- ## **Stem and leaf diagrams**

1.

Stem	Leaf
2	1 3 6 9
3	0 4 4
4	5 5 6
5	3

The numbers are 21, 23,

2.

Stem	Leaf
0	2 6 8
1	3 4 5 8
2	1 2 4
3	0 5

The numbers are ......, ...,

3.

Stem	Leaf
88	7
89	0 8 9
90	1 3 5 6 9
91	2 8

The numbers are ......, ...,

4.   Put these numbers in the stem and leaf diagram.

72, 45, 55, 71, 40, 59, 65, 52, 43, 79, 47, 57.

Rough version

Stem	Leaf
4	
5	
6	
7	

Neat version

Stem	Leaf
4	
5	
6	
7	

For the neat version make sure leaves are in order from smallest to largest and written in columns.

5.   Put these numbers in the stem and leaf diagram.

18, 9, 23, 37, 16, 33, 18, 29, 3, 7, 19, 21

Rough version

Stem	Leaf
0	
1	
2	
3	

Neat version

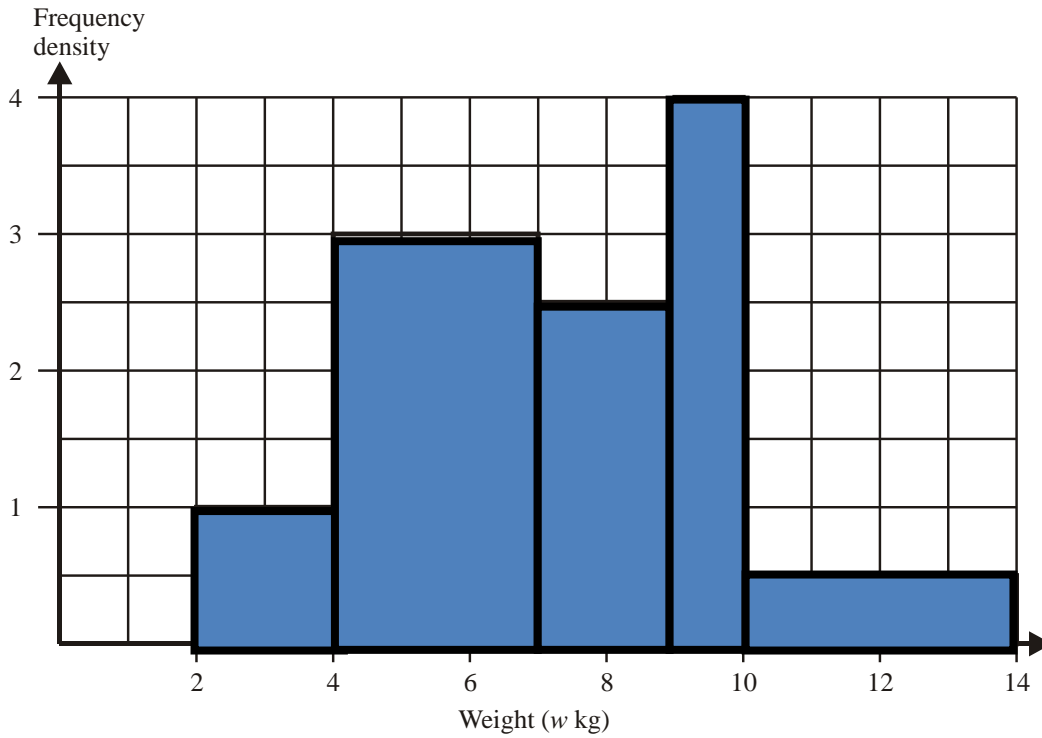| Stem	Leaf
0	
1	
2	
3	

6.   Put these numbers in a stem and leaf diagram.

88, 96, 74, 107, 78, 91, 100, 91, 74, 106, 97, 84

Histograms

The histogram gives information about the weights, in kilograms, of some boxes.

Frequency density

Weight (*w* kg)

Use the histogram to complete the table.

Weight (*w* kg)	Frequency
2 ⩽ *w* < 4	20
4 ⩽ *w* < 7	
7 ⩽ *w* < 9	
9 ⩽ *w* < 10	
10 ⩽ *w* < 14	

The table and histogram give information about how long, in minutes, some students took to complete a homework.

