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225021670

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 Calculator (Core) **May/June 2025**

1 hour 15 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 60.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **12** pages.

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

1 **(a)** Write the number 15 036 in words.

..... [1]

(b) Write down a factor of 36.

..... [1]

2 **(a)** Write $\frac{7}{15}$ as a percentage.

Give your answer correct to 2 decimal places.

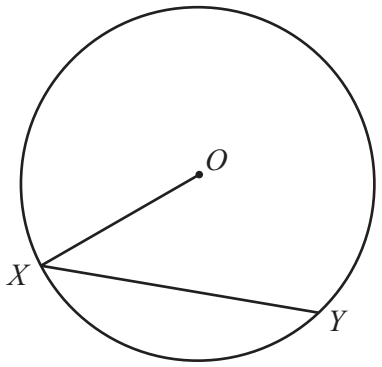
..... % [2]

(b) Work out.

$$2\frac{5}{8} \div 1\frac{3}{4}$$

..... [1]

3



NOT TO SCALE

X and Y are points on a circle, centre O.

(a) Complete each sentence with a mathematical term.

OX is a ..... of the circle.

XY is a ..... of the circle.

[2]

(b) On the diagram, draw a tangent to the circle at Y. [1]

4 These are the ingredients needed to make 8 biscuits.

70 g	butter
90 g	sugar
1	egg
140 g	flour
40 g	chocolate

(a) An egg has a mass of 45 g.

Work out the total mass of the ingredients.

..... g [1]

(b) Jasmine makes some of these biscuits.
She uses 140 g of butter.

Work out how many of these biscuits she makes.

..... [1]

(c) Viraj makes 10 of these biscuits.

Work out how many grams of chocolate he uses.

..... g [2]

5 A company uses this formula to work out the number of people who can safely work in an office.

$$N = \frac{L \times W}{15}$$

L is the length of the office in metres.
W is the width of the office in metres.
N is the number of people.

(a) An office has length 18 m and width 10 m.

Work out the number of people who can safely work in this office.

..... [1]

(b) 60 people can safely work in an office with width 22.5 m.

Work out the length of this office.

..... m [2]

6 A shirt costs $45.
The cost of the shirt is increased by 7%.

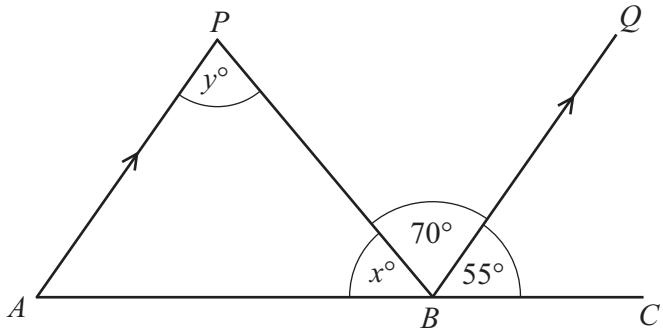
(a) Work out the increase in the cost of the shirt.

$ ..... [1]

(b) Work out the new cost of the shirt.

$ ..... [1]

7



NOT TO SCALE

In the diagram, ABC is a straight line.
AP is parallel to BQ.
Angle $PBQ = 70°$ and angle $QBC = 55°$.

(a) Work out the value of x.

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

(b) Write down the value of y.

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

(c) Show that triangle APB is isosceles.

[2]

8 Work out.

(a) 17^3

..... [1]

(b) $\frac{4^2}{2^4}$

..... [1]

(c) 8^0

..... [1]

(d) $\left(4.5\times10^7\right)\times\left(2.4\times10^{-3}\right)$
Give your answer in standard form.

..... [2]

9 **(a)** Solve.

$$\frac{x}{2}-1=5$$

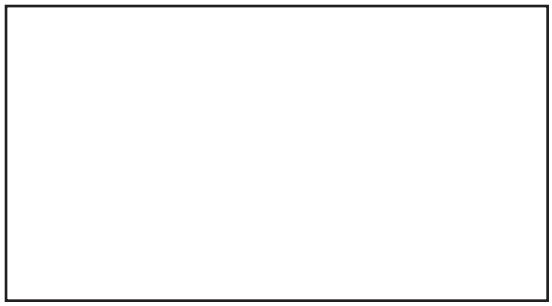
$x =$ ..... [2]

(b) Solve.

$$3(2x+7)=6$$

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

10



NOT TO SCALE

Geeta's garden is a rectangle 15.2 m long and 8.5 m wide.
She puts 50 g of grass seed on each square metre of the garden.

Work out the mass of grass seed she uses.
Give your answer in kilograms.

..... kg [4]

11 A 6-sided die, numbered 1 to 6, is thrown 400 times.
The table shows the results.

Number on die	1	2	3	4	5	6
Frequency	100	20	80	70	110	20

(a) Give reasons why this is a biased die.

