Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **0580/32**

Paper 3 (Core) **October/November 2016**

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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **16** printed pages.

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CAMBRIDGE International Examinations

1 **(a)** A group of 50 children were each asked which type of book they most like to read. The pictogram shows some of the results.

View solution

Type of book	Number of children
Adventure	
Horror	
History	
Comedy	
Fantasy	

Key: =4 children

(i) How many children said Comedy?

..... [1]

(ii) 9 children said they liked Horror best.

View solution

Complete the pictogram. [1]

(iii) Which type of book was most popular?

View solution

..... [1]

(iv) One of the children is chosen at random.

View solution

Find the probability that they liked History best.

..... [1]

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(b) The same 50 children were each asked how many books they had read in the past month. The results are shown in the table.

View solution

Number of books	1	2	3	4	5	6
Frequency	7	14	12	5	8	4

(i) Find the median.

..... [2]

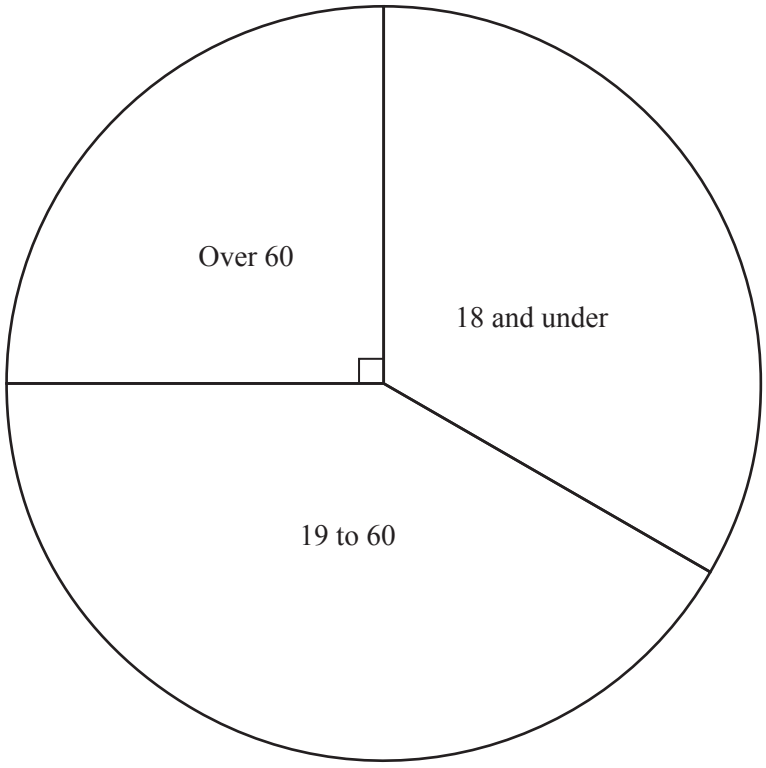
(ii) Calculate the mean.

View solution

..... [3]

(c) The ages of 300 people visiting a library one day were recorded. The pie chart shows the results.

View solution



(i) What fraction of the people were aged over 60?

..... [1]

(ii) How many people were aged 19 to 60?

View solution

..... [3]