Time (*t*) in minutes	Frequency
0 < *t* ⩽ 10	20
10 < *t* ⩽ 15	
15 < *t* ⩽ 30	
30 < *t* ⩽ 50	62
50 < *t* ⩽ 60	23

Frequency density

Time (minutes)
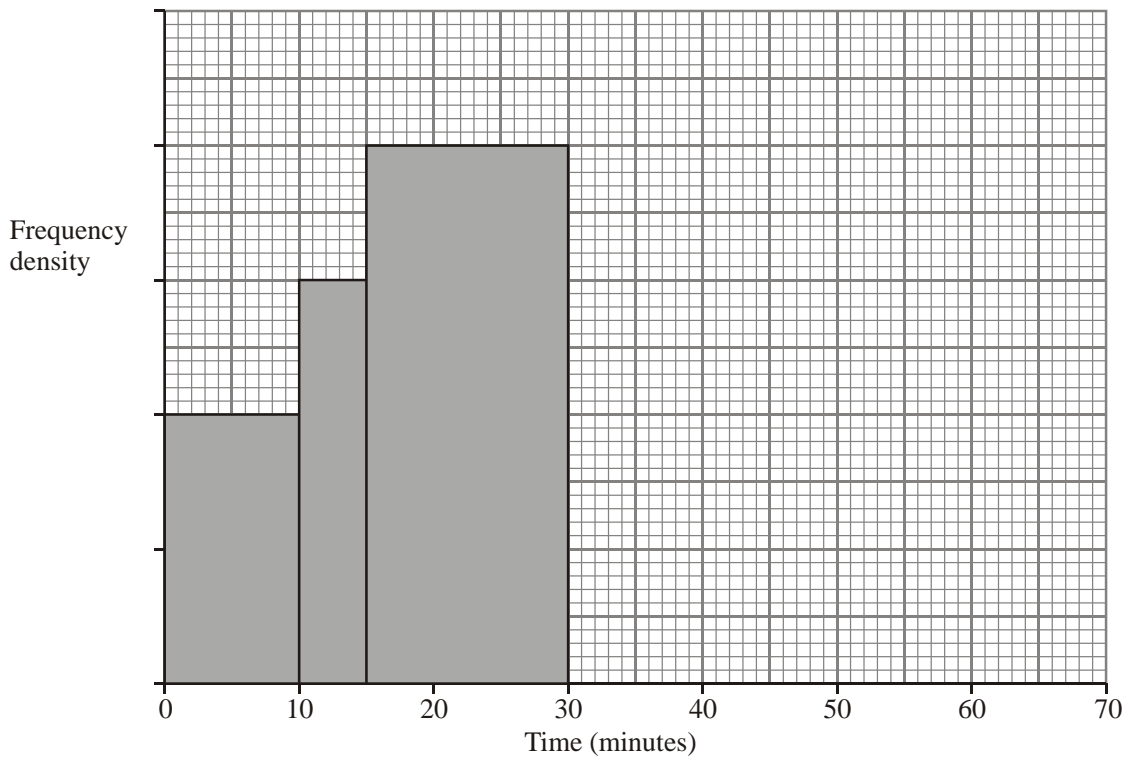
(a) Use the information in the histogram to complete the table.

(b) Use the table to complete the histogram.

1) 30 pupils were asked which national newspaper they read
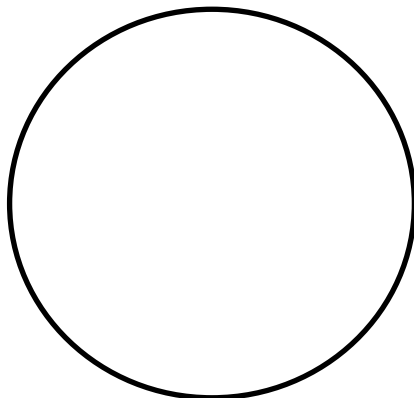
Show these results in a pie chart.

(a) Work out the angle for each pupil:

            $360° \div 30 = $ _____ ° per pupil.

(b) Fill in the table.

Newspaper	Number of people	Working	Angle
The Guardian	8		
Daily Mirror	7		
The Times	3		
The Sun	6		
Daily Express	6		
Total	30		

(c) Draw your pie-chart. Remember to add a title and a key.

Key:

2) 30 pupils in class 8J were asked what they usually have for breakfast.

