

## Representing data

# GCSE MATHS

Name: \_\_\_\_\_

Teacher: \_\_\_\_\_

### Learning objectives

By the end this pack you will be able to:





1. Construct bar charts
2. Construct Line graphs construct frequency polygons
3. Draw a scatter graph and find the line of best fit


**Q1.**

A car hire company wants to know if people are happy with their hire cars.

The company asks different people if they are happy with their hire cars.

The results for Monday, Tuesday, Wednesday and Thursday are shown in the pictogram.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:  4 happy people
---

(a) How many people were happy with their hire cars on Tuesday?

.....  
(1)

(b) How many people were happy with their hire cars on Wednesday?

.....  
(1)

On Friday 7 people are happy with their hire cars.

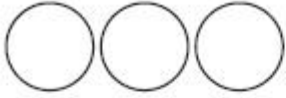


(c) Complete the pictogram for Friday.


(1)

**(Total for Question is 3 marks)**

**Q2.**

The pictogram shows the number of DVDs sold in a shop on Monday, on Tuesday and on Wednesday last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key: 
represents 8 DVDs

(a) Write down the number of DVDs sold on Monday.

.....

(1)

(b) Write down the number of DVDs sold on Wednesday.

.....

(1)

16 DVDs were sold on Thursday.

28 DVDs were sold on Friday.

(c) Use this information to complete the pictogram.

(2)

**(Total for Question is 4 marks)**

**Q3.**

The pictogram shows the number of tins of dog food sold in a shop on Monday, on Tuesday and on Wednesday last week.

Monday	○ ○ ○
Tuesday	○ ○ ○ ○ ◐
Wednesday	○ ○ ◐
Thursday	
Friday	

Key: ○ represents 10 tins
------------------------------

On Thursday, 60 tins of dog food were sold in the shop.  
On Friday, 35 tins of dog food were sold in the shop.

(a) Use this information to complete the pictogram.

(2)

More tins of dog food were sold on Tuesday than on Monday.

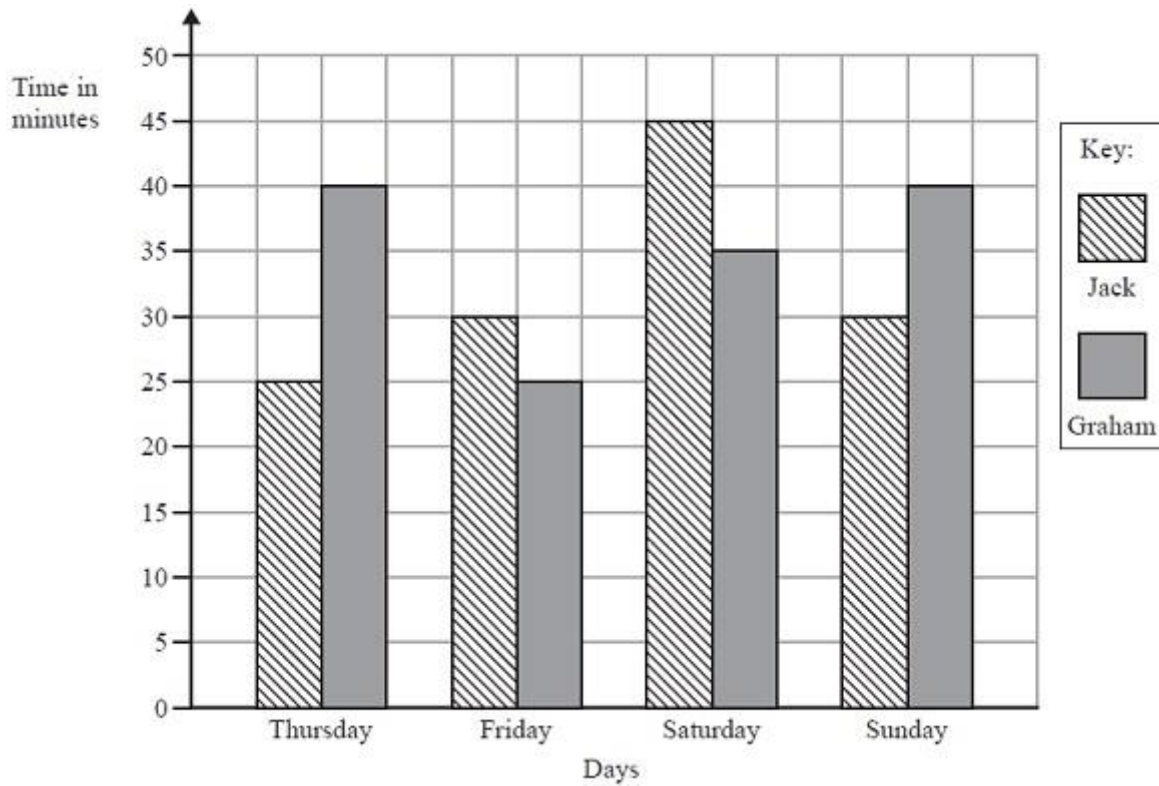
(b) How many more tins?

