Cambridge Assessment International Education

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5214594003

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **May/June 2022**

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.

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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)** 21 22 23 24 25 26 27 28 29

From this list of numbers, write down

(i) an even number,

..... [1]

(ii) a multiple of 6,

..... [1]

(iii) a factor of 100,

..... [1]

(iv) a prime number.

..... [1]

(b) Find the value of

(i) $\sqrt{841}$,

..... [1]

(ii) 6^3.

..... [1]

(c) Work out.

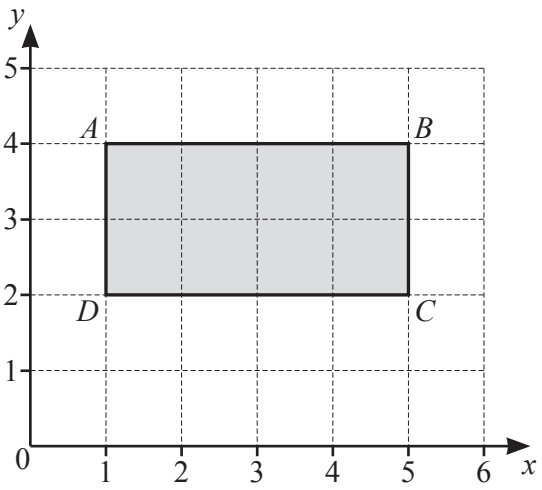
$$\frac{13.25 + 35.51}{5.2}$$

Give your answer correct to 2 decimal places.

..... [2]

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2



Quadrilateral *ABCD* is drawn on a 1 cm square grid.

(a) Write down the mathematical name of quadrilateral *ABCD*.

..... [1]

(b) Write down the coordinates of point *B*.

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

(c) Work out the area and the perimeter of quadrilateral *ABCD*.

Area ..... cm^2

Perimeter ..... cm [2]

(d) On the diagram, draw the lines of symmetry of quadrilateral *ABCD*.

[2]

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

4 8 12 16

(i) Write down the next two terms of this sequence.

..... , ... [1]

(ii) Write down the rule for continuing this sequence.

..... [1]

(iii) Find the nth term of this sequence.

..... [1]

(b) Look at the patterns of numbers in this table.

Row 1	$20^2 - 19^2 = 39$
Row 2	$19^2 - 18^2 = 37$
Row 3	$18^2 - 17^2 = 35$
Row 4	$17^2 - 16^2 = 33$
Row 5	
Row 8	

(i) Complete Row 5 of the table.

[1]

(ii) Complete Row 8 of the table.

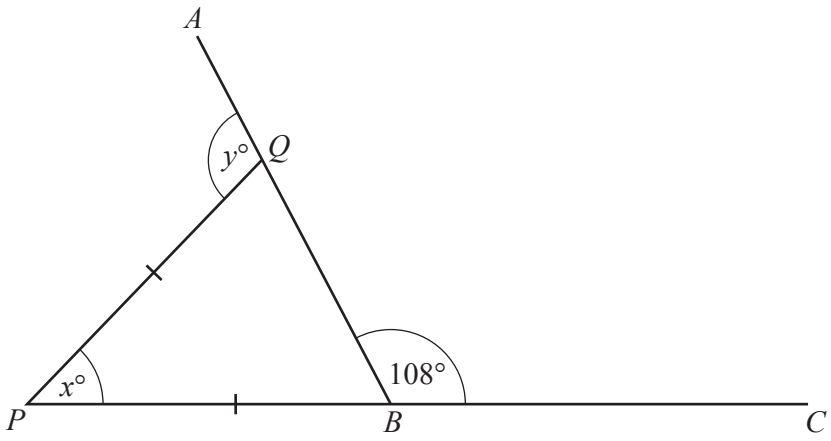
[2]

(iii) Find the nth term of this sequence.

39 37 35 33

..... [2]

4



NOT TO SCALE

In the diagram, AQB and PBC are straight lines and $PQ = PB$.

(a) What type of triangle is BPQ?

..... [1]

(b) Find the value of x.

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

(c) Find the value of y.

$y =$ ..... [1]

(d) AB and BC are two sides of a regular polygon.