They decided to draw a pie-chart of their results:

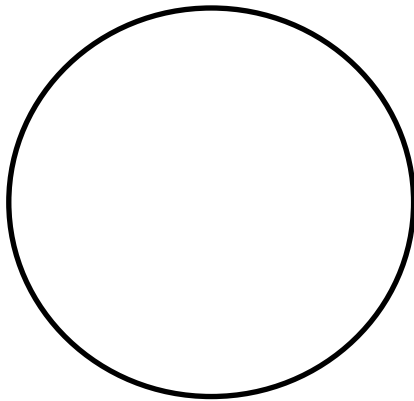(a) Work out the angle for each pupil:

         $360° \div 30 = $ _____ ° per pupil.

(b) Fill in the table below:

Breakfast	Number of pupils	Working	Angle
Cereal	9	9 x 12° =	108°
Toast	8	8 x 12° =	96°
Cooked	2	2 x	
Drink only	6		
Nothing	5		
Total	30		360°

(c) Use your table to help you draw a pie-chart.

Don't forget a title and a key.

Key:

3) The same 30 pupils were also asked how they travelled to school.

They decided to draw a pie-chart of their results:
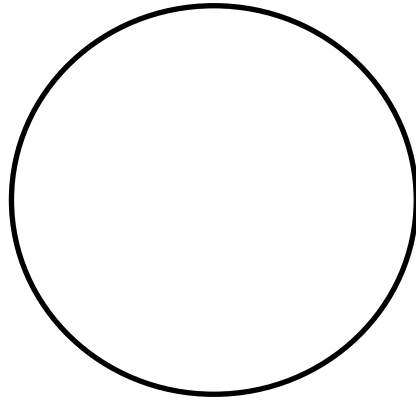
(a) Work out the angle for each pupil:

360° ÷ 30 = _____ ° per pupil.

(b) Fill in the table below:

Method of travel	Number of pupils	Working	Angle
Walk	14	14 x	
Bus	7	7 x	
Car	6		
Bike	3		
Private jet	0		
Total	30		360°

(c) Use your table to help you draw a pie-chart.

Don't forget a title and a key.

Key:

4) Class 8P has 24 pupils.

Here are their answers to the travel survey.
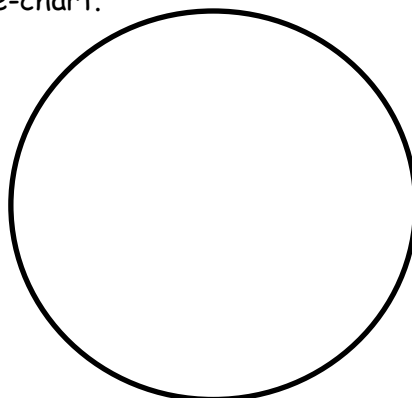
(a) Work out the angle for each pupil:

$360° \div 24 =$ _____ ° per pupil.

(b) Fill in the table below:

Method of travel	Number of pupils	Working	Angle
Walk	10		
Bus	7		
Car	6		
Bike	1		
Total	24		360°

(c) Use your table to help you draw a pie-chart.

Don't forget a title and a key.

Key:

5) 36 pupils were asked what their favourite eye colour was.

Here are their answers to the survey.
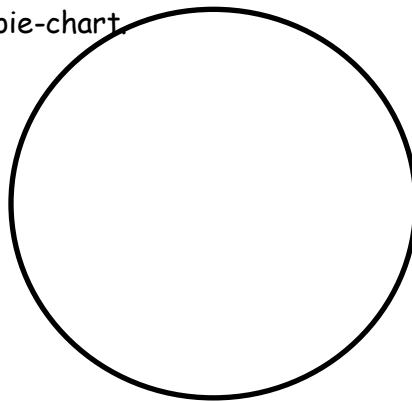
(a) Work out the angle for each pupil:

$360° ÷ 36 =$ _____ ° per pupil.

(b) Fill in the table below:

Eye Colour	Number of pupils	Working	Angle
Blue	12		
Brown	15		
Green	6		
Other	3		
Total	36		360°

(c) Use your table to help you draw a pie-chart.

   Don't forget a title and a key.

Key:

6) 90 pupils were asked what their favourite flavour ice cream was.