.....  
(2)

**(Total for Question is 4 marks)**

**Q4.**

Jack and Graham each recorded the time, in minutes, they each spent sending messages on Thursday, on Friday, on Saturday and on Sunday last week.



(a) How many minutes did Graham spend sending messages on Saturday?

..... minutes  
(1)

(b) On which day did Jack spend exactly 25 minutes sending messages?

..... minutes  
(1)

\*(c) Who spent the greater total time sending messages?

You must show your working.

(3)  
(Total for Question is 5 marks)

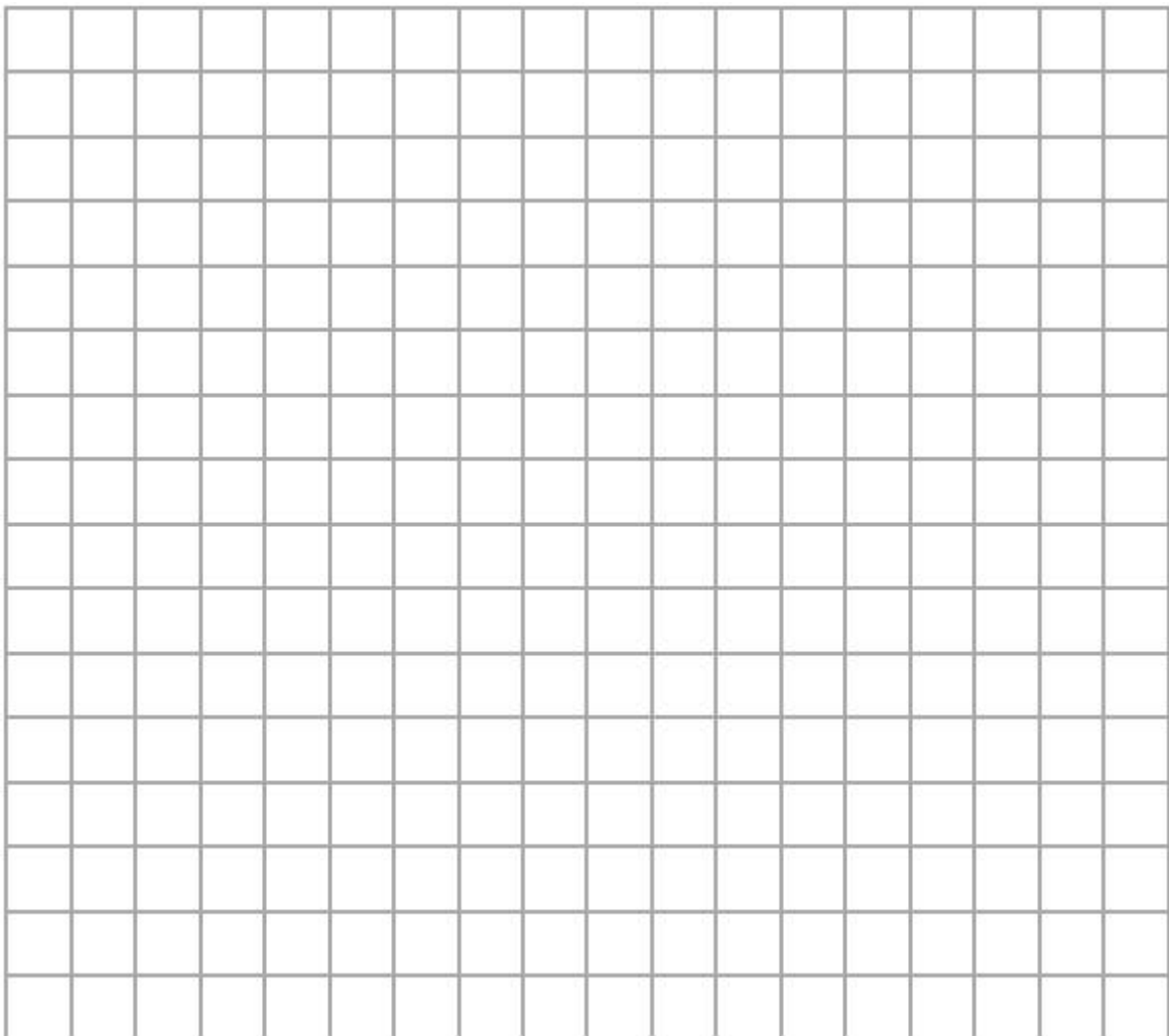
**Q5.**

\*The table shows information about the average daily hours of sunshine in Majorca and in Crete for each of five months.