Work out the number of sides of this polygon.

..... [2]

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5 **(a)** The table shows the melting point, in °C, of some metals.

Metal	Melting point (°C)
Zinc	420
Gold	1063
Silver	893
Copper	1084
Aluminium	660

(i) Write these five temperatures in order of size starting with the smallest.

..... , ... , ... , ... , ... [1]
smallest

(ii) Write 1063 correct to the nearest 10.

..... [1]

(iii) Write 1084 in words.

..... [1]

(b) Brass can be made by combining copper and zinc in this ratio.

copper : zinc = 13 : 7

Work out the mass of copper and the mass of zinc used to make 60 kg of brass.

copper ..... kg

zinc ..... kg [2]

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6 **(a)** **(i)** A train travels from Amsterdam to Brussels in 2 hours 15 minutes.
It leaves Amsterdam at 11 10.

Work out the time the train arrives in Brussels.

..... [1]

(ii) On its return journey, the train leaves Brussels at 14 50.
It arrives in Amsterdam at 17 15.

Work out the length of time this journey took.
Give your answer in hours and minutes.

..... h ..... min [1]

(b) One day, the adult train fare from Amsterdam to Brussels is 75 euros.

(i) The fare for a child is $\frac{3}{5}$ of the adult fare.

Work out the child fare for the journey.

..... euros [1]

(ii) On another day the adult fare of 75 euros is increased by 12%.

Work out the adult fare on this day.

..... euros [2]

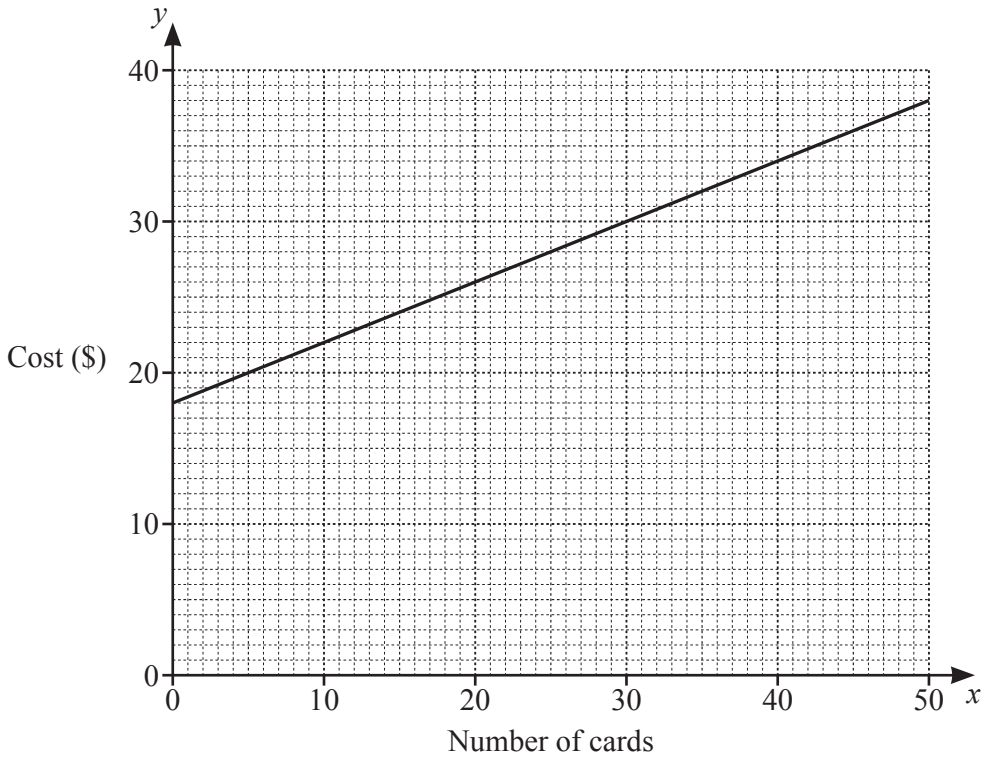
(c) The train from Amsterdam to Brussels travels 180 km in 2 hours 15 minutes.

Work out the average speed of the train in kilometres per hour.