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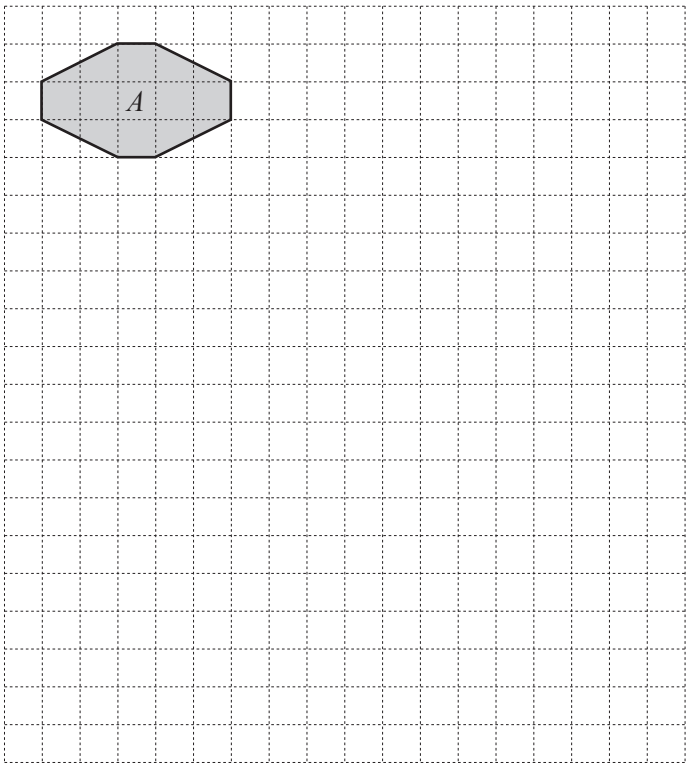
2 **(a)** Polygon A is shown on the grid.

View solution



(i) Write down the mathematical name of polygon A.

..... [1]

(ii) Write down the order of rotational symmetry of polygon A.

View solution

..... [1]

(iii) Polygon A is enlarged by scale factor 3 to give polygon B.

Draw polygon B on the grid. [2]

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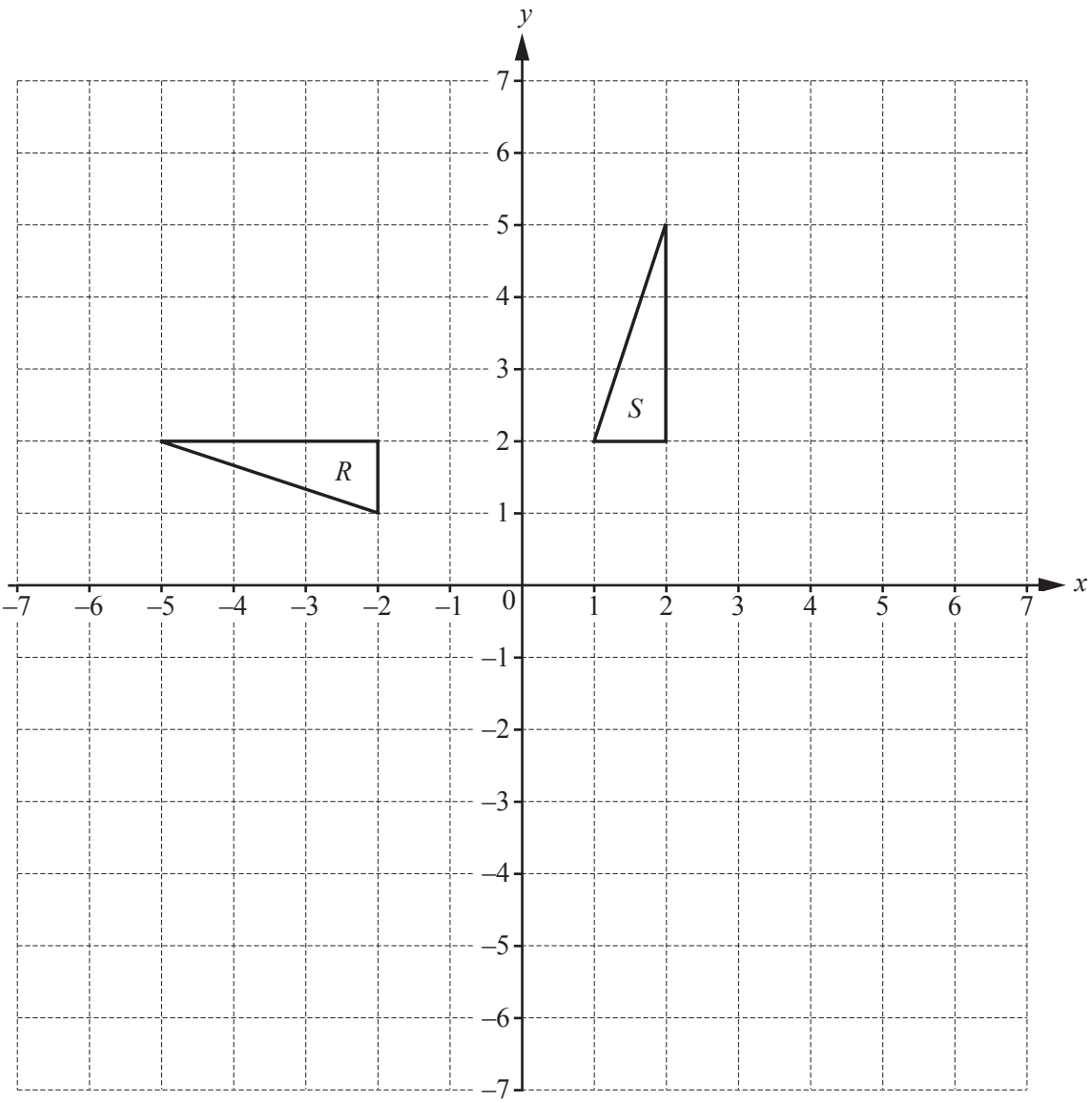
(b) Triangle R and triangle S are shown on the grid.