	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>
<b>Majorca</b>	9	9	11	11	10
<b>Crete</b>	6	8	11	13	12

Simon wants to compare this information.

On the grid, draw a suitable diagram or chart.



**(Total for Question is 4 marks)**

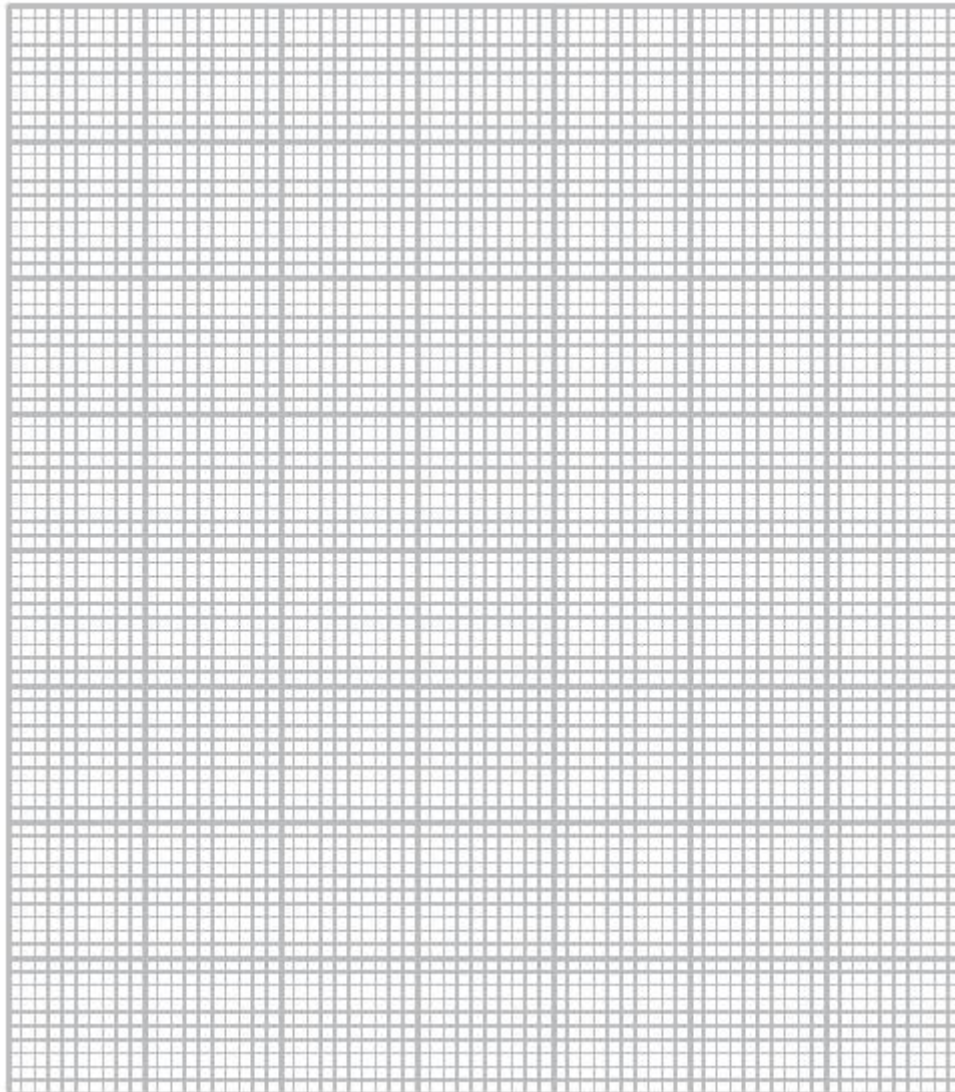
**Q6.**

\* Kitty and George sell cars.

The table shows the numbers of cars sold by Kitty and by George in the first four months of 2013

	January	February	March	April
Kitty	2	5	13	10
George	4	7	9	10

Show this information in a suitable diagram.