..... km/h [2]

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7 The graph shows the cost, y dollars, of printing x cards.



(a) (i) Find the cost of printing 45 cards.

$ ..... [1]

(ii) Find the largest number of cards that can be printed for \$28.

..... [1]

(b) (i) Find the equation of the line in the form $y = mx + c$.

$y =$ ..... [3]

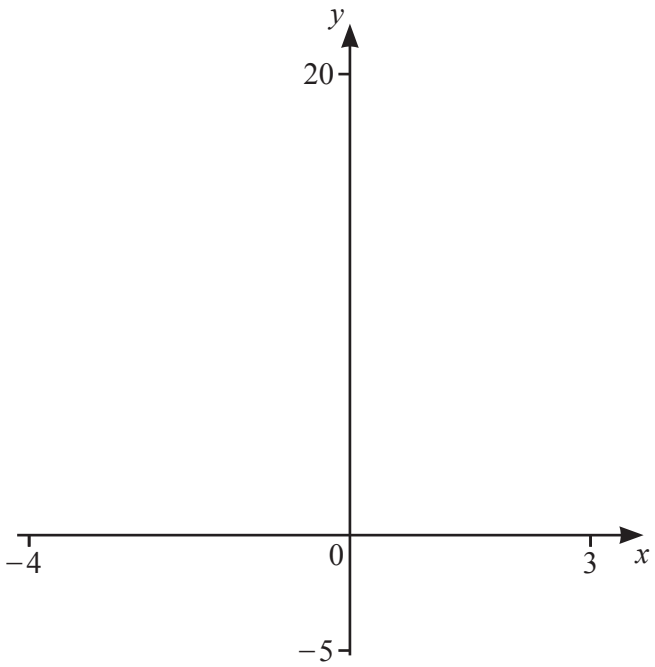
(ii) Any number of cards can be printed.
Steffi needs 100 cards.

Use your equation from **part (b)(i)** to find how much these will cost.

$ ..... [2]

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8



(a) On the diagram, sketch the graph of $y = x^2 + 3x$ for $-4 \leqslant x \leqslant 3$. [2]

(b) On the diagram, sketch the graph of $y = 2x + 6$ for $-4 \leqslant x \leqslant 3$. [2]

(c) Find the coordinates of each point of intersection of $y = x^2 + 3x$ and $y = 2x + 6$.

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

9 **(a)** Complete each of these statements using $<$ or $>$.

11 7

-11 ..... -7

[1]

(b) Simplify.

(i) $x + 3x + 5x$

..... [1]

(ii) $6p - 2t - 4p + 3t$

..... [2]

(c) Factorise fully.

$12x + 3xy$

..... [2]

(d) Solve.

(i) $\frac{x}{5} = 5$

$x =$ ..... [1]

(ii) $7x + 3 = 3x + 5$

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

(e) $y = 6x^2$

(i) Find the value of y when $x = 5$.

$y =$ ..... [1]

(ii) Find the value of x when $y = 294$.

