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Cambridge Assessment International Education

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CANDIDATE NAME

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2935507271

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 (Core) **October/November 2024**

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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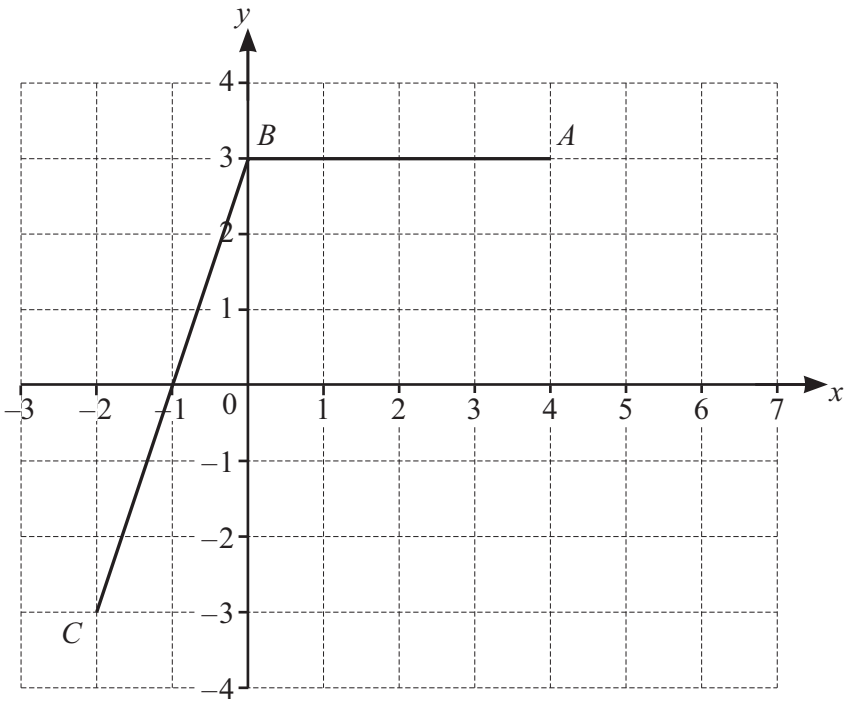
Formula List

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 The points A, B and C are plotted on a one centimetre square grid.



(a) Write down the coordinates of point A, point B and point C.

$A =$ (..... , ...)

$B =$ (..... , ...)

$C =$ (..... , ...) [3]

(b) On the grid, plot and label point D (6, −3). [1]

(c) Complete the quadrilateral $ABCD$.

Write down the mathematical name of quadrilateral $ABCD$.

..... [1]

(d) On the grid, draw the line of symmetry of quadrilateral $ABCD$. [1]

(e) Write down the coordinates of the mid-point of CB.

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

(f) Work out the gradient of CB.

..... [2]

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2 This table shows the number of newspapers sold in a shop each day during one week.

Day of the week	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Number of newspapers sold	135	105	170	130	120	150	205

(a) Find the total number of newspapers sold that week.

..... [1]

(b) Find how many more newspapers were sold on Saturday than on Tuesday.

..... [1]

(c) Find the range.