Here are their answers to the survey.
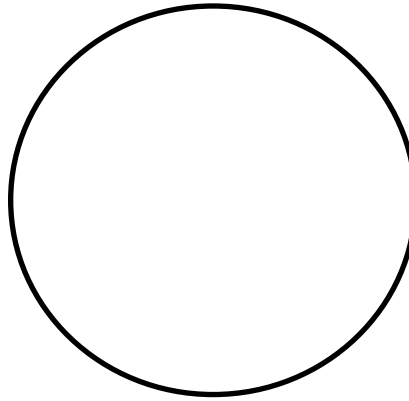
(a) Work out the angle for each pupil:

$360° ÷ 90 =$ _____ ° per pupil.

(b) Fill in the table below:

Ice-cream	Number of pupils	Working	Angle
Vanilla	35		
Chocolate	20		
Mint	22		
99	13		
Total	90		360°

(c) Use your table to help you draw a pie-chart.

Don't forget a title and a key.

Key:

7) 90 pupils were asked which month they were born in.

Here are their answers to the survey.
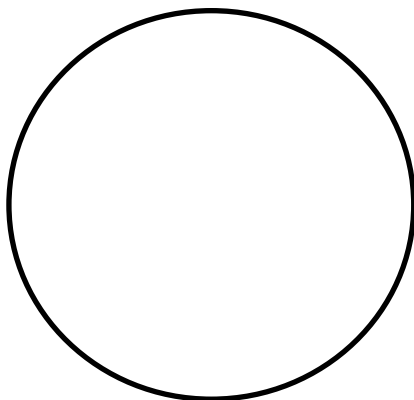
(a) Work out the angle for each pupil:

$$360° ÷ 90 = \underline{\hspace{2cm}}° \text{ per pupil.}$$

(b) Fill in the table below:

Month	Number of pupils	Working	Angle
Jan	7		
Feb	4		
March	9		
April	8		
May	37		
June	25		
Total	90	███████	360°

(c) Use your table to help you draw a pie-chart.

Don't forget a title and a key.

Key:

8) 120 pupils were asked what their favourite colour was.

Here are their answers to the survey.
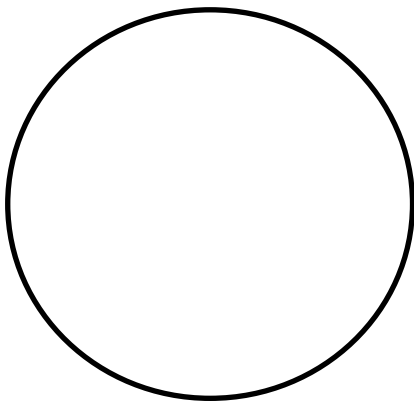
(a) Work out the angle for each pupil:

$$360° ÷ 120 = \text{_____} ° \text{ per pupil.}$$

(b) Fill in the table below:

Colour	Number of pupils	Working	Angle
Red	15		
Blue	10		
Yellow	35		
Green	50		
Other	10		
Total	120		360°

(c) Use your table to help you draw a pie-chart.

Don't forget a title and a key.

Key:

1.   The table shows the number of pages and the weight, in grams, for each of 10 books.

Number of pages	80	130	100	140	115	90	160	140	105	150
Weight (g)	160	270	180	290	230	180	320	270	210	300