View solution



(i) Describe fully the **single** transformation that maps triangle R onto triangle S.

.....

..... [3]

(ii) Reflect **triangle *R*** in the x-axis. [1]

(iii) Translate **triangle *S*** by the vector $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$. [2]

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3 **(a)** Tariq wants to buy some orange juice.
He sees these offers in a shop.

View solution

Offer A	**Offer B**	**Offer C**
1-litre carton	2-litre carton	Pack of 4 1-litre cartons
$0.65	$1.25	$2.56

Work out the lowest amount Tariq could pay for 5 litres of orange juice.
Show how you decide.

Tariq buys ..... cartons.

The lowest amount is $..... [3]

(b) Bottle P contains 1.5 litres of lemonade.
Bottle Q contains $\frac{1}{3}$ more lemonade than bottle P.

View solution

Work out how much lemonade is in bottle Q.

..... litres [2]

(c) Tariq makes a fruit drink.
He mixes 500 ml of orange juice, 200 ml of pineapple juice and 1 litre of lemonade.

View solution

(i) Write the ratio orange juice : pineapple juice : lemonade in its simplest form.

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

(ii) Tariq makes more of this fruit drink.

View solution

Work out the total amount of fruit drink he makes when he uses 2 litres of orange juice.
Give your answer in litres.

..... litres [3]

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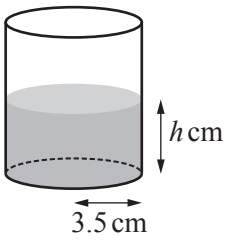
(d) Tariq pours 300 cm^3 of fruit drink into a glass.
The glass is in the shape of a cylinder with radius 3.5 cm.
The height of the drink in the glass is h cm.

View solution



NOT TO SCALE

Work out the value of h.

h = ... [2]

(e) The capacity of a jug is 750 ml correct to the nearest 10 ml.

View solution

Write down the upper and lower bounds of the capacity of the jug.

Upper bound = ... ml

Lower bound = ... ml [2]

