Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS **0580/32**

Paper 3 (Core) **October/November 2019**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

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.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 104.

1 Nadira owns a clothes shop.

(a) The pictogram shows the number of skirts that were sold each day in one week.

Day	Number of skirts
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

Key:  = 10 skirts

(i) On which day were most skirts sold?

..... [1]

(ii) How many skirts were sold on Wednesday?

..... [1]

(iii) Work out how many more skirts were sold on Friday than on Thursday.

..... [1]

(b) The shop is open for 6 days each week.
On each day, the shop is open from 09 30 until 13 00 and from 14 15 until 20 30.

Work out the total number of hours the shop is open in one week.

..... hours [2]

(c) Nadira pays 6 people to work in the shop.

In one week
- 4 people each work for 38 hours
- 2 people each work for 25 hours.

They are each paid \$11.40 for each hour they work.

Calculate the total amount Nadira pays these 6 people in one week.

\$ ..... [2]

(d) Nadira has some T-shirts that are either white or blue or green.
The numbers of T-shirts are in the ratio white : blue : green = 5 : 4 : 1.
48 of the T-shirts are blue.

Work out the total number of T-shirts.

..... [3]

(e) Nadira buys a pack of 40 dresses and pays \$500.
She sells 35 of these dresses for \$22 each.
She sells the remaining 5 dresses for \$14.50 each.

Calculate the percentage profit she makes when she sells all 40 dresses.

..... % [4]

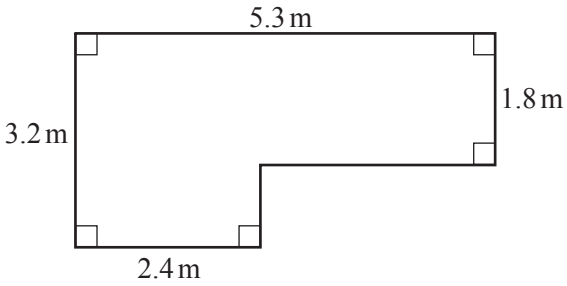
2 Henry decorates a room.

(a) Complete Henry's shopping bill.

Item	Cost ($)
3 tins of paint at $15.95 each	
2 brushes at $7.50 each	
1 roll of tape at $2.90	2.90
Total	

[2]

(b)



NOT TO SCALE

The diagram shows the floor of the room.

(i) Calculate the area of the floor.

..... m^2 [2]

(ii) Henry buys varnish for the floor of the room.
500 ml of varnish covers 8 m^2 of floor.

Calculate the amount of varnish Henry needs.

..... ml [2]

(c) This scale drawing shows the window in the room.
The scale is 1 centimetre represents 40 centimetres.

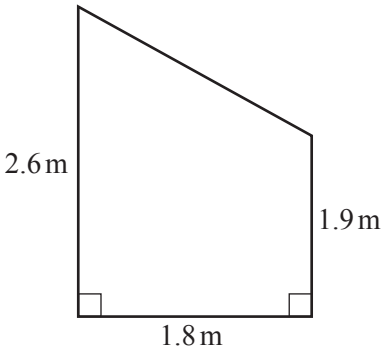
Scale: 1 cm to 40 cm

Work out the actual length and height of the window.

Length = ... cm

Height = ... cm [2]

(d)



NOT TO SCALE

The diagram shows one wall of the room.

Calculate the area of the wall.

..... m^2 [2]

(e) Henry buys a circular mirror for the room.
The diameter of the mirror is 80 cm.

Calculate the circumference of the mirror.

..... cm [2]

3 **(a)** Write down

(i) all the factors of 18,

..... [2]

(ii) a square number between 30 and 50,

..... [1]

(iii) a prime number between 90 and 100.

..... [1]

(b) Put **one** pair of brackets into each calculation to make it correct.

(i) $24 \div 6 + 2 \times 3 = 9$ [1]

(ii) $24 \div 6 + 2 \times 3 = 2$ [1]

(c) Calculate.

$$\frac{4.85 \times 6.14}{8.91 + 3.89}$$

Give your answer correct to 2 decimal places.

..... [2]

(d) (i) Find the highest common factor (HCF) of 36 and 90.

..... [2]

(ii) Find the lowest common multiple (LCM) of 36 and 90.

..... [2]

(e) (i) Write 4.2×10^{-3} as an ordinary number.

..... [1]

(ii) Calculate $(8.1 \times 10^5) + (7.9 \times 10^4)$.
Give your answer in standard form.

..... [2]

4 **(a)** 50 students each record the number of glasses of water they drink in one day.
The results for 10 of the students are shown below.

