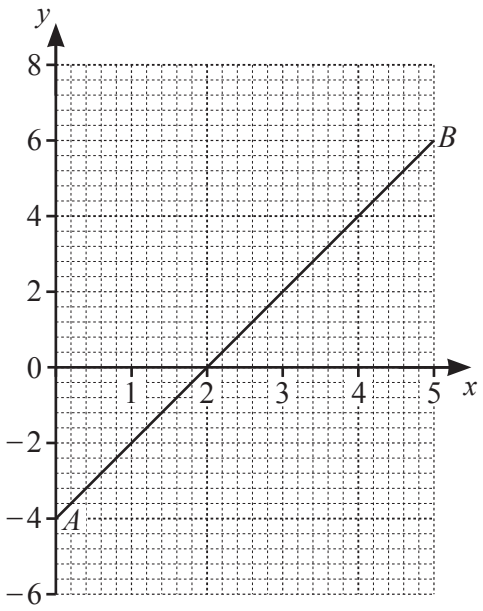
..... [2]

(ii) $\frac{4x}{7} + \frac{x}{3}$

..... [2]

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(a) Work out the coordinates of the mid-point of line AB.

(..... , ...) [2]

(b) Find the equation of line AB.

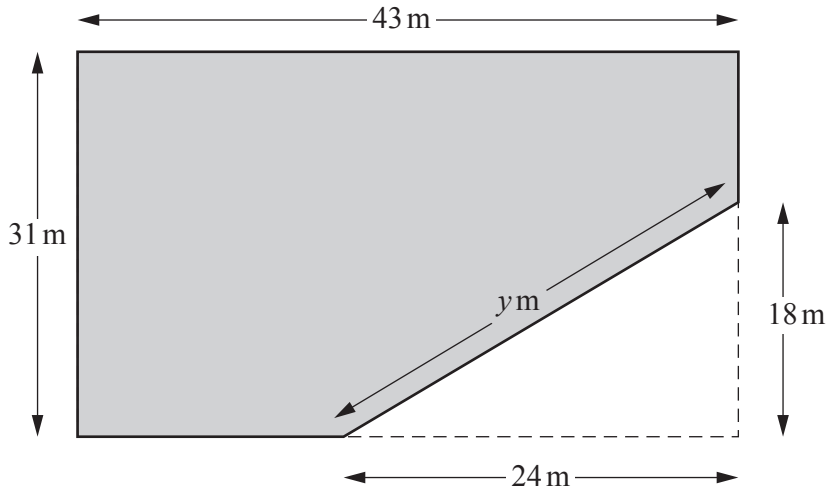
..... [3]

(c) (i) On the grid, draw the line $y = 2$. [1]

(ii) Write down the coordinates of the point where the line $y = 2$ crosses line AB.

(..... , ...) [1]

9



NOT TO SCALE

The diagram shows a rectangle with a triangular corner cut off.

(a) Work out the area of the shaded shape.
Give the units of your answer.

.... [5]

(b) Use Pythagoras' Theorem to work out the value of y.