(a)   Complete the scatter graph to show the information in the table.
       The first 6 points in the table have been plotted for you.
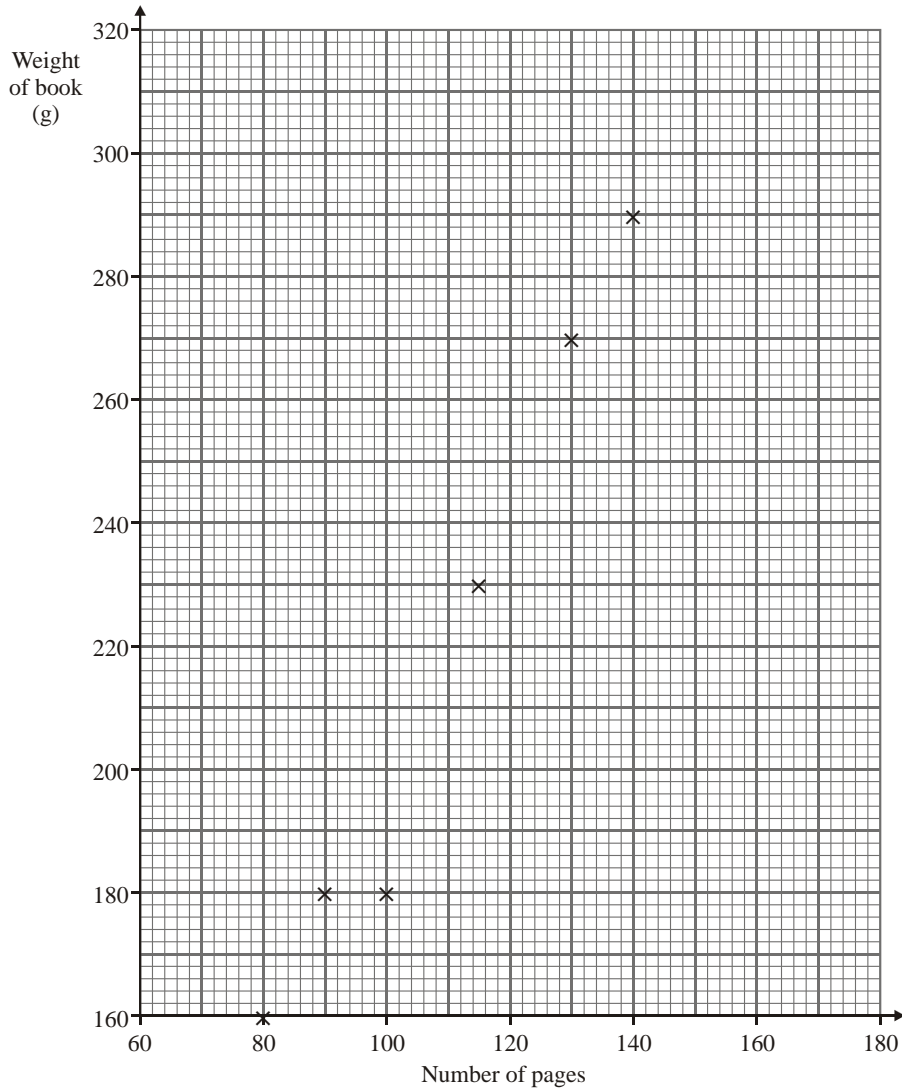
(b)   For these books, describe the relationship between the number of pages and the weight of a book.

(c)   Draw a line of best fit on the scatter diagram.

(d)   Use your line of best fit to estimate

   (i)   the number of pages in a book of weight 280 g,

   (ii)   the weight of a book with 120 pages.

2. Pablo is an artist.
The scatter graph, below, gives information about the area and the cost of some of his pictures.

The table shows the area and the cost of another three of his pictures.

Area (cm^2)	2000	2900	3260
Cost (£)	1150	1250	1500

(a) On the scatter graph below, plot the information from the table.

(b) Describe the relationship between the area of a picture and its cost.

(c) Draw a line of best fit on the scatter graph.

(d) Use your line of best fit to find an estimate of the cost of a picture with an area of 2500 cm^2.
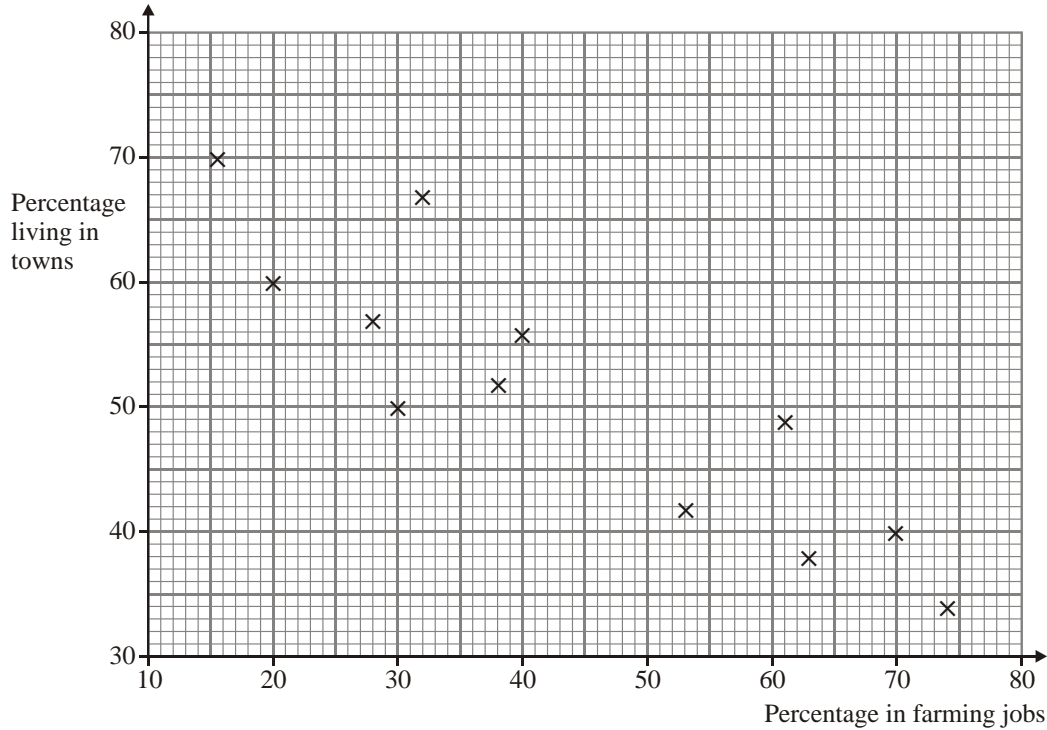
£...............................

