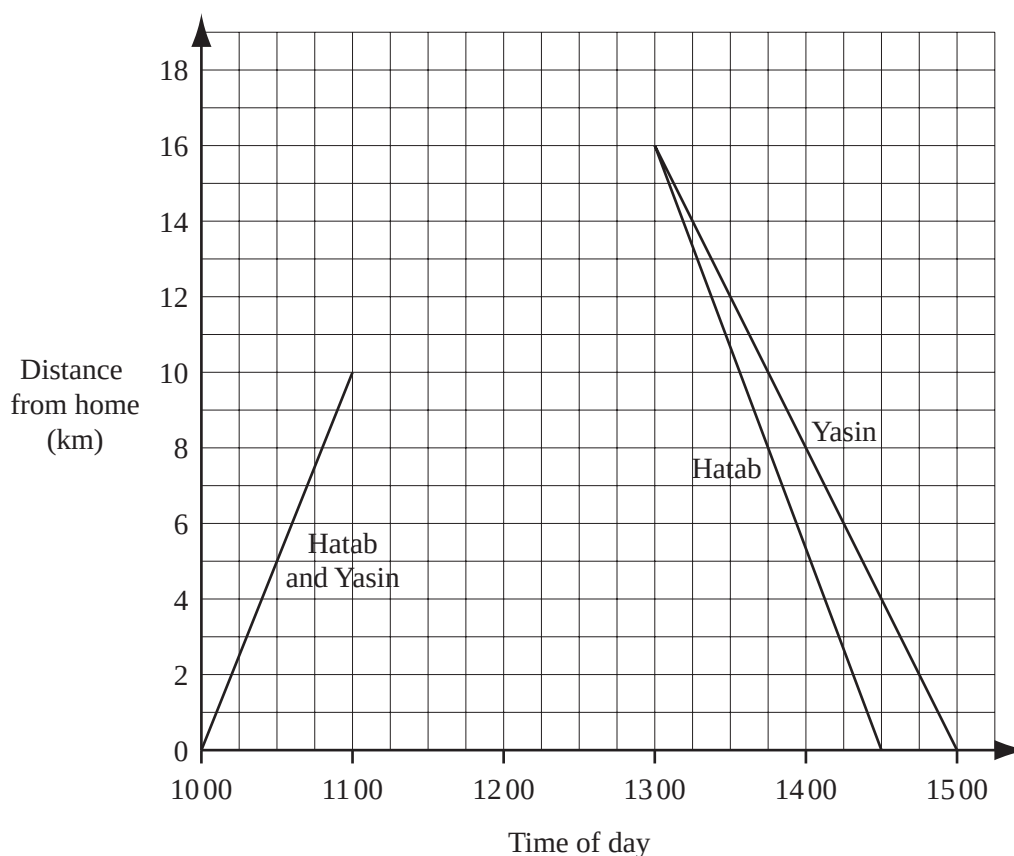


- 1 (a) Two friends, Hatab and Yasin, went on a cycle ride.
Part of the distance-time graph for their journey is shown below.

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For the first part of the journey they cycled at the same speed.

- (i) Find their speed for the first part of the journey.

Answer(a)(i) km/h [1]

- (ii) At 11 00 they stopped for half an hour. Show this on the graph. [1]

- (iii) They continued on their ride and at 12 45 they were 16 kilometres from home.
Show this part of the journey on the graph. [1]

- (iv) They stopped again and then had a race going home.

- (a) For how long did they stop?

Answer(a)(iv)(a) min [1]

- (b) Who won the race?

Answer(a)(iv)(b) [1]

- (v) What was the total length of their journey?

Answer(a)(v) km [1]

(b) On a certain day the conversion rate between dollars (\$) and Indian rupees was