**(Total for Question is 4 marks)**



**Q7.**

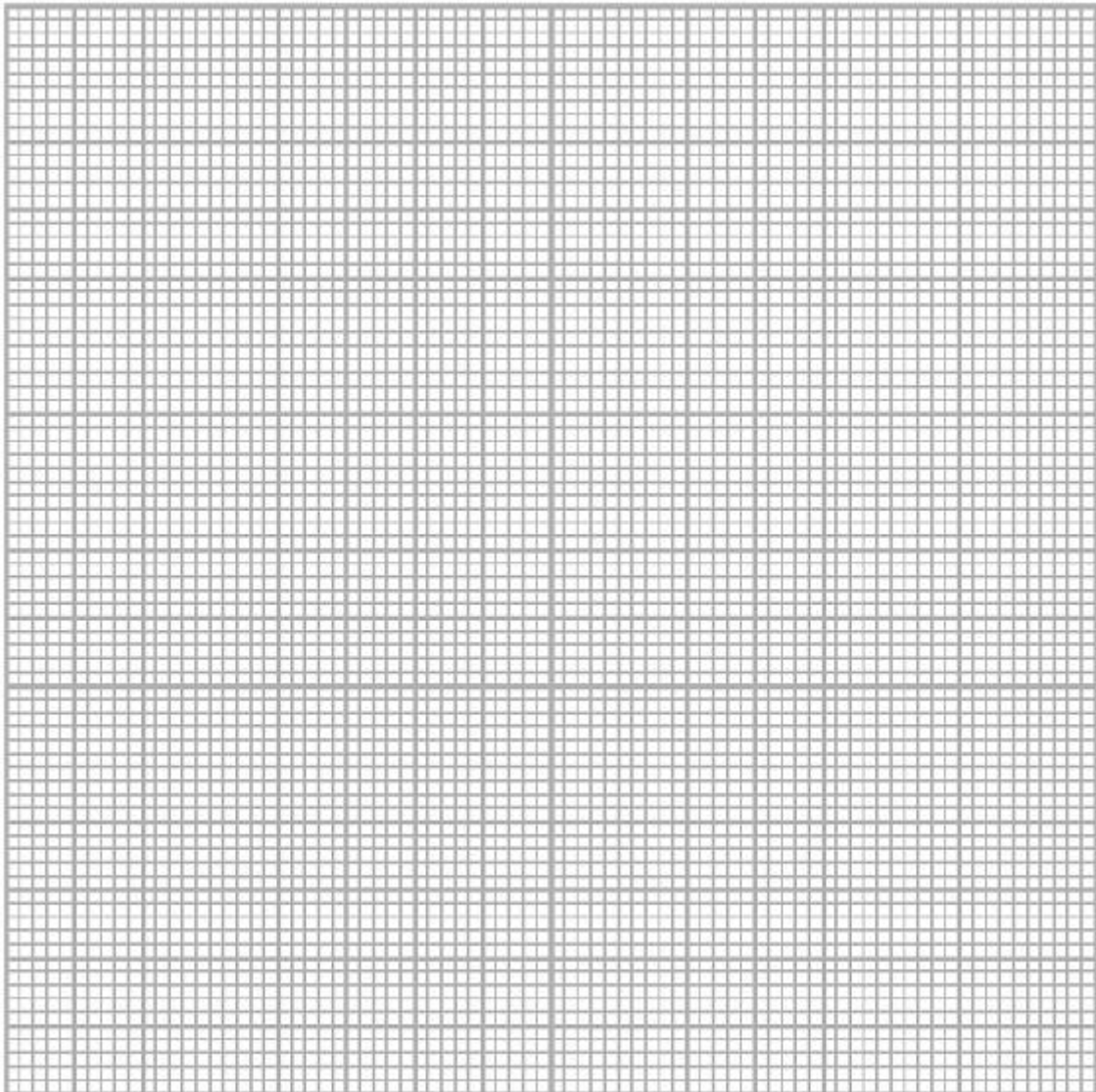
\* Lev counts the number of bicycles and the number of motorbikes he sees on each of five mornings.

The table shows his results.

	Monday	Tuesday	Wednesday	Thursday	Friday
Bicycles	10	12	12	13	8
Motorbikes	5	4	7	2	6

Lev wants to compare this information.

On the grid, draw a suitable chart or diagram.



**(Total for Question is 4 marks)**



**Q8.**

The table gives information about the temperature,  $T$  °C, at noon in a town for 50 days.

Temperature ( $T$ °C)	Frequency
$8 < T \leq 12$	6
$12 < T \leq 16$	8
$16 < T \leq 20$	13
$20 < T \leq 24$	21
$24 < T \leq 28$	2