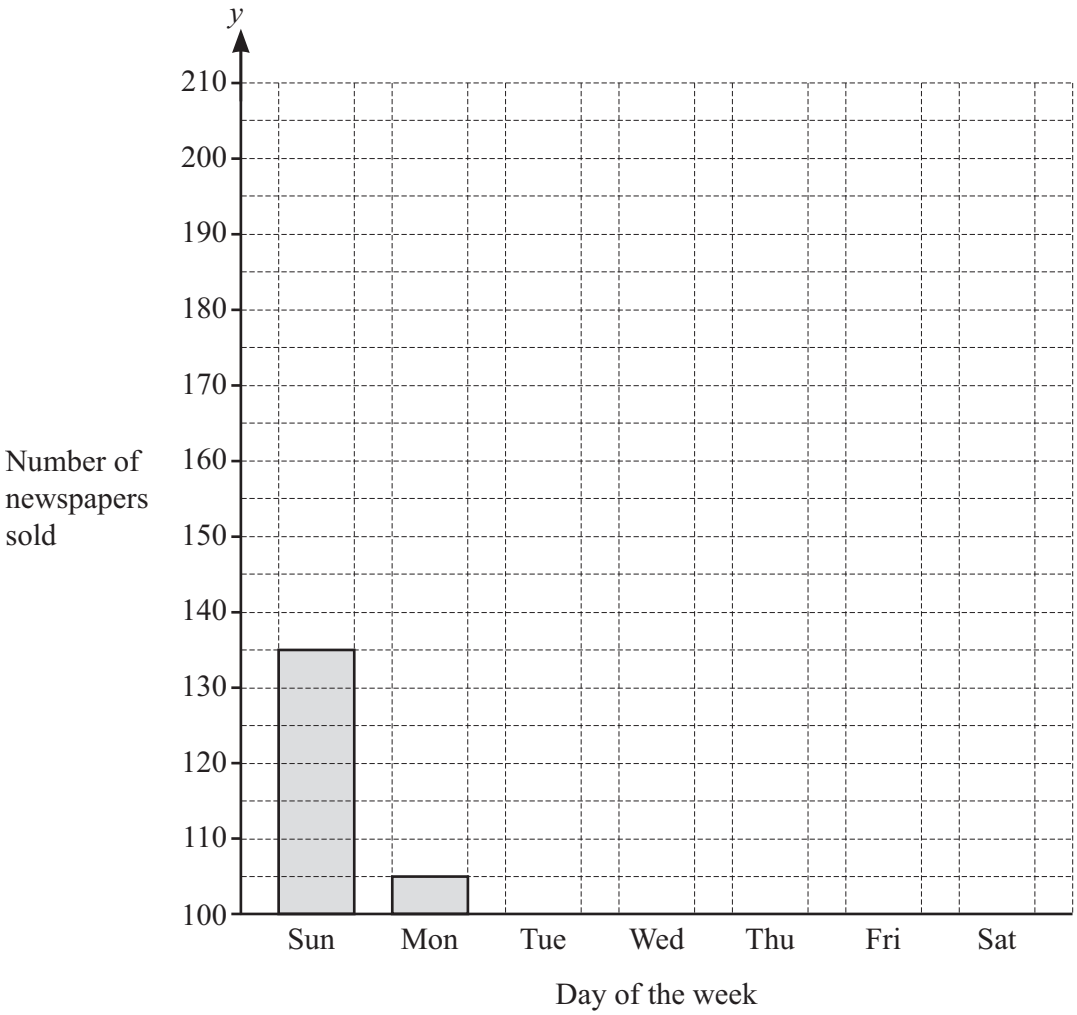
..... [1]

(d) Find the median number of newspapers sold.

..... [2]

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(e) Complete the bar chart to show the information in the table.



[2]

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3 **(a)** Work out 2.87^2.
Give your answer correct to 2 decimal places.

..... [2]

(b) Work out.

$$\frac{29.7}{6.1+3.8}$$

..... [1]

(c) Work out $\sqrt[3]{64}$.

..... [1]

(d) Work out 5800×250.
Give your answer in standard form.

..... [2]

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4 **(a)** Petrol costs \$2.47 for each litre.
Dev buys a whole number of litres of petrol.

Work out the greatest number of litres he can buy with \$50 and how much change he gets.

..... litres with \$ ..... change [3]

(b) At the petrol station, it takes 3 seconds to pump each litre of petrol into a car.

Work out how long it would take to pump 28 litres of petrol into a car.
Give your answer in minutes and seconds.