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

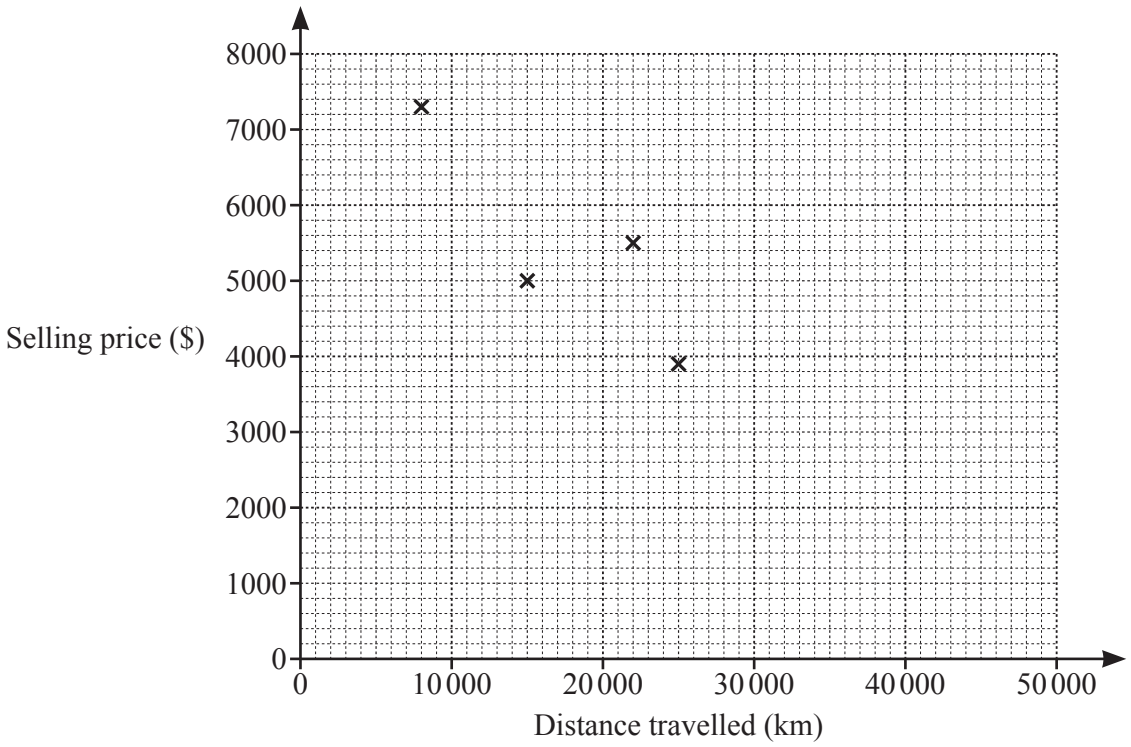
(iii) Rearrange the formula $y = 6x^2$ to make x the subject.

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

10 A garage sells used cars.
The table shows the selling price, in $, and the distance travelled, in km, of eight used cars.
All cars are of the same make and model.

Distance travelled (km)	8000	15 000	25 000	22 000	34 000	2000	40 000	46 000
Selling price ($)	7300	5000	3900	5500	4000	6000	2000	2300

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



[2]

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

..... [1]

(c) The mean distance travelled is 24 000 km and the mean selling price is $4500.

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

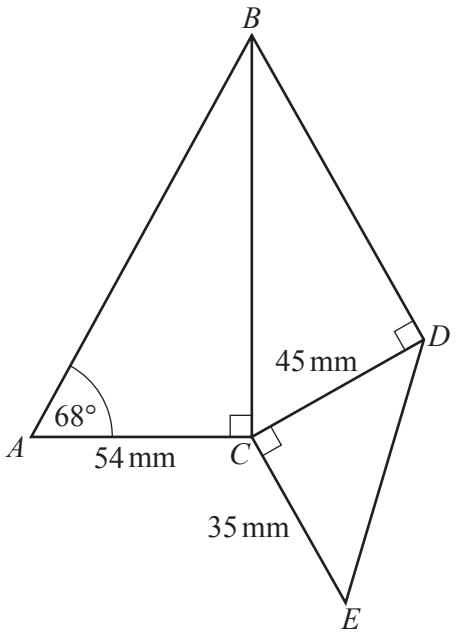
(d) Another used car of this make and model had travelled a distance of 30 000 km.

Use your line of best fit to estimate the selling price of this car.

$ ..... [1]

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11



NOT TO SCALE

The diagram shows three right-angled triangles ABC, BCD and CDE.
$AC = 54\,\text{mm}$, $CD = 45\,\text{mm}$, $CE = 35\,\text{mm}$ and angle $BAC = 68°$.

(a) Use trigonometry to show that $BC = 134\,\text{mm}$, correct to the nearest mm.

[2]

(b) Use trigonometry to find angle BCD.

Angle $BCD =$ ..... [2]

(c) Use Pythagoras' Theorem to find DE.