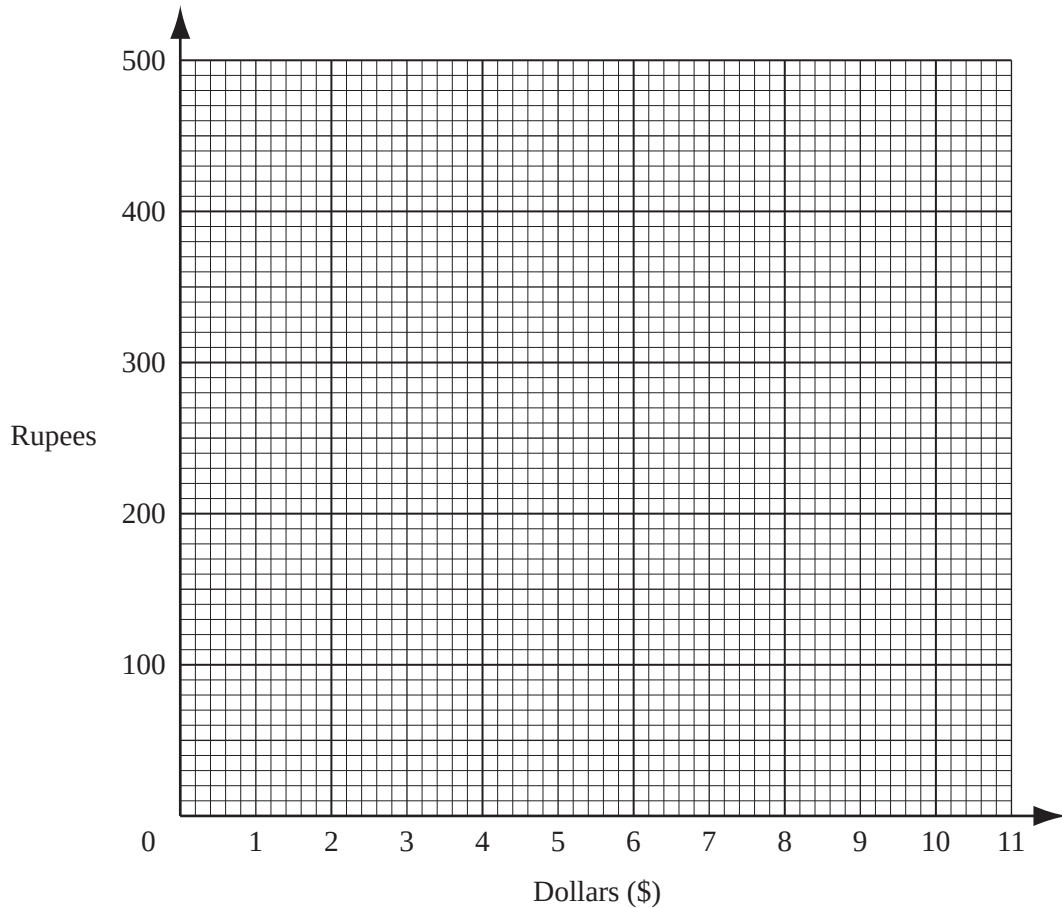
$$\text{\$1} = 45 \text{ rupees.}$$

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(i) How many rupees were equivalent to \\$10?

Answer(b)(i) rupees [1]

(ii) Use this information to draw a conversion graph on the axes below.



[2]