All Pablo's pictures are rectangles.
One of his pictures costs £1000.
Its length is 48 cm.

(e) Use your line of best fit to find an estimate for the width of the picture

Cost (£)

Area (cm²)
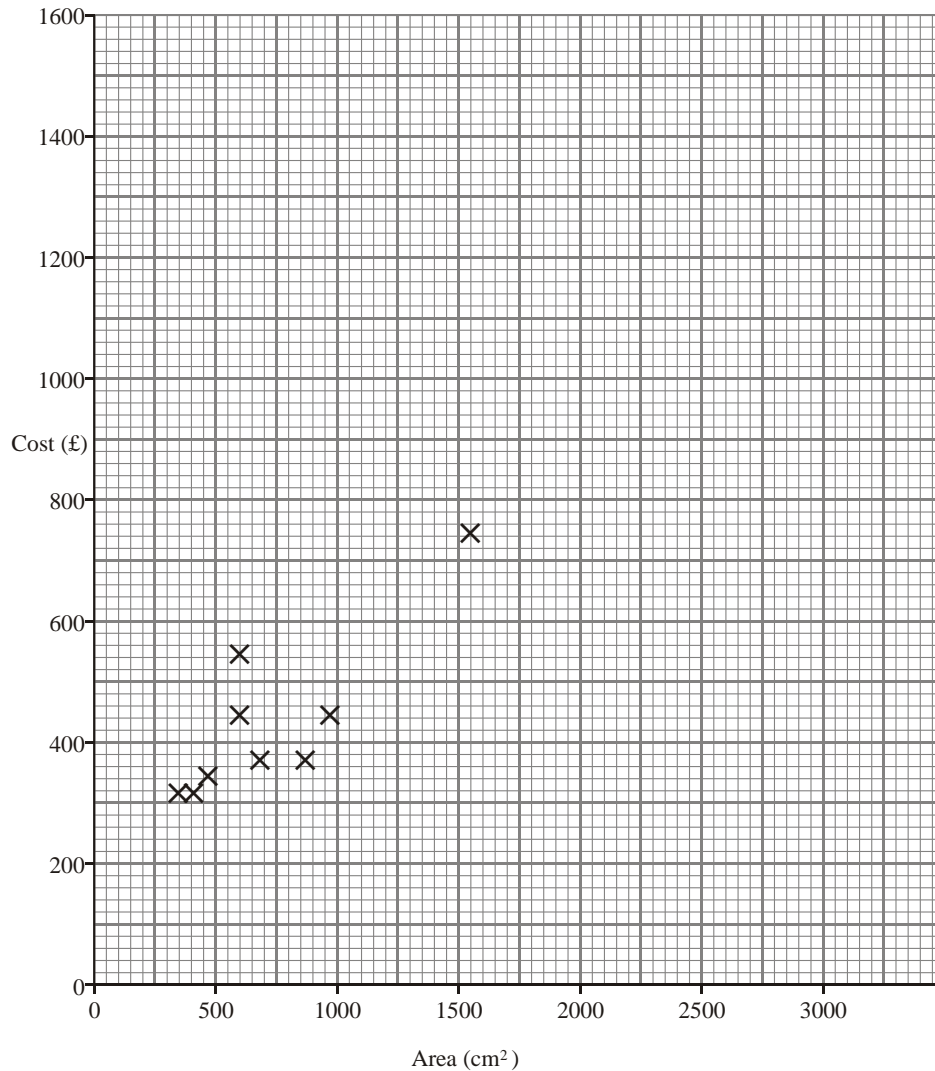
3. The scatter graph shows information about 12 countries.

