Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

4647667183

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 (Core) **October/November 2017**

1 hour 45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Graphics Calculator

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
Unless instructed otherwise, give your answers exactly or correct to three significant figures as appropriate.
Answers in degrees should be given to one decimal place.
For π, use your calculator value.
You must show all the relevant working to gain full marks and you will be given marks for correct methods, including sketches, even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 96.

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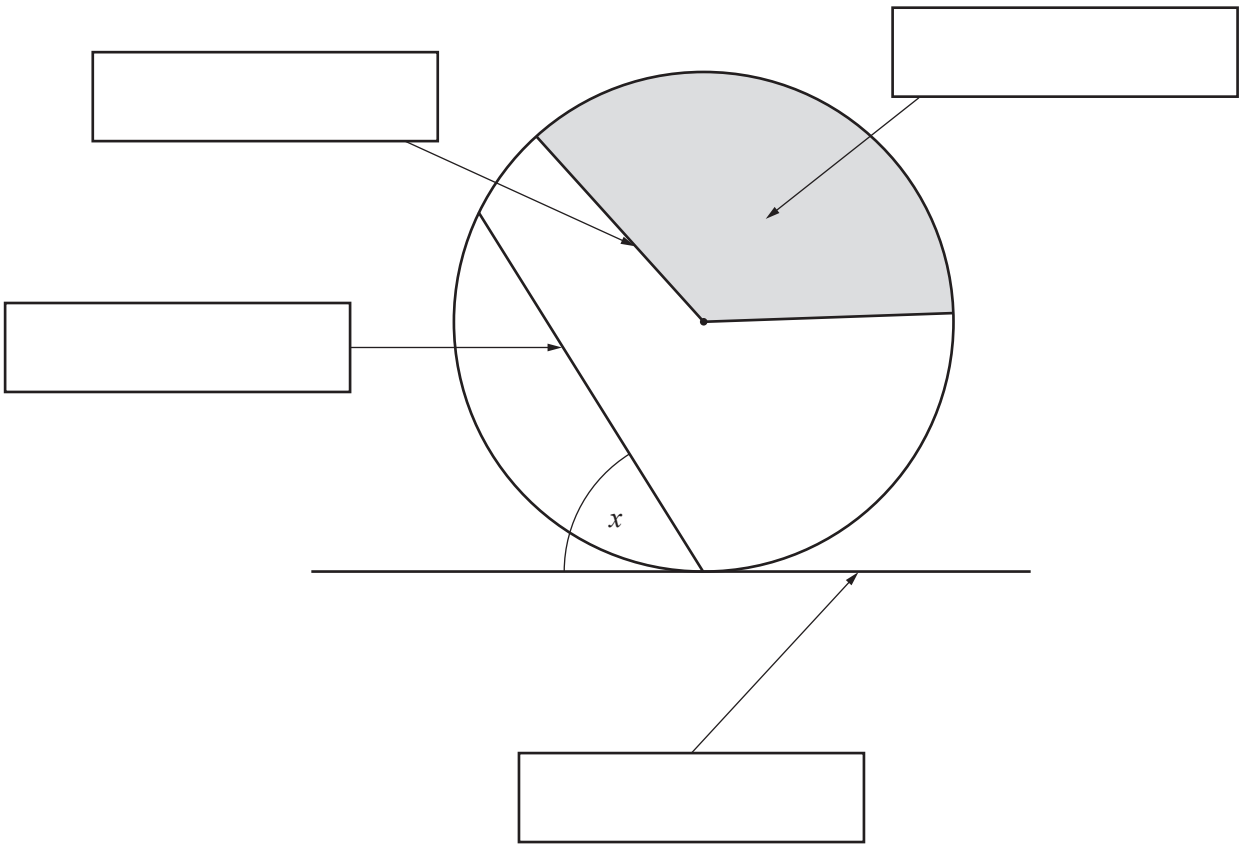
Formula List

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)** Write a mathematical word in each box to describe the three lines and the shaded area.