$DE =$ ..... mm [2]

12 The table shows the frequency distribution for the masses, in kg, of 100 students.

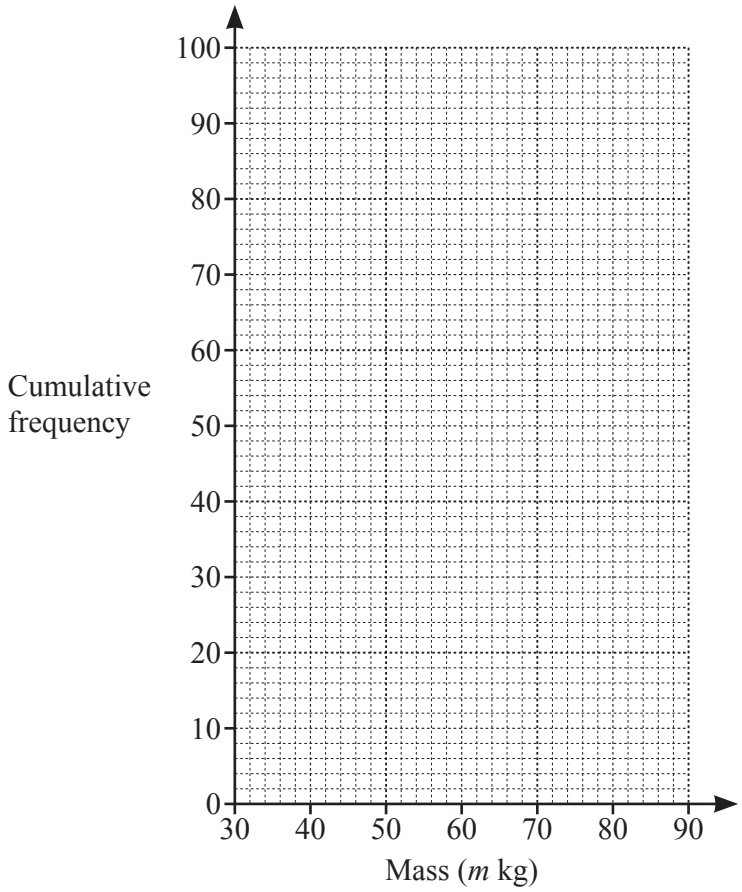
Mass (m kg)	$30 < m \leqslant 40$	$40 < m \leqslant 50$	$50 < m \leqslant 60$	$60 < m \leqslant 70$	$70 < m \leqslant 80$	$80 < m \leqslant 90$
Frequency	16	23	28	18	11	4

(a) Complete the cumulative frequency table.

Mass (m kg)	$m \leqslant 40$	$m \leqslant 50$	$m \leqslant 60$	$m \leqslant 70$	$m \leqslant 80$	$m \leqslant 90$
Cumulative frequency						

[2]

(b) On the grid below, draw the cumulative frequency curve for this data.



[3]

(c) Use your cumulative frequency curve to find an estimate of

(i) the median,

..... kg [1]

(ii) the interquartile range.

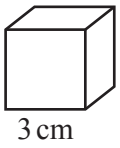
..... kg [2]

(d) Use your cumulative frequency curve to find an estimate for the number of students with a mass of less than 68 kg.

..... [1]

Question 13 is printed on the next page.

13 (a) A cube has edges of length 3 cm.



NOT TO SCALE

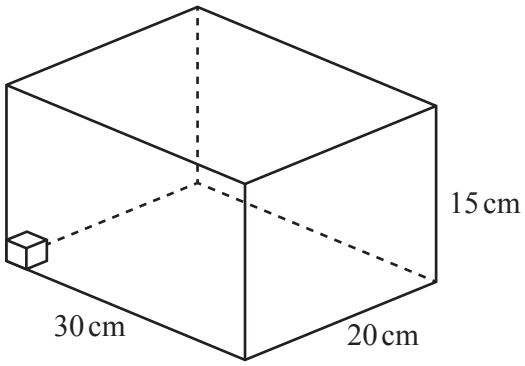
(i) Find the volume of the cube.

..... cm^3 [2]

(ii) Find the total surface area of the cube.

..... cm^2 [2]

(b)



NOT TO SCALE

Some cubes, each with edges of length 3 cm, are placed in a box.
The box is a cuboid with dimensions 30 cm by 20 cm by 15 cm.

Work out the greatest number of these cubes that can be placed in the box.

..... [3]

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