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

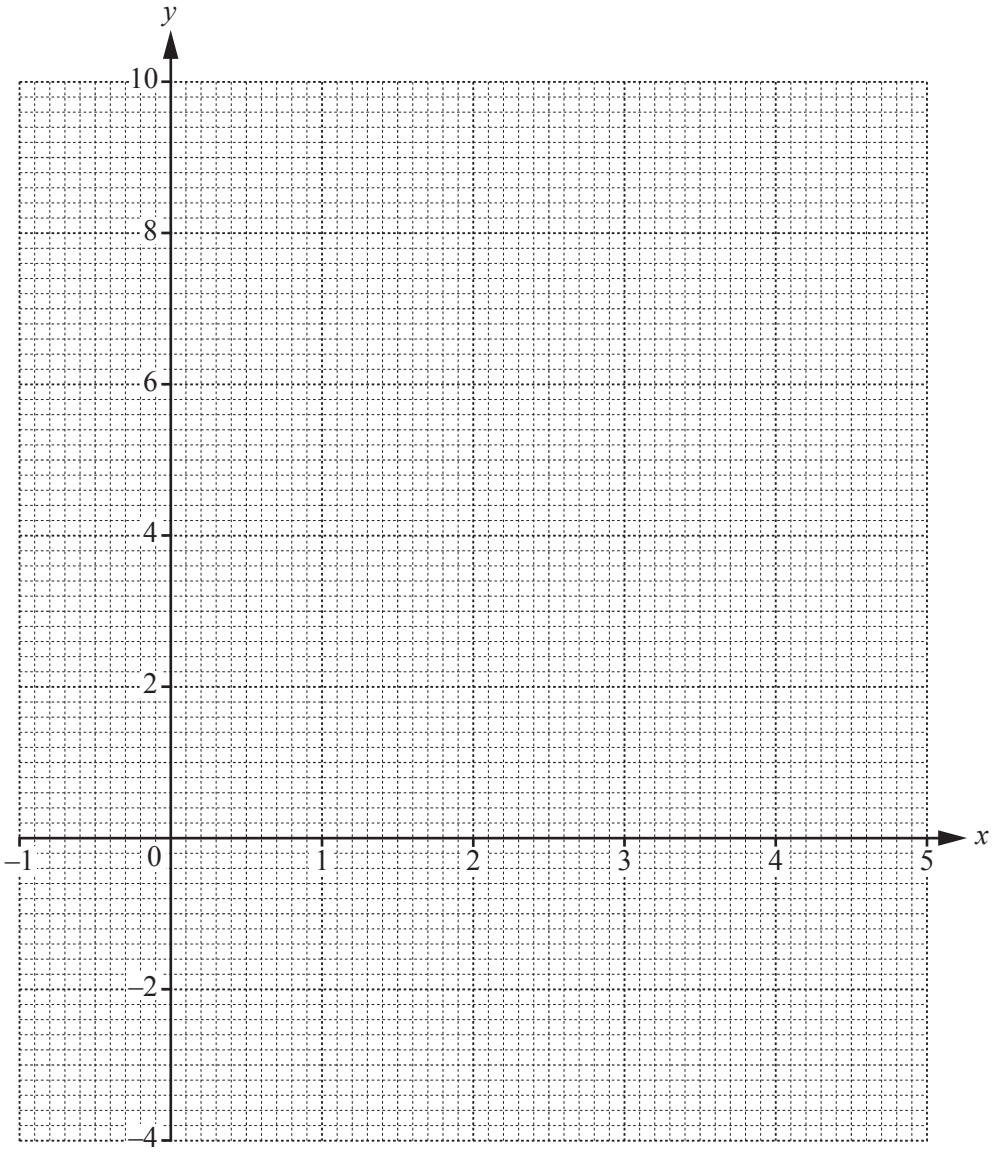
View solution

x	–1	0	1	2	3	4	5
y		3	–1			–1	3

[2]

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

View solution



[4]

(c) Write down the equation of the line of symmetry of the graph of $y = x^2 - 5x + 3$.

View solution

..... [1]

(d) Write down the co-ordinates of the point where the line $y = 4 - x$

View solution

(i) crosses the x-axis,

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

(ii) crosses the y-axis.

View solution

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

(e) On the grid, draw the line $y = 4 - x$. [1]

View solution

(f) Write down the co-ordinates of the points of intersection of the graph of $y = x^2 - 5x + 3$ and the line $y = 4 - x$.