[4]

(b) Measure angle x.

x = ... [1]

2 Complete the table for the three sequences.

Rule	Sequence
−4	27, 23, ..., ..., ...
.....	64, 32, 16, 8, 4
× 3 then +1	2, 7, ..., ..., ...

[4]

3 **(a)** Here are some scores in a mathematics test.

15 7 10 12 20 19 16 11 9 14

(i) Work out the range of these scores.

..... [1]

(ii) Work out the mean score.

..... [1]

(b) A group of students were asked if they preferred lessons in mathematics or science.

Complete the table.

	Science	Mathematics	Total
Boys		18	
Girls	15		
Total		25	48

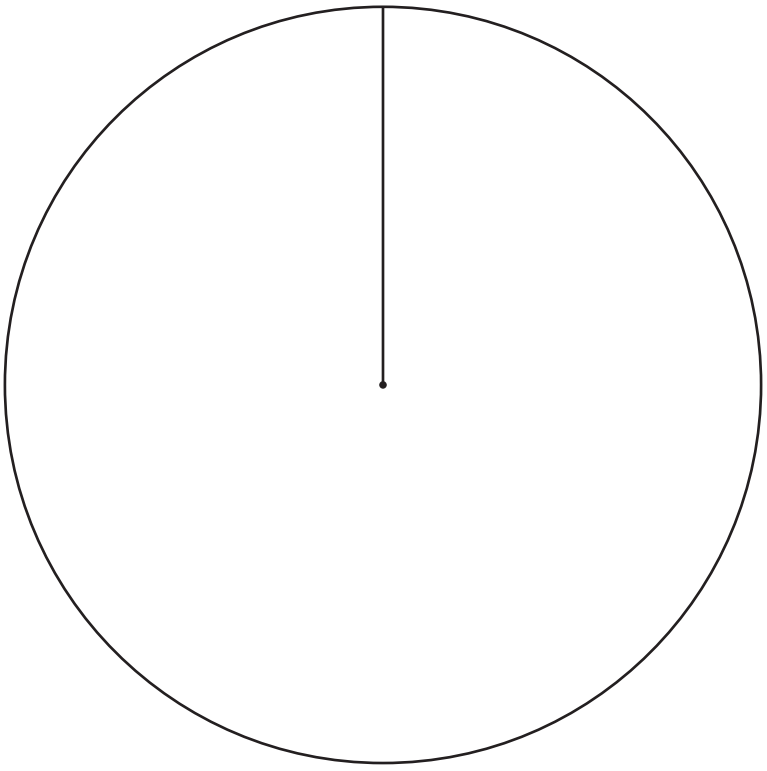
[3]

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(c) The results for 30 students in an English exam are shown in the table.

Pass	Merit	Distinction
5	18	7

Complete the pie chart to show this information.
You must show all your working.



[5]

4 **(a)** Write in figures the number seven thousand and sixty one.

..... [1]

(b) Write down

(i) a multiple of 9,

..... [1]

(ii) an even number between 21 and 29.

..... [1]

(c) Find the value of

(i) $\sqrt{625}$,

..... [1]

(ii) 11^3,

..... [1]

(iii) $5^2 - \sqrt[3]{729}$.

..... [1]

(d) Insert one pair of brackets to make this calculation correct.

$$3 \times 6 + 5 - 4 = 29$$

[1]

(e) Work out.

$$\frac{25.2}{6.1 + 3.8}$$

Write your answer correct to two decimal places.

..... [2]

(f) Write 0.031 626

(i) correct to three significant figures,

..... [1]

(ii) in standard form.

..... [1]

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5 **(a)** A train takes 1 hour 30 minutes to travel from Cambridge to London.

(i) The train leaves Cambridge at 07 25.

Find the time that this train arrives in London.

..... [1]

(ii) The distance from Cambridge to London is 105 km.

Work out the average speed of this train.

..... km/h [2]

(b) There are 104 trains travelling from Cambridge to London each day.

(i) 3% of these trains arrive late in London.

Work out how many of the trains arrive late in London.