2 5 1 3 2 1 0 0 1 1

(i) The results for the remaining 40 students are recorded in the table.

Complete the table to show the results for all 50 students.

Number of glasses of water	Tally	Frequency
0	𝍸 |	
1	||	
2	𝍸 |||	
3	𝍸 𝍸 |	
4	𝍸 |||	
5	𝍸	
	Total	50

[2]

(ii) Write down the range.

..... [1]

(iii) Find the median.

..... [2]

(iv) Find the percentage of the 50 students who drink 4 glasses of water.

..... % [1]

(v) One of the 50 students is chosen at random.

Find the probability that this student drinks fewer than 2 glasses of water in one day.
Give your answer as a fraction in its lowest terms.

..... [2]

(b) Musa has a glass that holds 250 ml of water.
He drinks 5 of these glasses of water.
He fills his glass from a 2-litre bottle of water.

Work out how much water is left in the bottle.
Give your answer in millilitres.

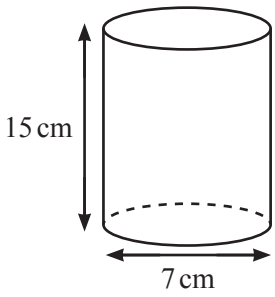
..... ml [2]

(c) The amount of water, w litres, in a jug is 1.5 litres, correct to the nearest 0.1 litre.

Complete this statement about the value of w.

..... $\leqslant w <$ ..... [2]

(d)



NOT TO
SCALE

Another glass is in the shape of a cylinder.
The cylinder has height 15 cm and diameter 7 cm.

Calculate the volume of the glass.

..... cm^3 [3]

5 **(a)** In triangle ABC, $AC = 7$ cm and $BC = 5$ cm.

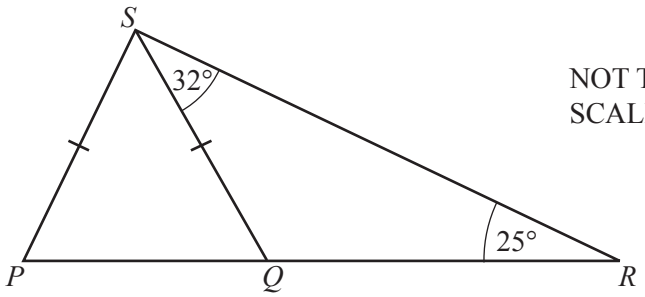
(i) **Using a ruler and compasses only**, construct triangle ABC.
AB has been drawn for you.

[2]

(ii) Measure angle ABC.

..... [1]

(b)



The diagram shows triangle PRS and a straight line QS.
Q is a point on PR.
Angle $QRS = 25°$, angle $RSQ = 32°$ and $PS = QS$.

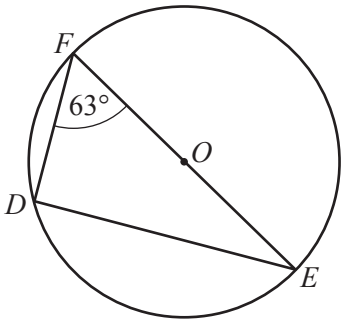
(i) Find angle PQS.

Angle PQS = ... [2]

(ii) Find angle PSR.

Angle PSR = ... [2]

(c)



NOT TO SCALE

The diagram shows a circle, centre O, with diameter EF.
Angle $DFE = 63°$.

(i) Find angle DEF.

Angle DEF = ... [2]

(ii) $EF = 12\,\text{cm}$

Calculate DF.