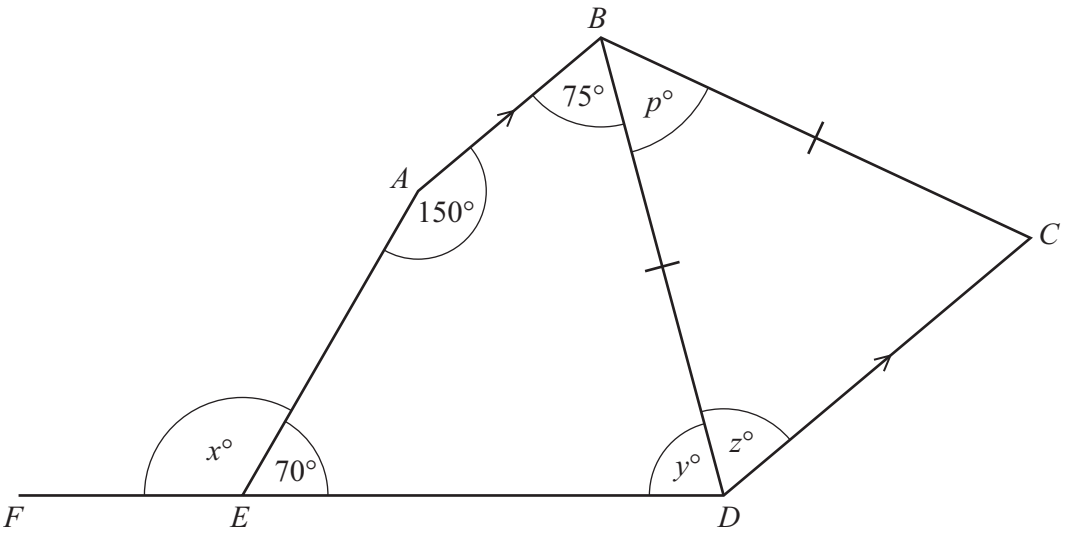
..... minutes ..... seconds [2]

(c) Dev drives at an average speed of 20 km/h for 30 minutes and then at an average speed of 58 km/h for 2 hours.

Calculate the average speed for the whole journey.

..... km/h [4]

5



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In the diagram, FED is a straight line.
AB is parallel to DC and $BD = BC$.

(a) Find the value of x, the value of y and the value of z.
Give a geometric reason for each answer.

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

.....

$y =$ ..... because .....

.....

$z =$ ..... because .....

..... [6]

(b) Find the value of p.

$p =$ ..... [2]

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6 **(a)** Factorise.

$5x + 10$

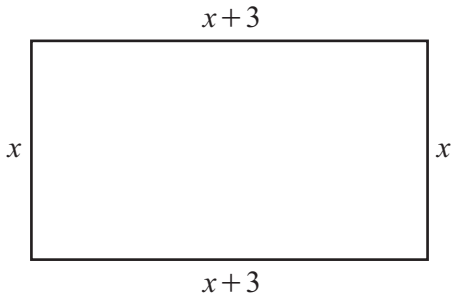
..... [1]

(b) Multiply out the brackets.

$x(x^2 - 3x)$

..... [2]

(c) In this question, all lengths are in centimetres.



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(i) Find an expression, in terms of x, for the perimeter of this rectangle.
Give your answer in its simplest form.

..... [2]

(ii) The perimeter of this rectangle is 36 cm.

Write down an equation in terms of x and solve it to find the longest side of the rectangle.

..... cm [4]

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7 This formula can be used to convert between a temperature in °C, and a temperature in °F.

$$F = 1.8C + 32$$

(a) Use the formula to convert 15 °C to °F.

..... °F [2]

(b) Use the formula to convert 86 °F to °C.

..... °C [2]

(c) Rearrange $F = 1.8C + 32$ to make C the subject.

$C =$ ..... [2]

8 Sam has a biased six-sided die.
The table shows the probability of the die landing on each of the numbers 2 to 6.

Number	1	2	3	4	5	6
Probability		0.16	0.18	0.18	0.16	0.11

(a) Work out the probability that the die will land on 1.

..... [2]

(b) Sam throws the die once.

Work out the probability that the die lands on 5 or 6.