..... [2]

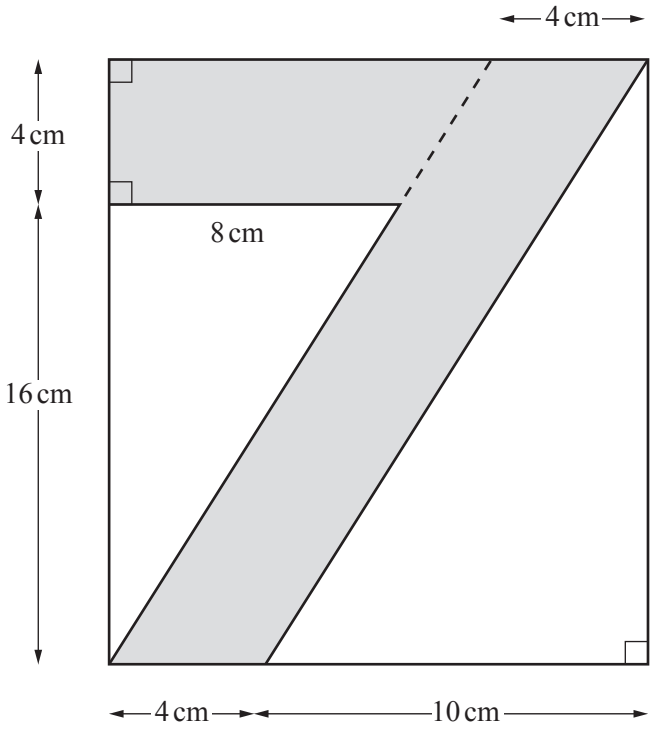
(ii) Trains from Cambridge are either express trains or local trains.
The ratio express trains : local trains = 5 : 3.

How many of the 104 trains are local trains?

..... [2]

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6 The number 7 is drawn on a rectangular piece of paper.



NOT TO SCALE

(a) Work out the area of the rectangular piece of paper.

.....cm^2 [2]

(b) Work out the total area of the shaded number 7.

.....cm^2 [4]

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(c) What fraction of the area of the rectangular piece of paper is the area of the shaded number 7? Give your answer as a fraction in its simplest form.

..... [2]

(d) Write down the mathematical name for each of the two quadrilaterals that make up the shaded number 7.

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

7 Solve these equations to find the value of x, the value of y and the value of z.

$x + x + x = 42$

$x + y + y = 32$

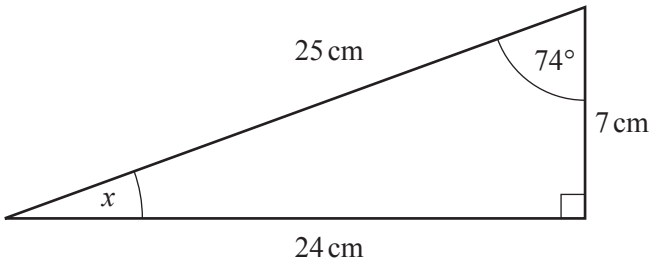
$x + y + z = 22$

$x =$ .....

$y =$ .....

$z =$ ..... [4]

8



(a) **(i)** Work out the perimeter of the triangle.

..... cm [1]

(ii) Write your answer to **part (a)(i)** in metres.

..... m [1]

(b) Work out the size of angle x.

x = ... [1]

(c) The triangle is enlarged by scale factor 3.

Find the lengths of the sides and the sizes of the angles in the enlarged triangle.

Sides ..... cm ..... cm ..... cm

Angles .....° .....° .....° [3]