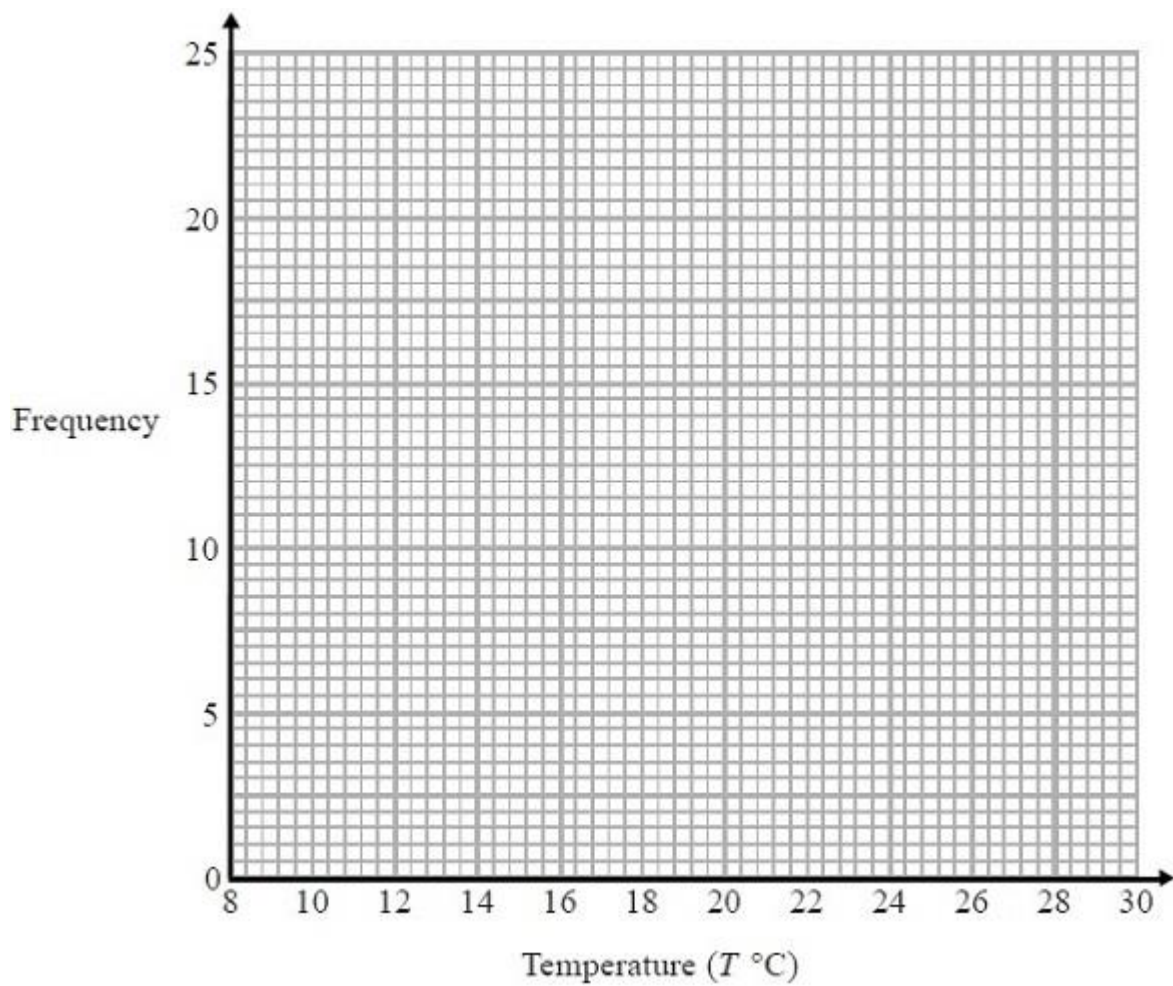
(a) Write down the modal class interval.

.....  
(1)

(b) Calculate an estimate for the mean temperature.

..... °C  
(4)

(c) Draw a frequency polygon for the information in the table.



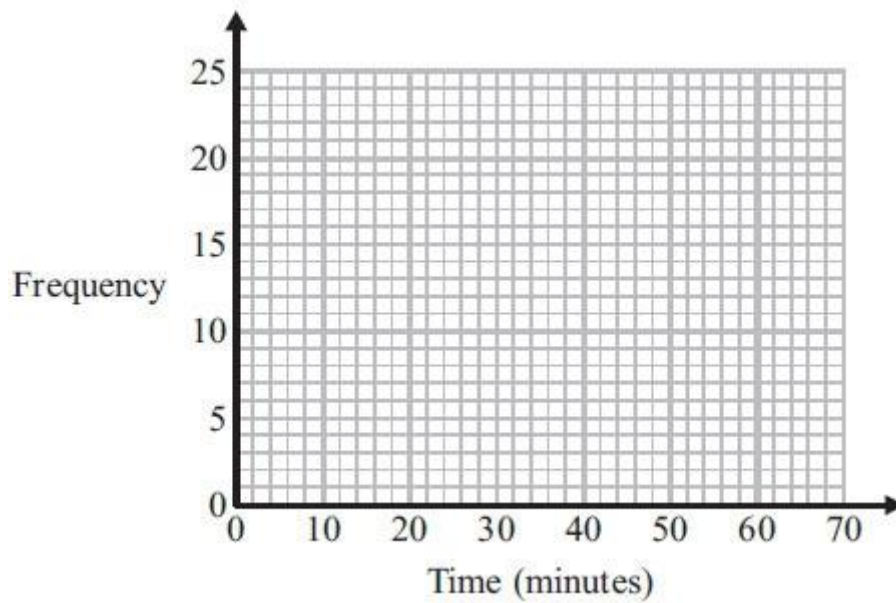
(2)  
(Total for Question is 7 marks)

Q9.