For each country, it shows the percentage of the population in farming jobs and the percentage of the population living in towns.

(a) Describe the relationship between the percentage of the population in farming jobs and the percentage of the population living in towns.

(b) Draw the line of best fit on the scatter graph.

In Mathsland, the percentage of the population in farming jobs is 35%.

(c) Use your line of best fit to estimate the percentage of Mathsland's population living in towns.

You are the manager of a basketball team and the big championship match of the year is coming up. The owner has given you some money to buy a new player. A talent scout has found two possibilities and given you this information.

Which player will you choose?

Give good mathematical reasons why you choose this player. Remember if you lose the game and cannot justify your purchase you will be fired!

Player	Points Scored						Total
Bahr Sket Bolah	20	30	10	26	24	10	120
Scott Theball	55	0	2	3	5	55	120

The table shows information about the heights of 40 bushes.

Height (h cm)	Frequency
$170 \leq h < 175$	5
$175 \leq h < 180$	18
$180 \leq h < 185$	12
$185 \leq h < 190$	4
$190 \leq h < 195$	1

(a) Complete the cumulative frequency table.

Height (h cm)	Cumulative Frequency
$170 \leq h < 175$	
$170 \leq h < 180$	
$170 \leq h < 185$	
$170 \leq h < 190$	
$170 \leq h < 195$	

(b) On the grid, draw a cumulative frequency graph for your table.
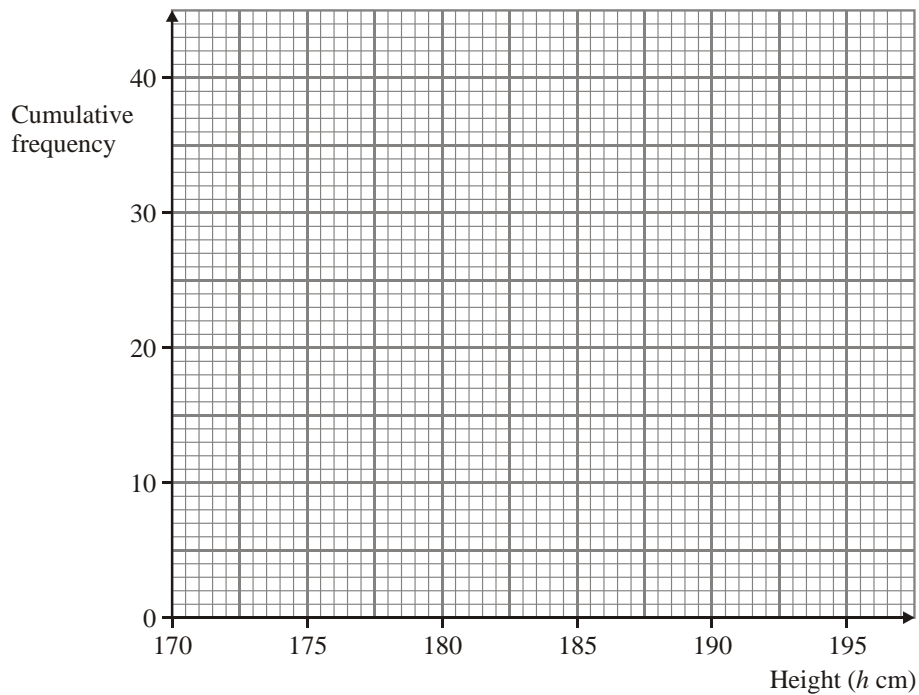
(c) Use the graph to find an estimate for the median height of the bushes.

o   Boxplots

The times, in seconds, taken by 11 teachers to solve a puzzle are listed in order

  4   12   13   17   18   20   22   24   25   30   34

(a)   Find

  (i)   the lower quartile

  (ii)   the interquartile range.

(b)   Draw a box plot for this data.

0   5   10   15   20   25   30   35

Time (seconds)