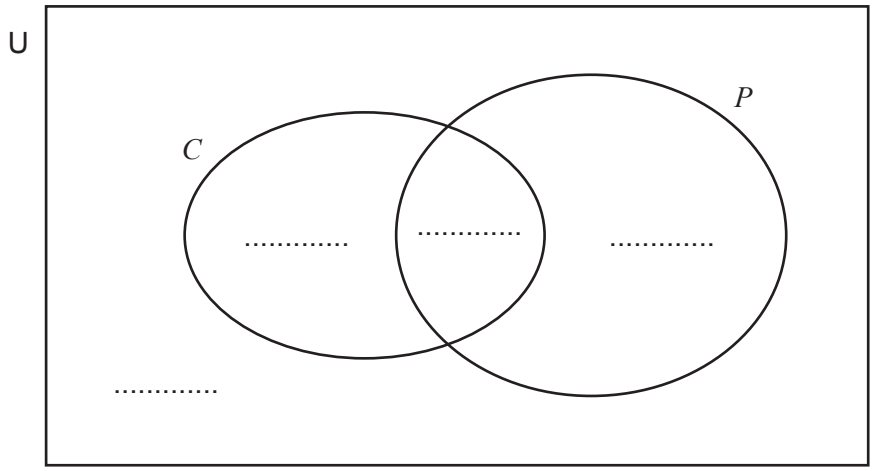
(d) Complete this statement with a mathematical word.

The enlarged triangle is ..... to the original triangle. [1]

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9 In a class of students, 11 like classical music (C), 15 like pop music (P), 8 like both and 6 like neither.

(a) Complete the Venn diagram to show this information.



[2]

(b) Find the total number of students in the class.

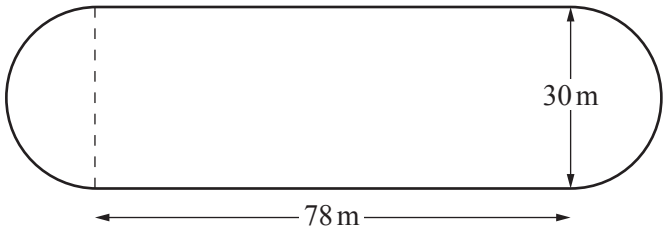
..... [1]

(c) One student is chosen at random.

Find the probability that this student likes both classical music and pop music.

..... [1]

10 A cycle track has two straight sections, each 78 m long.
Each of the two semi-circular ends has diameter 30 m.



NOT TO SCALE

Work out the perimeter of the cycle track.

..... m [3]

11 **(a)** Factorise.

$5x - 15$

..... [1]

(b) Solve.

$4(3x - 2) = 28$

..... [3]

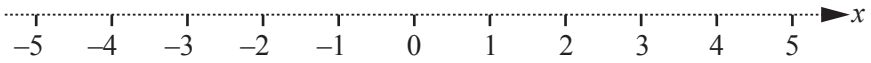
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(c) Simplify.

$$\frac{4a}{b} \times \frac{3b^2}{2a^2}$$

..... [2]

(d) On the number line, show the inequality $x \leqslant 3$.



[1]

(e) Solve.

$7x > 3x + 6$

..... [2]

(f) Solve these simultaneous equations.

$$x + y = 5$$
$$x - y = 7$$

$x =$ .....

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

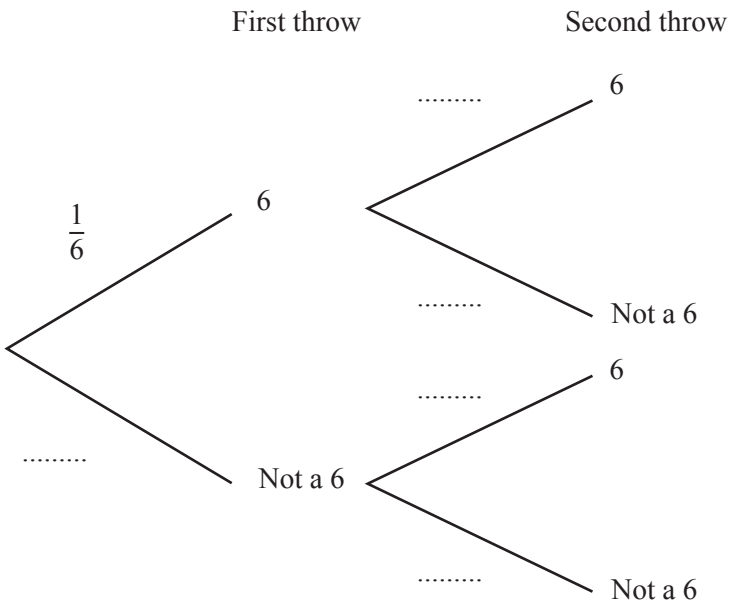
12 Find the highest common factor (HCF) and the lowest common multiple (LCM) of 54 and 72.