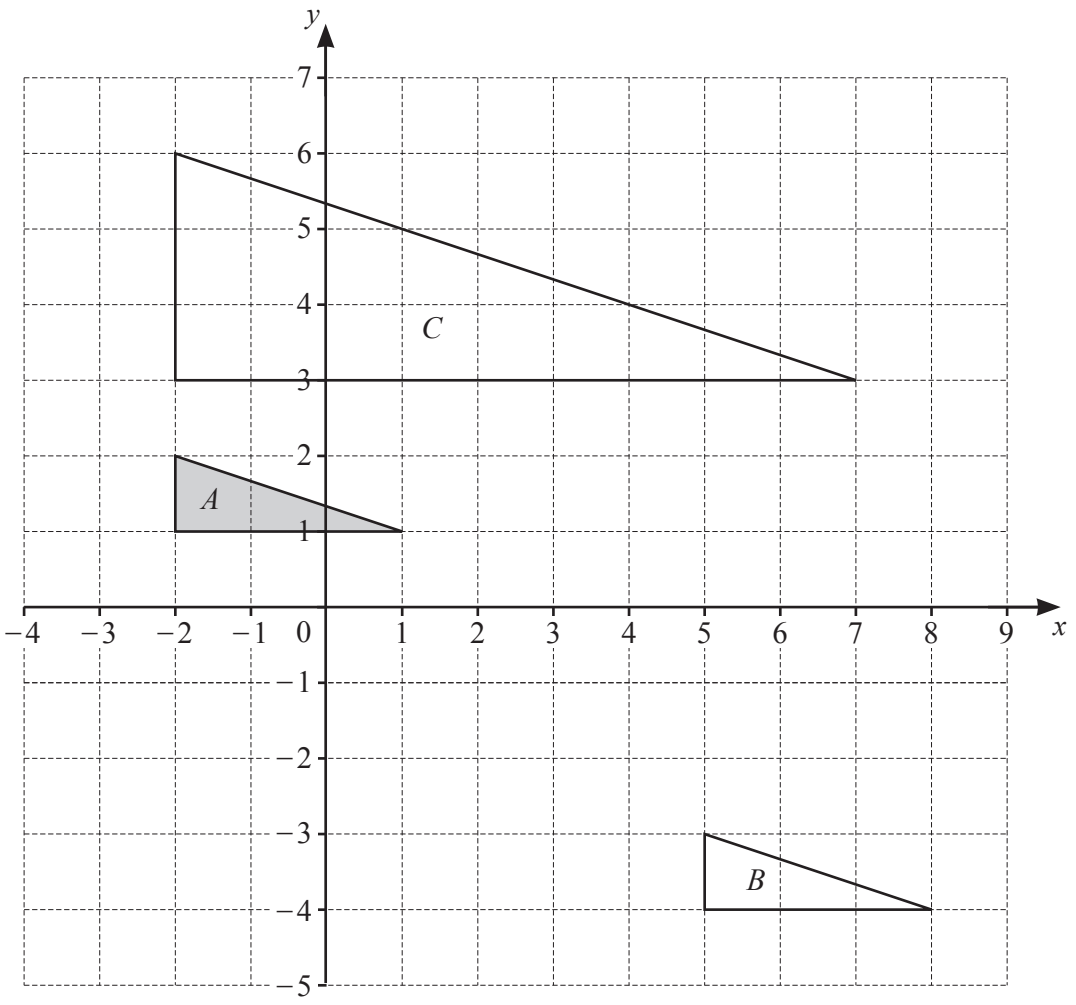
$y =$ ..... [2]

(c) Work out the perimeter of the shaded shape.

..... m [3]

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(a) Describe fully the **single** transformation which maps triangle A onto triangle B.

.....

..... [2]

(b) Describe fully the **single** transformation which maps triangle A onto triangle C.

.....

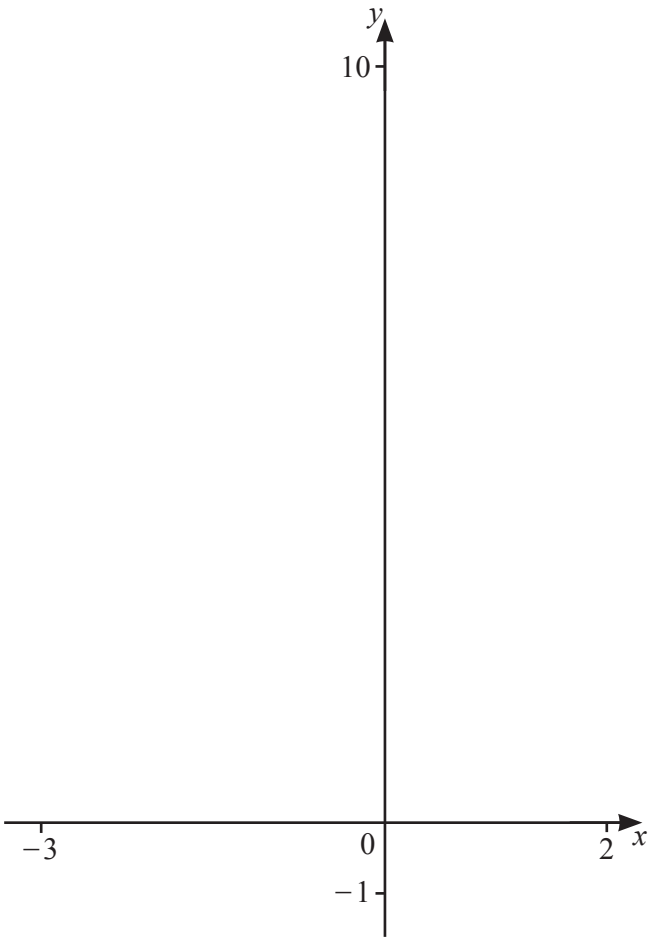
..... [3]

(c) Reflect triangle A in the line $x = 3$.
Label the image X. [2]

(d) Rotate triangle A by 90° clockwise about (0, 0).
Label the image Y. [2]

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(a) **(i)** On the diagram, sketch the graph of $y = x^2 + 2x + 1$ for $-3 \leqslant x \leqslant 2$. [2]

(ii) Find the coordinates of the local minimum.

(..... , ...) [1]

(b) On the diagram, sketch the graph of $y = 2^x$ for $-3 \leqslant x \leqslant 2$. [2]

(c) Find the x-coordinate of each point of intersection of $y = x^2 + 2x + 1$ and $y = 2^x$.

..... and ..... [2]

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