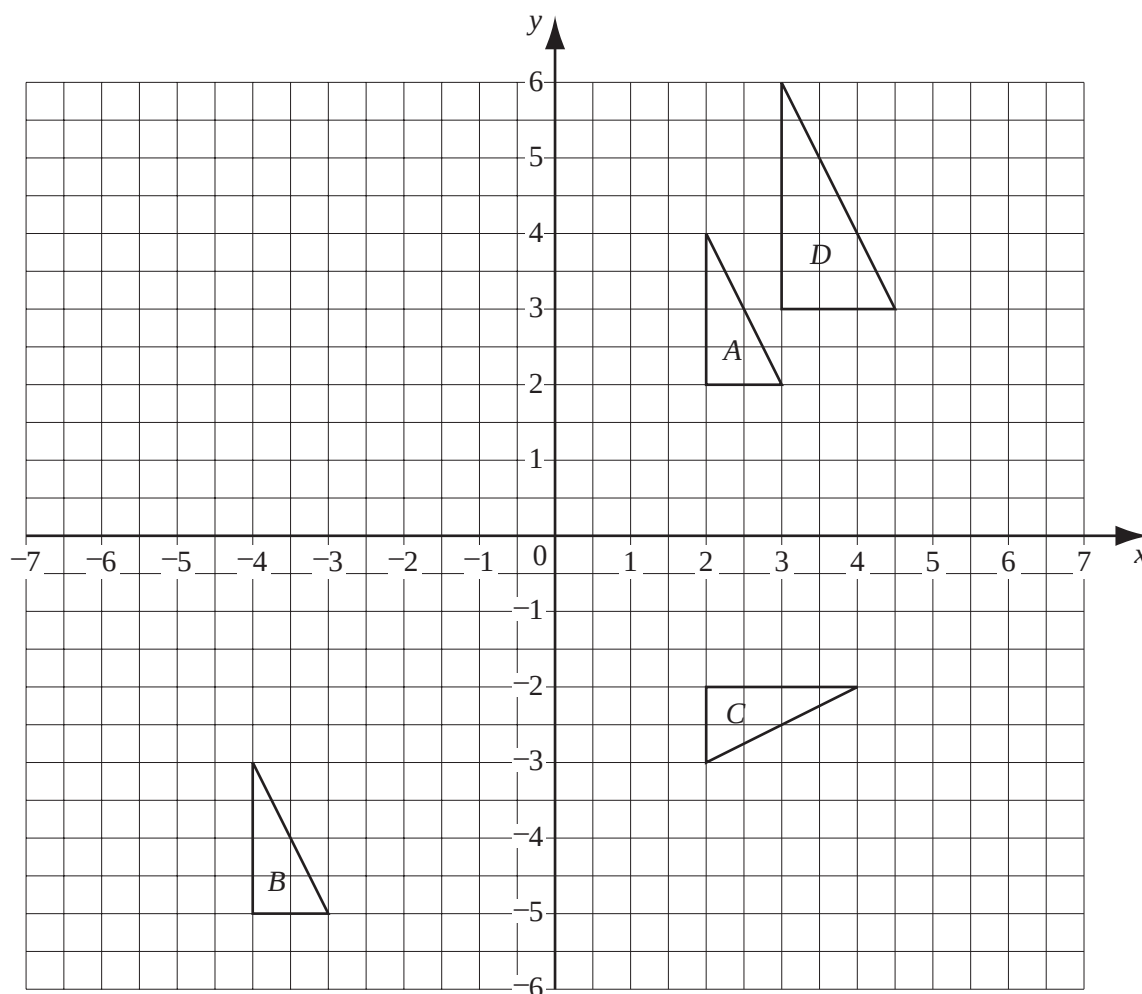
(iii) Use your graph to find

(a) how many rupees were equivalent to \\$6.80,

Answer(b)(iii)(a) rupees [1]

(b) how many dollars were equivalent to 480 rupees.

Answer(b)(iii)(b) \\$ [1]



- (a) Describe fully the single transformation that maps triangle *A* onto triangle *B*.

Answer(a)

[3]

- (b) Describe fully the single transformation that maps triangle *A* onto triangle *C*.

Answer(b)

[3]

- (c) Find the centre and the scale factor of the enlargement that maps triangle *A* onto triangle *D*.

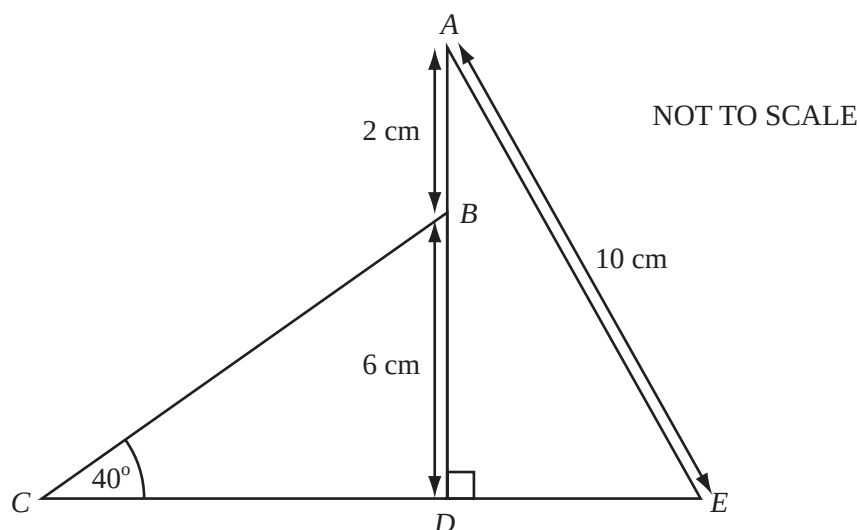
Answer(c) centre (..... ,) scale factor

[2]

- (d) On the grid

(i) draw the image of triangle *A* under a reflection in the line $x = -1$, [2]

(ii) draw the image of triangle *B* under a rotation of 180° about $(-4, -3)$. [2]



On the above diagram, $AB = 2$ cm, $BD = 6$ cm, $AE = 10$ cm, angle $BCD = 40^\circ$ and angle $BDE = 90^\circ$.