Highest common factor .....

Lowest common multiple ..... [4]

13 Sandy is playing a game with a fair dice numbered 1 to 6.
To win the game she needs a 6 on each of the next two throws.

(a) Complete the tree diagram.

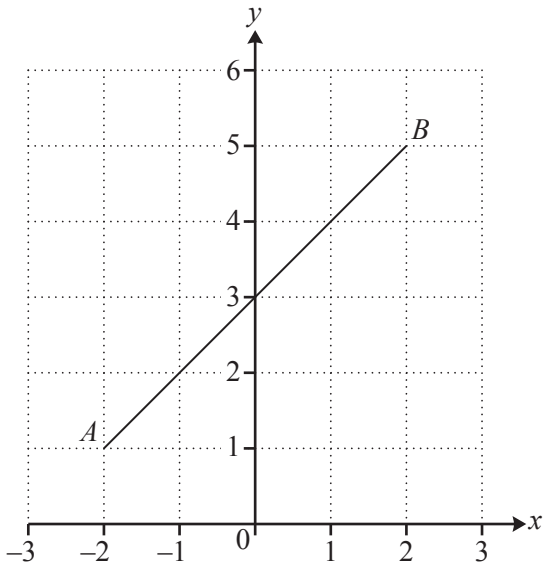


[2]

(b) Work out the probability that Sandy **does not** win the game.

..... [3]

14 The line AB is drawn on a 1 cm^2 grid.



(a) Write down the co-ordinates of the midpoint of AB.

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

(b) Use Pythagoras' Theorem to work out the length of AB.

AB = ... cm [2]

(c) Work out the gradient of AB.

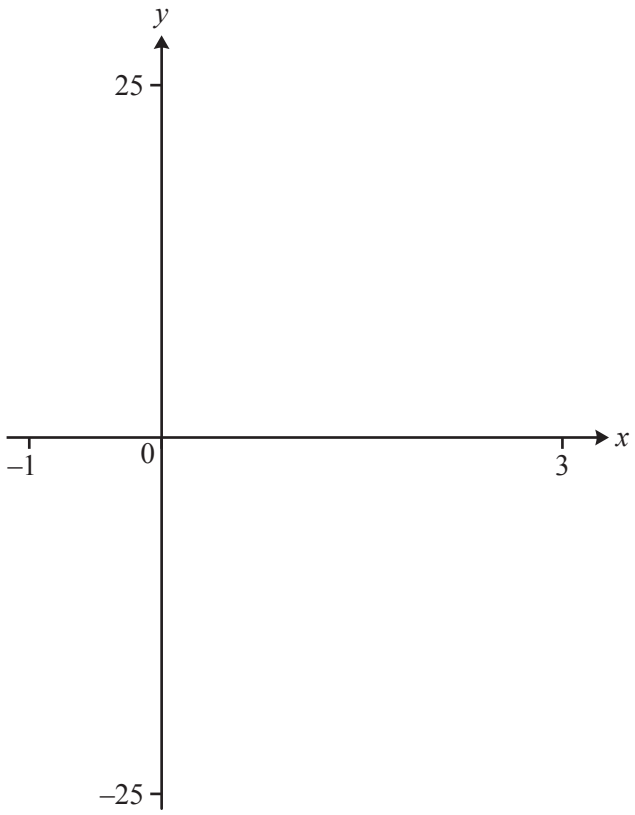
..... [2]

(d) Write down the equation of AB in the form $y = mx + c$.

y = ... [2]

Question 15 is printed on the next page.

15



(a) On the diagram, sketch the graph of $y = 8x^2 - 18x - 5$ for $-1 \leqslant x \leqslant 3$. [2]

(b) Solve the equation $8x^2 - 18x - 5 = 0$.

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

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