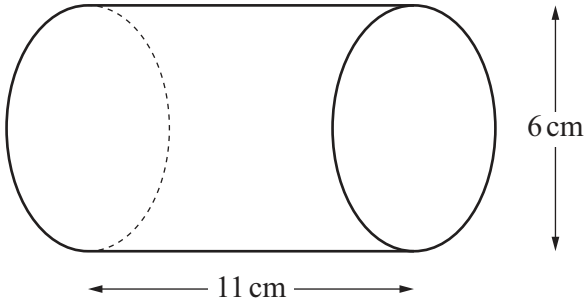
.....

..... [2]

(b) Find the probability of throwing a 4 with this die.

..... [1]

12



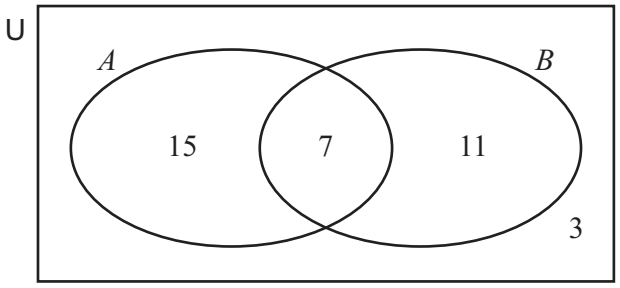
NOT TO SCALE

This cylinder has diameter 6 cm and length 11 cm.

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

.... [3]

13



The Venn diagram shows the number of elements in each region.

(a) Find $n(A')$.

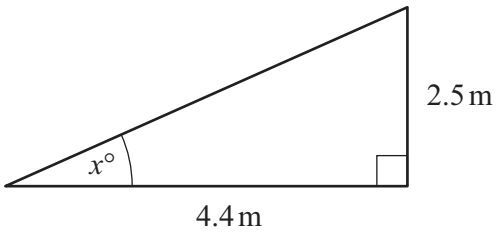
..... [1]

(b) An element is chosen at random from U.

Find the probability that this element is in $A \cap B$.

..... [2]

14



NOT TO SCALE

Use trigonometry to find the value of x.

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

15

Score (x)	Mid-value	Frequency
$0 < x \leqslant 10$	5	24
$10 < x \leqslant 20$		81
$20 < x \leqslant 30$		195

Complete the table and work out an estimate of the mean score.

..... [2]

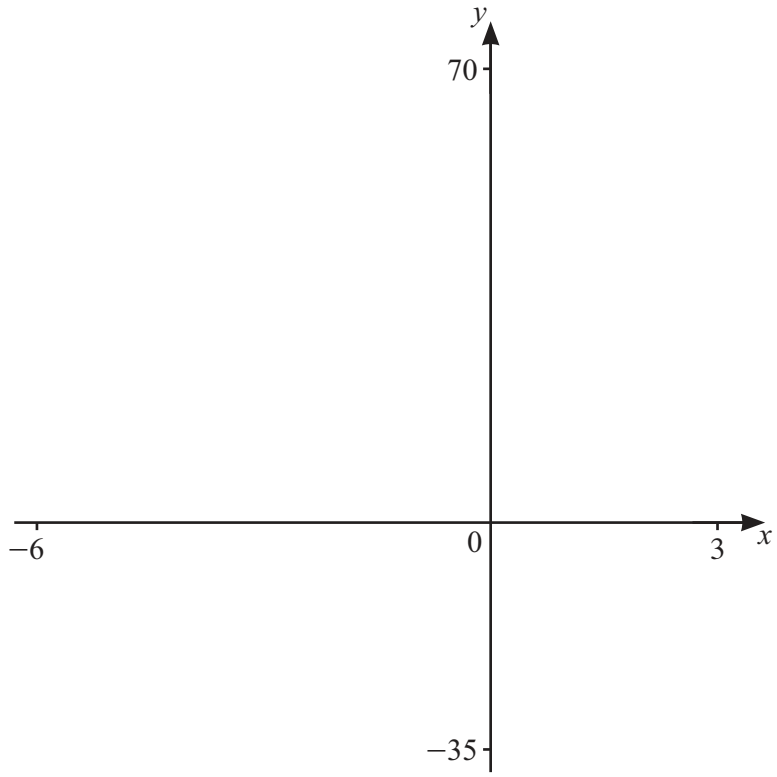
16 Mike invests \$2500 in an account paying simple interest at a rate of R% per year.
At the end of 5 years, the value of his investment is \$2800.

Work out the value of R.

$R =$ ..... [4]

Question 17 is printed on the next page.

17



(a) **(i)** On the diagram, sketch the graph of $y = x^3 + 6x^2 + 2x - 20$ for values of x between –6 and 3. [2]

(ii) Find the x-coordinate of the local maximum.

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

(b) On the diagram, sketch the graph of $y = 3x + 10$ for values of x between –6 and 3. [2]

(c) Find the coordinates of each point of intersection of $y = x^3 + 6x^2 + 2x - 20$ and $y = 3x + 10$.

(..... , ...) and (..... , ...) and (..... , ...) [3]