- (a) Write down the length of AD .

Answer(a) $AD = \dots\dots\dots$ cm [1]

- (b) Calculate the length of DE .

Answer(b) $DE = \dots\dots\dots$ cm [2]

- (c) Calculate the size of angle AED .

Answer(c) angle $AED = \dots\dots\dots$ [2]

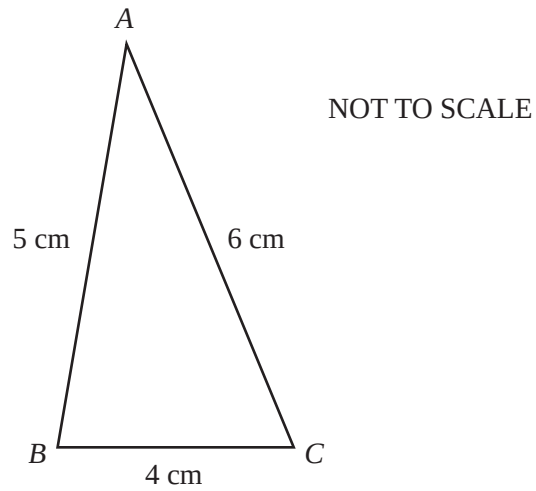
- (d) Calculate the length of CD .

Answer(d) $CD = \dots\dots\dots$ cm [3]

- (e) Find the length of CE .

Answer(e) $CE = \dots\dots\dots$ cm [1]

4 (a)



For
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Use

- (i) In the space below, using a ruler and compasses only, construct the above triangle accurately.

[3]

- (ii) Using the triangle you have drawn, measure and write down the size of angle ACB .

Answer(a)(ii) angle ACB = [1]

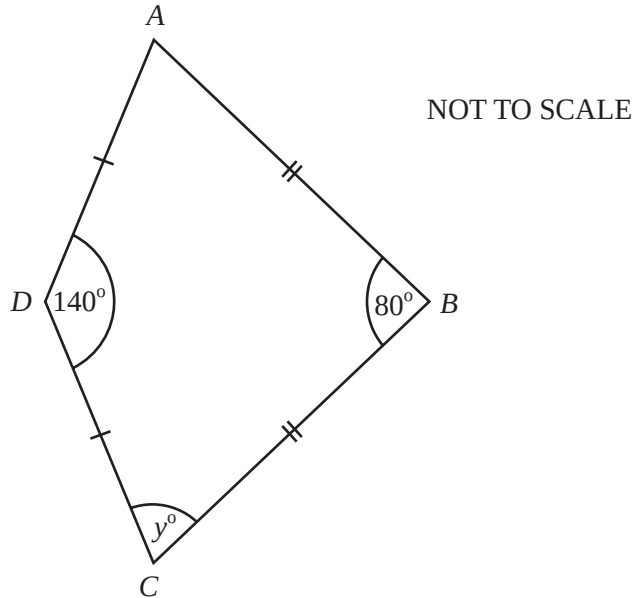
- (b) In the diagram below two points, P and Q , are joined by a straight line.

For
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Use



- (i) On the diagram draw the locus of all the points that are 4 centimetres from the line PQ . [3]
- (ii) On the same diagram, using a straight edge and compasses only, construct the locus of the points that are equidistant from P and Q .
Show all your construction lines. [2]
- (iii) Shade the region which contains the points that are closer to P than to Q **and** are less than 4 centimetres from the line PQ . [2]
-

5 (a)

For
Examiner's
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In the diagram above $AB=BC$ and $AD=DC$.

- (i) What is the special name of the quadrilateral $ABCD$?

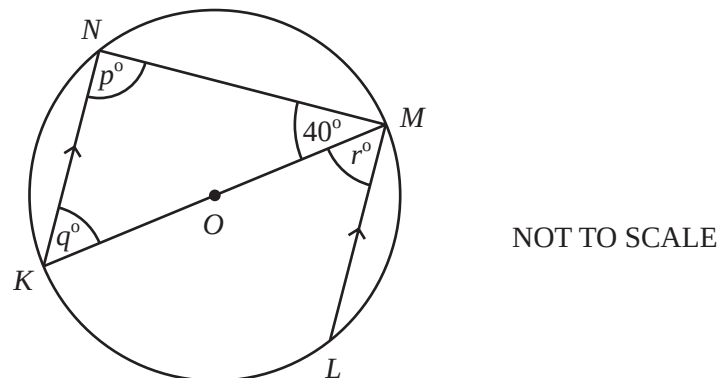
Answer(a)(i) [1]

- (ii) On the diagram draw the line of symmetry. [1]

- (iii) Calculate the value of y .