The frequency table gives information about the times it took some office workers to get to the office one day.

Time ( $t$ minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	8
$20 < t \leq 30$	14
$30 < t \leq 40$	16
$40 < t \leq 50$	6
$50 < t \leq 60$	2

(a) Draw a frequency polygon for this information.



(2)

(b) Write down the modal class interval.

.....  
(1)

One of the office workers is chosen at random.

(c) Work out the probability that this office worker took more than 40 minutes to get to the office.

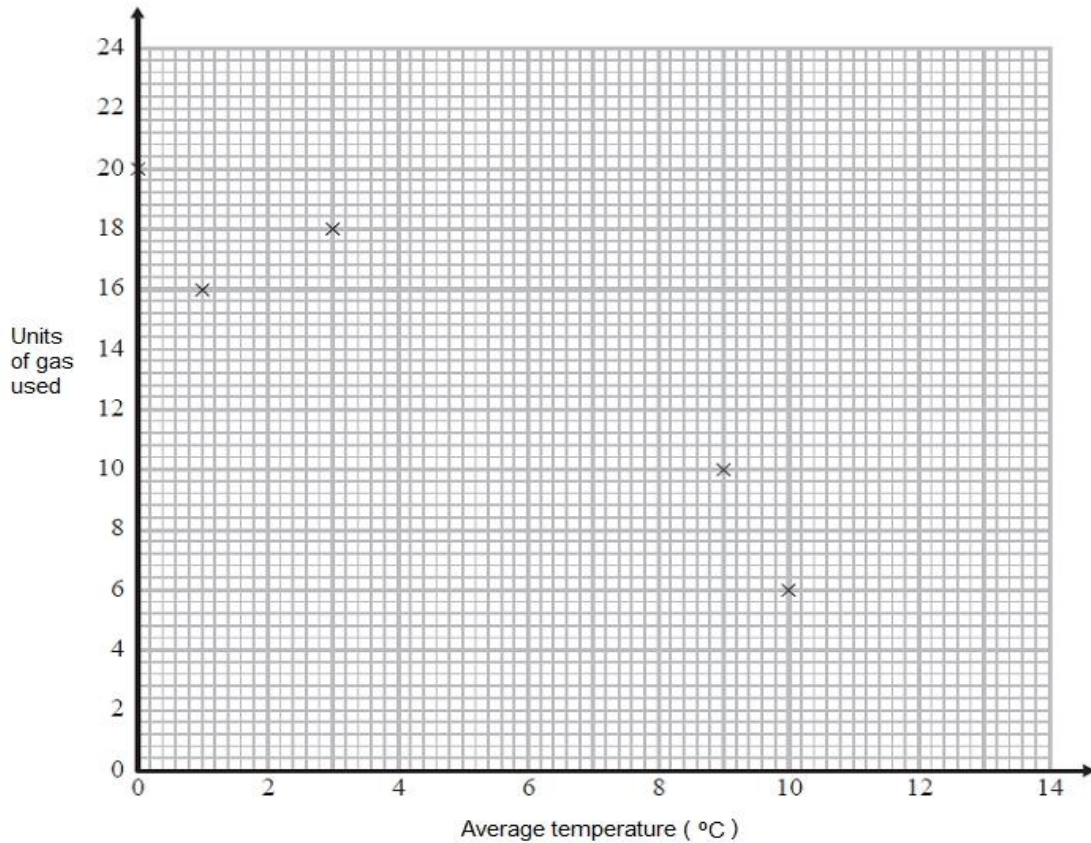
.....  
(2)

**(Total for Question is 5 marks)**

**Q10.**

The table shows the average temperature on each of seven days and the number of units of gas used to heat a house on these days.

Average temperature ( °C )	0	1	3	9	10	12	13
Units of gas used	20	16	18	10	6	6	2



(a) Complete the scatter graph to show the information in the table. The first 5 points have been plotted for you.

(1)

(b) Describe the relationship between the average temperature and the number of units of gas used.

.....  
 .....

(1)

(c) Estimate the average temperature on a day when 12 units of gas are used.