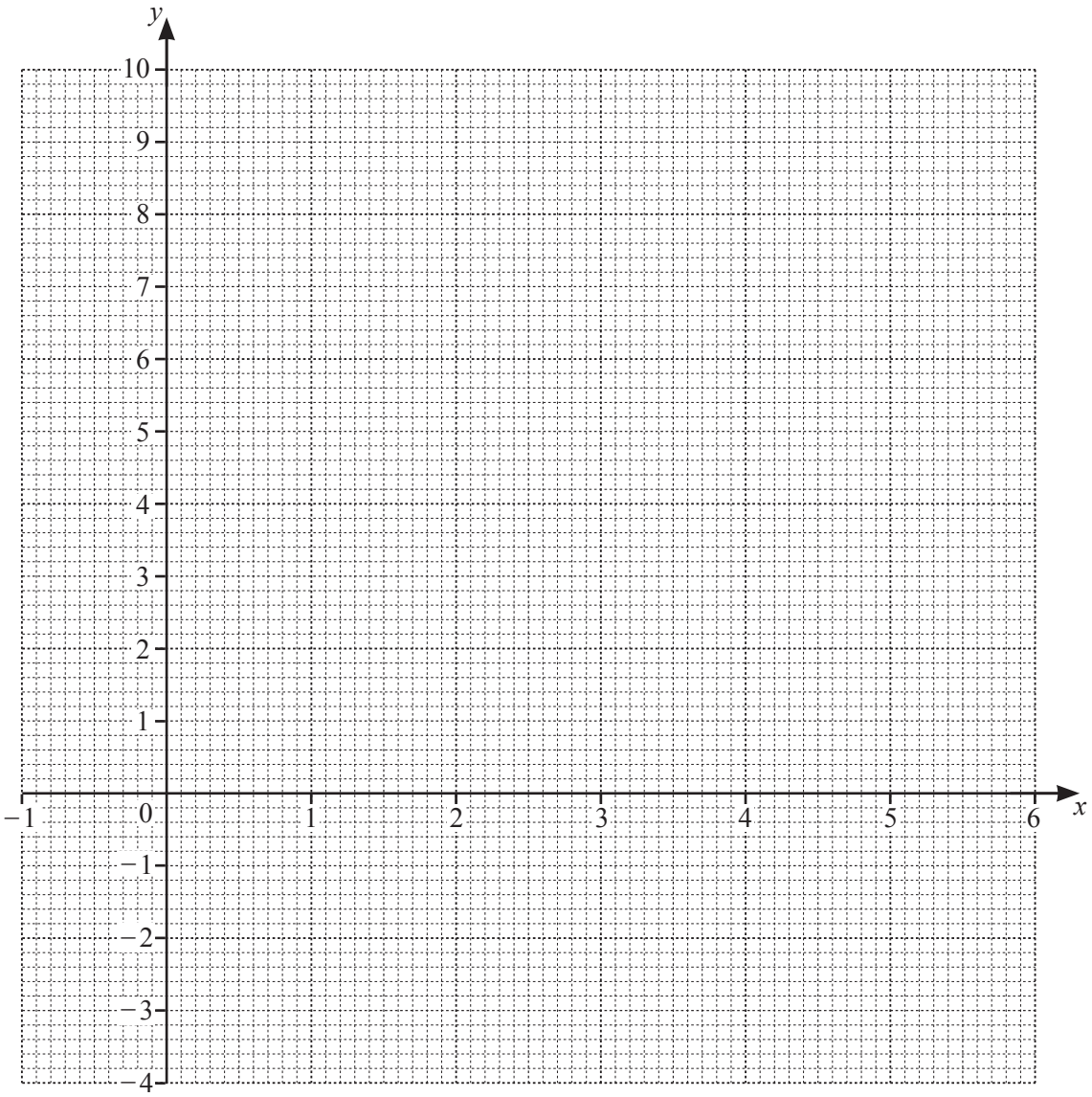
DF = ... cm [2]

6 **(a)** Complete the table of values for $y = x^2 - 5x + 3$.

x	−1	0	1	2	3	4	5	6
y			−1	−3	−3	−1	3	

[2]

(b) On the grid, draw the graph of $y = x^2 - 5x + 3$ for $-1 \leqslant x \leqslant 6$.



[4]

(c) Use your graph to solve the equation $x^2 - 5x + 3 = 0$.

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

7 **(a)** Here are the first four terms of a sequence.

32 27 22 17

(i) Write down the next term.

..... [1]

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

..... [1]

(b) The nth term of another sequence is $n^2 + 2n$.

Find the first three terms of this sequence.

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

(c) Here are the first three patterns in a sequence.

Pattern 1

Pattern 2

Pattern 3

(i) Complete the table.

Pattern	1	2	3	4	5
Number of lines	6				

[2]

(ii) Find an expression, in terms of n, for the number of lines in Pattern n.