Answer(a)(iii) $y =$ [2]

(b)

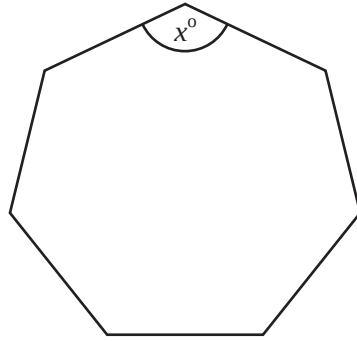


In the diagram above, the points K, L, M and N lie on the circle centre O .
 KN is parallel to LM .

Find the values of p, q and r .

Answer(b) $p =$, $q =$, $r =$ [3]

(c)



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The diagram above shows a regular seven-sided polygon.
Each of the interior angles measures x° .
One of the angles is marked in the diagram.
Calculate the value of x , giving your answer correct to 1 decimal place.
Show all your working.

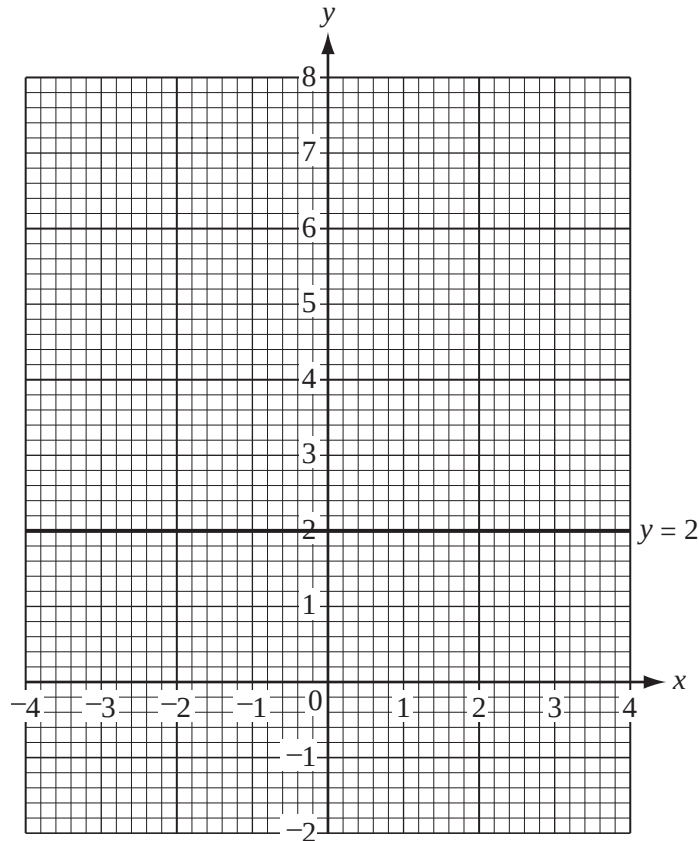
Answer(c) $x =$ [4]

- 6 (a) Complete the table below for $y = x^2 - 2x$.

x	-2	-1	0	1	2	3	4
y	8			-1		3	8

[3]

- (b) On the grid below, draw the graph of $y = x^2 - 2x$ for $-2 \leq x \leq 4$.



[4]

- (c) The line $y = 2$ is drawn on the diagram.

Use your graph to find the values of x that solve the equation $x^2 - 2x = 2$.

Answer(c) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [2]

- (d) Complete the table below for $y = 4 - x$.

x	-4	0	4
y	8		

[2]

- (e) On the grid above, draw the line $y = 4 - x$ for $-4 \leq x \leq 4$.

[1]

- (f) Write down the x coordinates of the points of intersection of the graphs of $y = x^2 - 2x$ and $y = 4 - x$.

Answer(f) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [2]

- 7 (a) Rajeesh thought of a number.
He multiplied this number by 2.
He then added 10.
The answer was 42.

(i) What was the number Rajeesh first thought of?

Answer(a)(i) [1]

- (ii) Simon thought of a number x .
He multiplied this number by 3 and then added 8.
Write down an expression in x for his answer.

Answer(a)(ii) [2]

- (b) Simplify $-8a + 7b - a - 2b$.

Answer(b) [2]

- (c) Factorise fully $6a - 9a^2$.