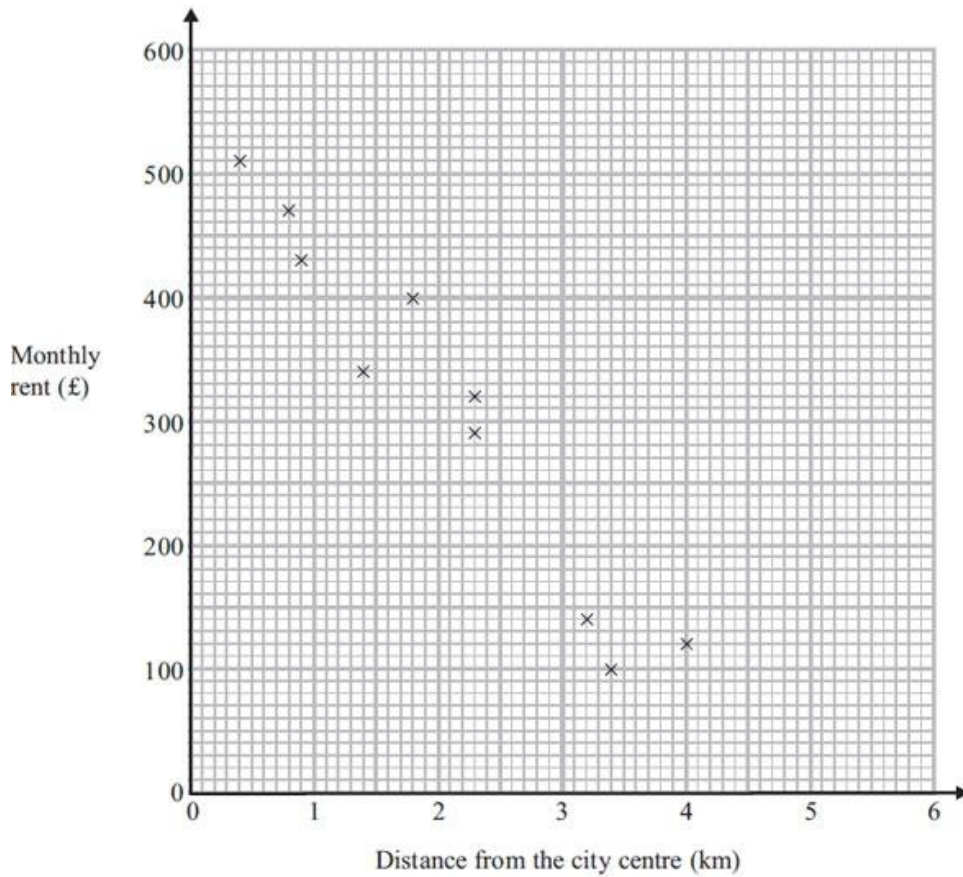
..... °C  
 (2)

**(Total for Question is 4 marks)**

**Q11.**

The scatter graph shows information about 10 apartments in a city.

The graph shows the distance from the city centre and the monthly rent of each apartment.



The table shows the distance from the city centre and the monthly rent for two other apartments.

<b>Distance from the city centre (km)</b>	2	3.1
<b>Monthly rent (£)</b>	250	190

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

(1)

(b) Describe the relationship between the distance from the city centre and the monthly rent.

.....  
 .....

(1)

An apartment is 2.8 km from the city centre.

(c) Find an estimate for the monthly rent for this apartment.

.....

(2)