..... [1]

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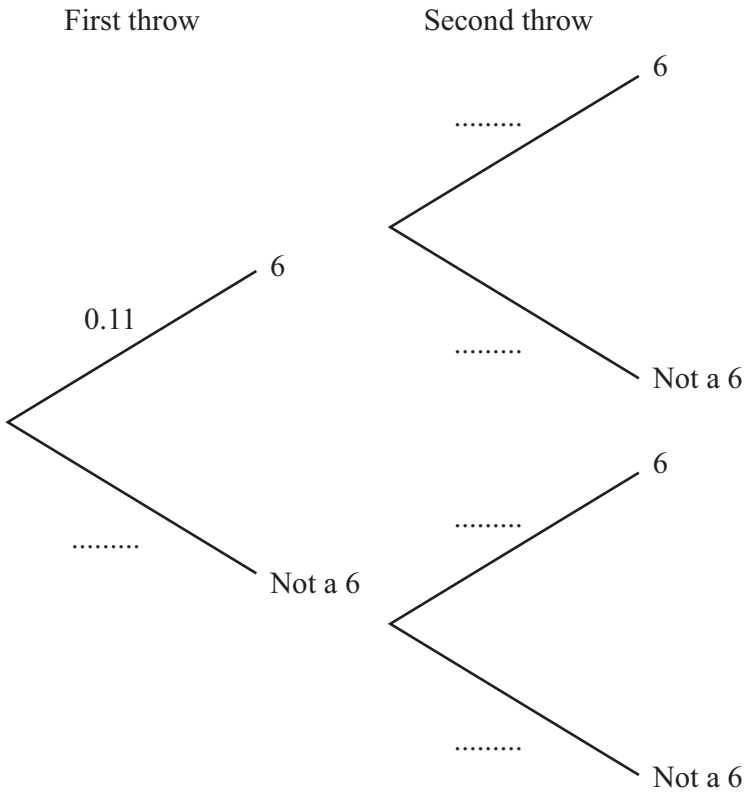
(c) Sam throws the die 50 times.

Calculate an estimate of the number of times the die will land on 2.

..... [1]

(d) Sam throws the die twice.

(i) Complete the tree diagram.



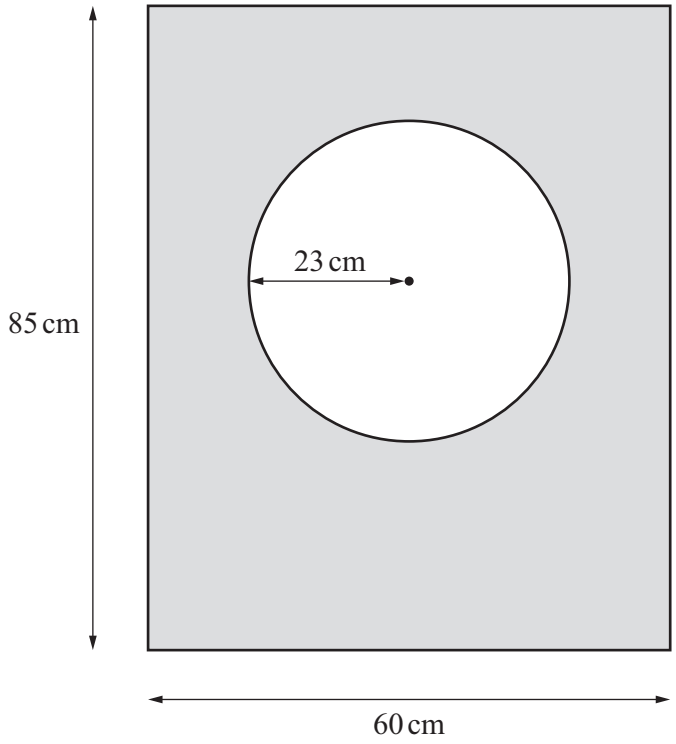
[2]

(ii) Find the probability that Sam does not throw a 6 on either throw.

..... [2]

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9 (a)



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The diagram shows the front of a washing machine.
The front is a rectangle and the door is a circle.

Work out the shaded area.

..... cm^2 [3]

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(b) In a sale, the price of a washing machine is reduced from \$1250 to \$1175.

(i) Work out the percentage reduction.

..... % [3]

(ii) 3 years ago Tony invested \$1000 at a rate of 8% per year simple interest.

Is the value of his investment enough to buy the washing machine in the sale?
Show how you decide.

[4]

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10 Kiara and Prisha are sisters.
At New Year 2023, Kiara was 10 years old and Prisha was 14 years old.

(a) At New Year 2023, their grandfather gives money to Kiara and Prisha.
The money is divided in the ratio of their ages.
Kiara receives $250.