Answer(c) [2]

- (d) Make t the subject of the formula

$$v = u + at.$$

Answer(d) $t =$ [2]

- (e) Solve the simultaneous equations

$$\begin{aligned} 8x + 2y &= 13, \\ 3x + y &= 4. \end{aligned}$$

Answer(e) $x =$, $y =$ [4]

- 8 (a) The list shows the rainfall in millimetres in Prestbury for the 12 months of 2002.

61 146 22 54 67 94 141 22 37 167 87 170

- (i) Write down the mode.

Answer(a)(i) mm [1]

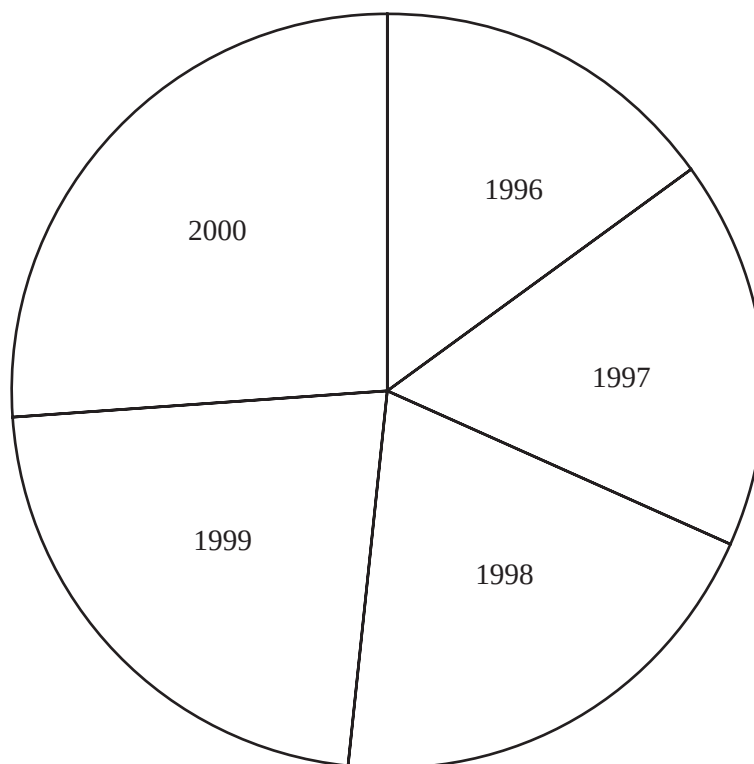
- (ii) Find the median.

Answer(a)(ii) mm [2]

- (iii) Calculate the mean.

Answer(a)(iii) mm [2]

- (b) During the years 1996 - 2000 the total rainfall in Prestbury was 5400 millimetres.
The pie chart shows how this was spread over the five years.



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- (i) Measure the angles of the sectors for 1998, 1999 and 2000.

Write your answers in the table below.

[3]

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- (ii) Work out the annual rainfall, in millimetres, for each of the years 1998, 1999 and 2000.

Write your answers in the table below.

[3]

Answers (b)(i) and (ii)

Year	Angle (degrees)	Rainfall (mm)
1996	54	810
1997	60	900
1998		
1999		
2000		
Total	360	5400

- (iii) What do you notice about the trend in the rainfall from 1996 to 2000?

Answer(b)(iii)

[1]

[illegible]

- (ii)** The last numbers in each row form a sequence.

(a) What is the special name given to these numbers?

- (a)** What is the special name given to these numbers?

(b) Write down the last number in the 10th row.

(c) Write down an expression for the last number in the n th row.

(iii) The numbers in the middle column of the pattern form a sequence.

(a) Write down the next number in this sequence.

(b) The expression for the n th number in this sequence is $n^2 - n + 1$.
Work out the 30th number.

Answer(a)(iii)(b) [2]

(b) Another pattern of numbers is shown below.

row											
1	---	→	1	2	3	4	5	6	7	8	9 10
2	---	→	11	12	13	14	15	16	17	18	19 20
3	---	→	21	22	23	24	25	26	27	28	29 30
4	---	→	31	32	33	34	35	36	37	38	39 40

(i) What is the last number in the 10th row?

Answer(b)(i) [1]

(ii) Find an expression for the last number in the n th row.

Answer(b)(ii) [1]

(iii) What is the **first** number in the 10th row?

Answer(b)(iii) [1]

(iv) Find an expression for the **first** number in the n th row.

Answer(b)(iv) [1]

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