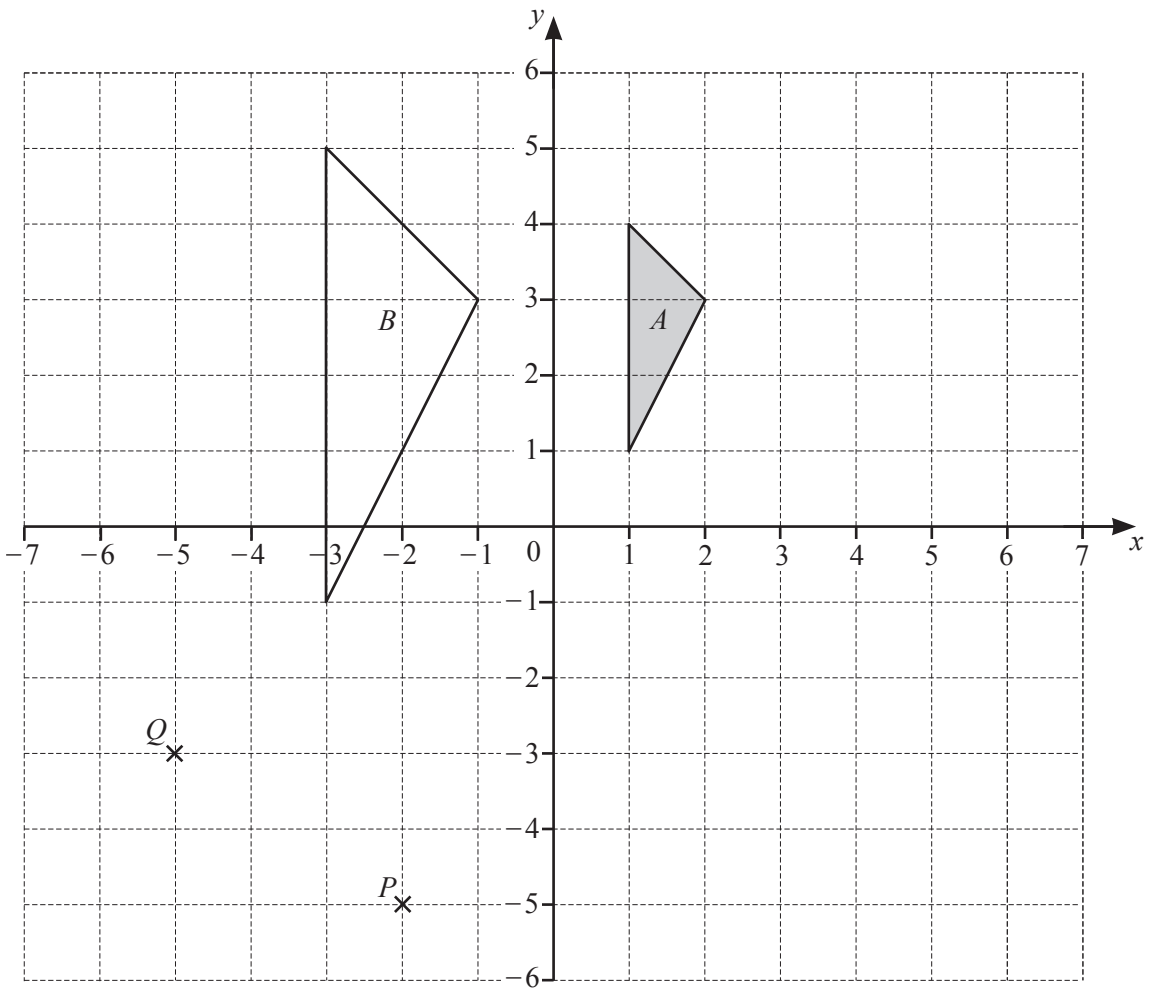
..... [2]

(iii) Jake says that he can make one of these patterns using exactly 105 lines.

Explain, without doing any working, why he is wrong.

..... [1]

8 The diagram shows two triangles, A and B, and two points P and Q.



(a) (i) Write down the co-ordinates of point P.

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

(ii) Write down the column vector $\overrightarrow{PQ}$.

$\overrightarrow{PQ} = \begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) (i) Describe fully the **single** transformation that maps triangle *A* onto triangle *B*.

.....

..... [3]

(ii) On the grid, draw the image of triangle *A* after a translation by the vector $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$. [2]

(iii) On the grid, draw the image of triangle *A* after a rotation through 90° clockwise about (0, 0). [2]

Question 9 is printed on the next page.

9 **(a)** $c = 5a - 2b$

(i) Find the value of c when $a = 8$ and $b = -3$.

..... [2]

(ii) Make a the subject of the formula $c = 5a - 2b$.

$a =$ ..... [2]

(b) Factorise $3x + 12$.

..... [1]

(c) Expand $x(2y + x)$.

..... [2]

(d) Cara has n pencils.
Alice has twice as many pencils as Cara.
Leon has three more pencils than **Alice**.
The three children have a total of 58 pencils.

Use this information to write down an equation and solve it to find the value of n.

$n =$ ..... [4]