Work out the total amount the grandfather gives the sisters.

$ ..... [3]

(b) At New Year 2023, Kiara and Prisha's aunt gives them $180 also to be divided in the ratio of their ages.

Work out how much of the $180 each sister gets.

Kiara $ .....

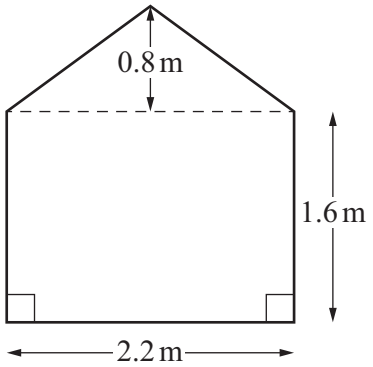
Prisha $ ..... [2]

(c) Work out the ratio Kiara's age : Prisha's age at New Year 2029.
Give your answer in its simplest form.

..... : ..... [2]

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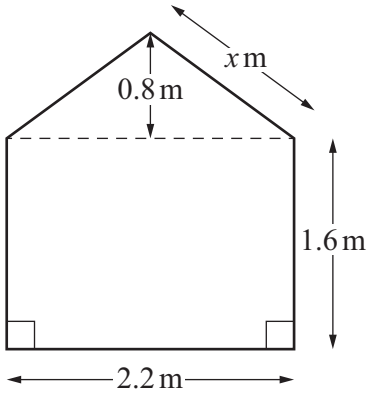
The diagram shows the cross-section of a garden shed.
The diagram has one line of symmetry.

(a) The shed is a prism with length 1.5 m.

Work out the volume of the shed.
Give the units of your answer.

.... [5]

(b)



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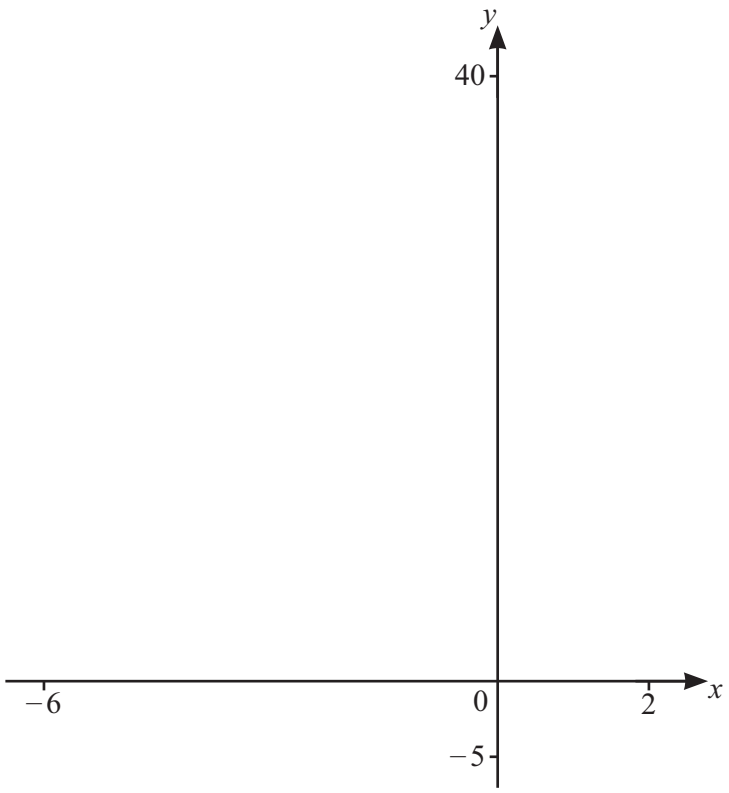
Use Pythagoras' Theorem to work out the value of x.

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

Question 12 is printed on the next page.

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12



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

(ii) Find the coordinates of the local minimum.

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

(iii) Find the coordinates of the local maximum.

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

(b) On the diagram, sketch the graph of $y = 10 - 3x$ for $-6 \leqslant x \leqslant 2$. [2]

(c) Find the x-coordinate of each point of intersection of $y = x^3 + 6x^2$ and $y = 10 - 3x$.

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

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