View solution

(..... , ...)

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

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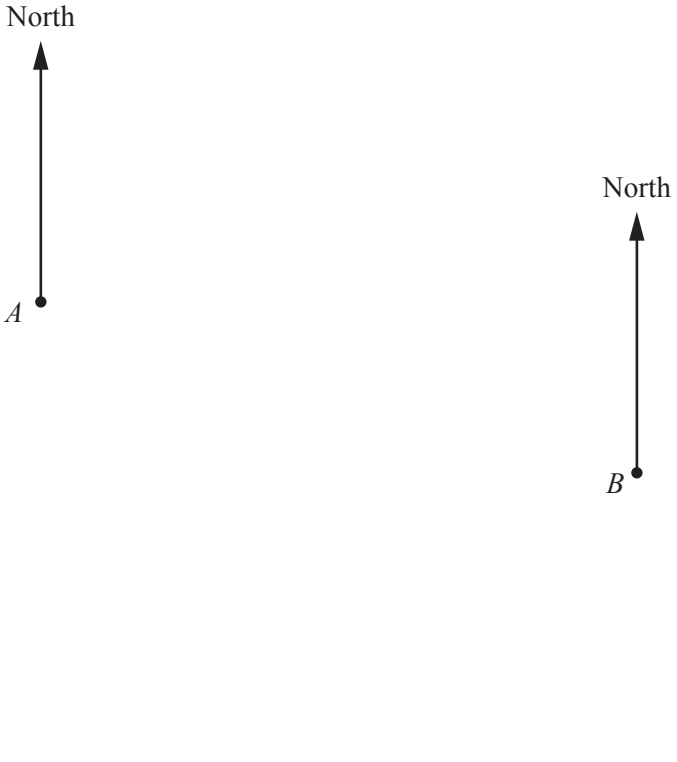
5 **(a)** The scale drawing shows the positions of three villages, *A*, *B* and *C*.
The scale is 1 centimetre represents 5 kilometres.

View solution



Scale: 1 cm to 5 km

(i) Find the actual distance between village *A* and village *B*.

..... km [2]

(ii) Measure the bearing of *B* from *A*.

View solution

..... [1]

(iii) Another village, *D*, is 30 km from village *B* on a bearing of 215°.

View solution

On the scale drawing, mark the position of village *D*. [2]

(iv) A power station, *P*, is 25 km from village *C*.
It is equidistant from village *A* and village *B*.

View solution

Using a ruler and compasses only, construct and mark a position of the power station, *P*. [3]

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(b) A bus takes workers from village *C* to the power station.
Each journey takes 35 minutes.

View solution

(i) Complete the timetable for the bus.

Village *C*	05 45		
Power station		06 50	08 05

[3]

View solution

(ii) The bus travels 25 km from village *C* to the power station.

Calculate the average speed of the bus in kilometres per hour.

..... km/h [2]

6 **(a)** Write down a factor of 24 that is a square number.

View solution

.....[2]

(b) Write down the cube number between 100 and 200.

View solution

.....[1]

(c) Find

(i) $\sqrt{12.25}$,

View solution

.....[1]

(ii) 17^3,

View solution

.....[1]

(iii) 4^{-2}.

View solution

.....[1]

(d) $s = \frac{1}{2}at^2$

Find the value of s when $a = 0.7$ and $t = 4.2$.

View solution

$s =$ .....[2]

(e) Simplify.

(i) a^0

View solution

.....[1]

(ii) $b^3 \times b^2$

View solution

.....[1]

(iii) $\frac{c^4}{c^8}$

.....[1]

View solution

7 **(a)** Mei is paid \$15.25 for each hour she works.

View solution

(i) Work out how much she is paid when she works for 8 hours.

\$ ..... [1]

View solution

(ii) Mei gets a pay increase.
She is paid 8% more for each hour she works.
Mei works for 38 hours each week.

Work out how much Mei earns each week after the pay increase.

\$ ..... [3]

View solution

(b) Xia works in France.
She is paid 425 euros each week.
The exchange rate between euros (€) and dollars is €1 = \$1.45 .

Work out who earns more each week, Mei or Xia, and by how much.
Give your answer in dollars.

..... earns more by \$ ..... [3]

View solution

(c) Mei invests \$500 in a bank at a rate of 3.5% per year compound interest.

Calculate the **total** amount of money she will receive at the end of 3 years.

\$ ..... [3]

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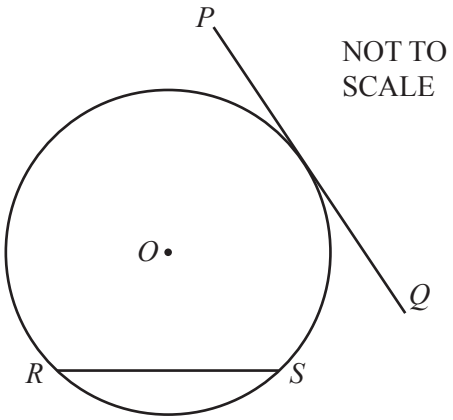
8 (a)



The diagram shows a circle, centre O, and lines PQ and RS.

Write down the mathematical name for

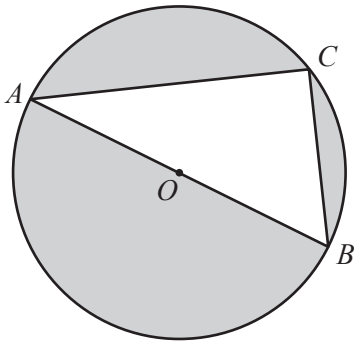
(i) line PQ,

..... [1]

(ii) line RS.

..... [1]

(b)



A, B and C are points on the circle, centre O.

(i) Complete the statement.

Angle $ACB = 90°$ because ..... [1]

(ii) $AC = 8$ cm and $BC = 5$ cm.

Calculate the area of triangle ABC.

..... cm^2 [2]

(iii) Show that the diameter of the circle is 9.43 cm, correct to 2 decimal places.

View solution

[2]

(iv) Calculate the area of the circle.

View solution

.....cm^2 [2]

(v) Calculate the percentage of the circle that is shaded.

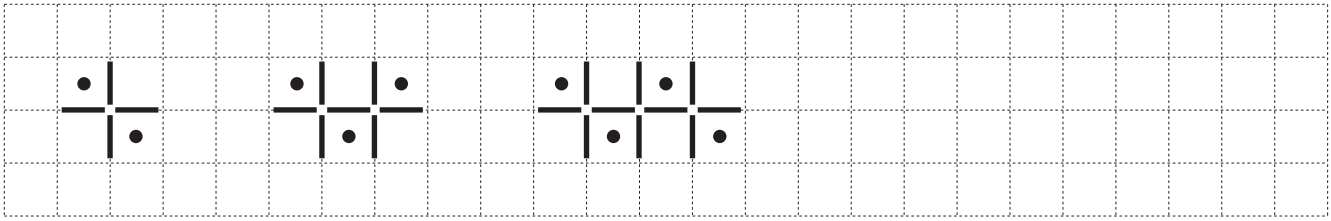
View solution

..... % [2]

Question 9 is printed on the next page.

9 A sequence of patterns is made from lines and dots.
The first three patterns in the sequence are shown.

View solution



Pattern 1 Pattern 2 Pattern 3 Pattern 4

(a) Draw Pattern 4 on the grid. [1]

(b) Complete the table.

View solution

Pattern	1	2	3	4		10
Number of dots	2	3				
Number of lines	4	7				

[4]

(c) Find an expression, in terms of n, for

View solution

(i) the number of dots in Pattern n,

..... [1]

(ii) the number of lines in Pattern n.

View solution

..... [2]

(d) One of these patterns has 76 lines.

View solution

Work out how many **dots** are in this pattern.

..... [2]

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