**(Total for Question is 4 marks)**

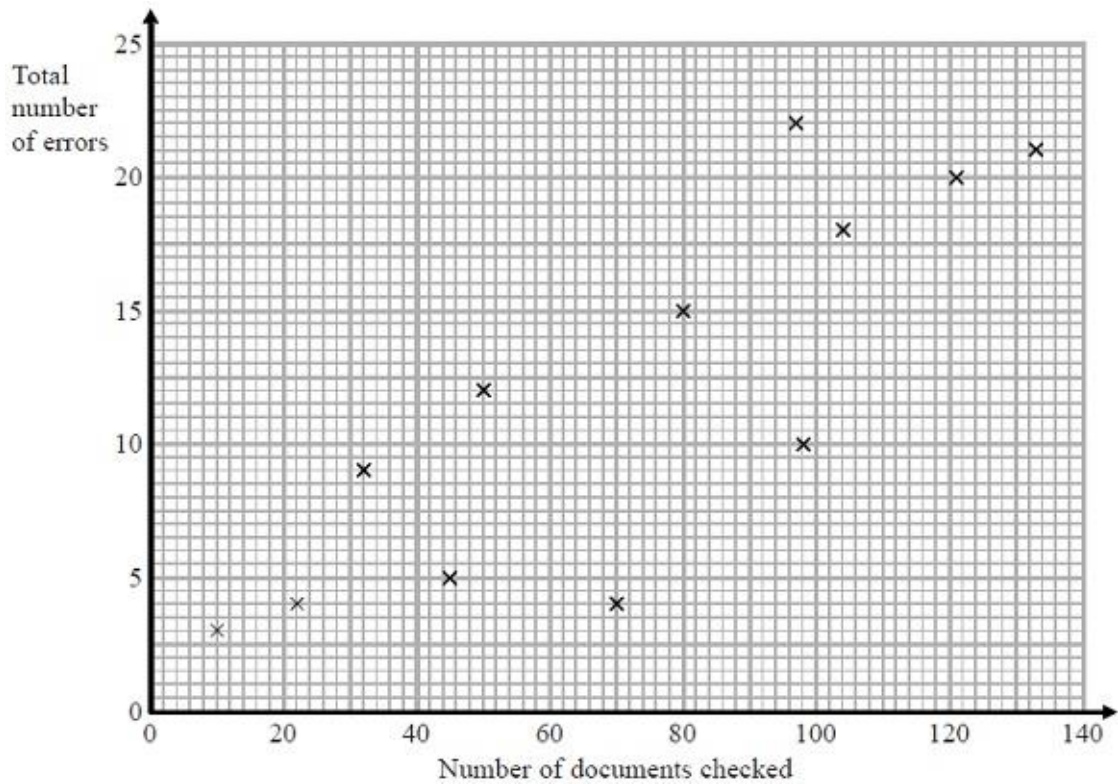
**Q12.**

A publisher checks documents for errors.

He records the number of documents that are checked each day.

He also records the total number of errors in the documents each day.

The scatter graph shows this information.



On another day 90 documents are checked.

There is a total of 17 errors.

(a) Show this information on the scatter graph.

(1)

(b) Describe the correlation between the number of documents checked and the total number of errors.

.....  
(1)

One day 110 documents are checked.

(c) Estimate the total number of errors in these documents.

.....  
(2)

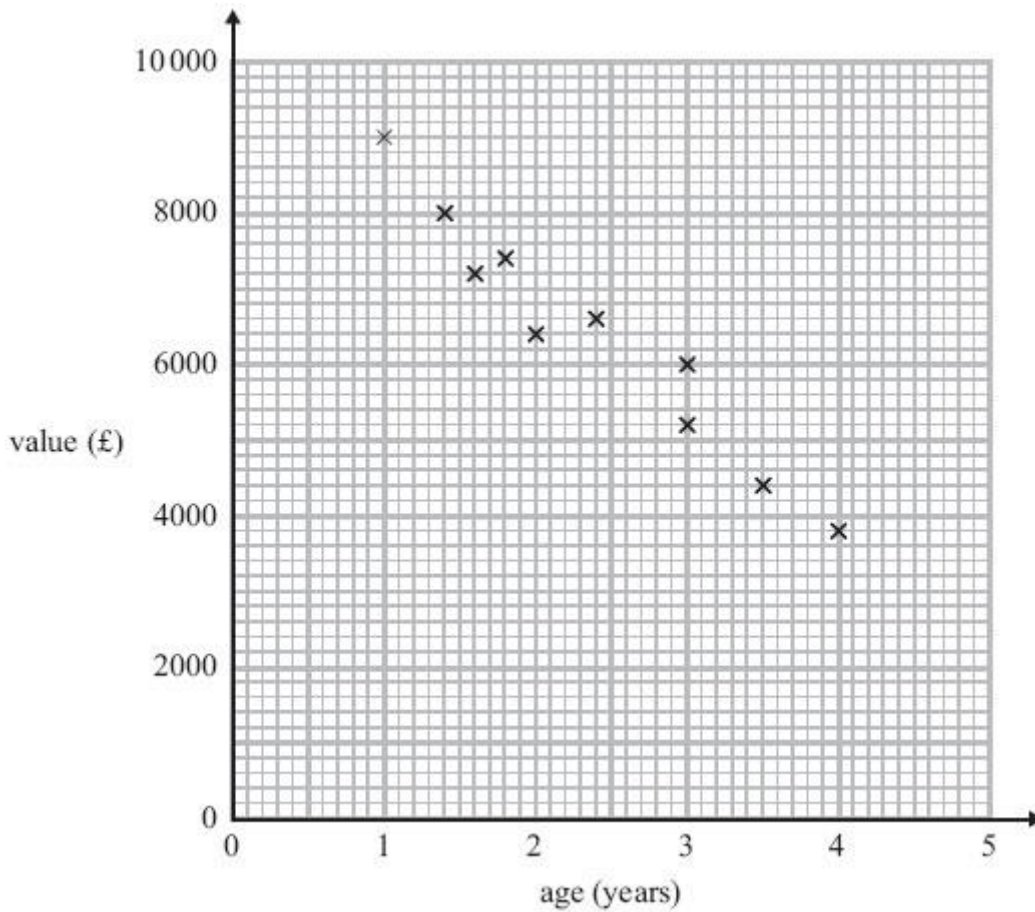
**(Total for Question is 4 marks)**



**Q13.**

The scatter graph shows some information about 10 cars, of the same type and make.

The graph shows the age (years) and the value (£) of each car.



The table shows the age and the value of two other cars of the same type and make.

<b>age (years)</b>	1	3.5
<b>value (£)</b>	8200	5000

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

(1)

(b) Describe the relationship between the age and the value of the cars.

.....  
 .....

(1)

A car of the same type and make is  $2\frac{1}{2}$  years old.

(c) Estimate the value of the car.

.....

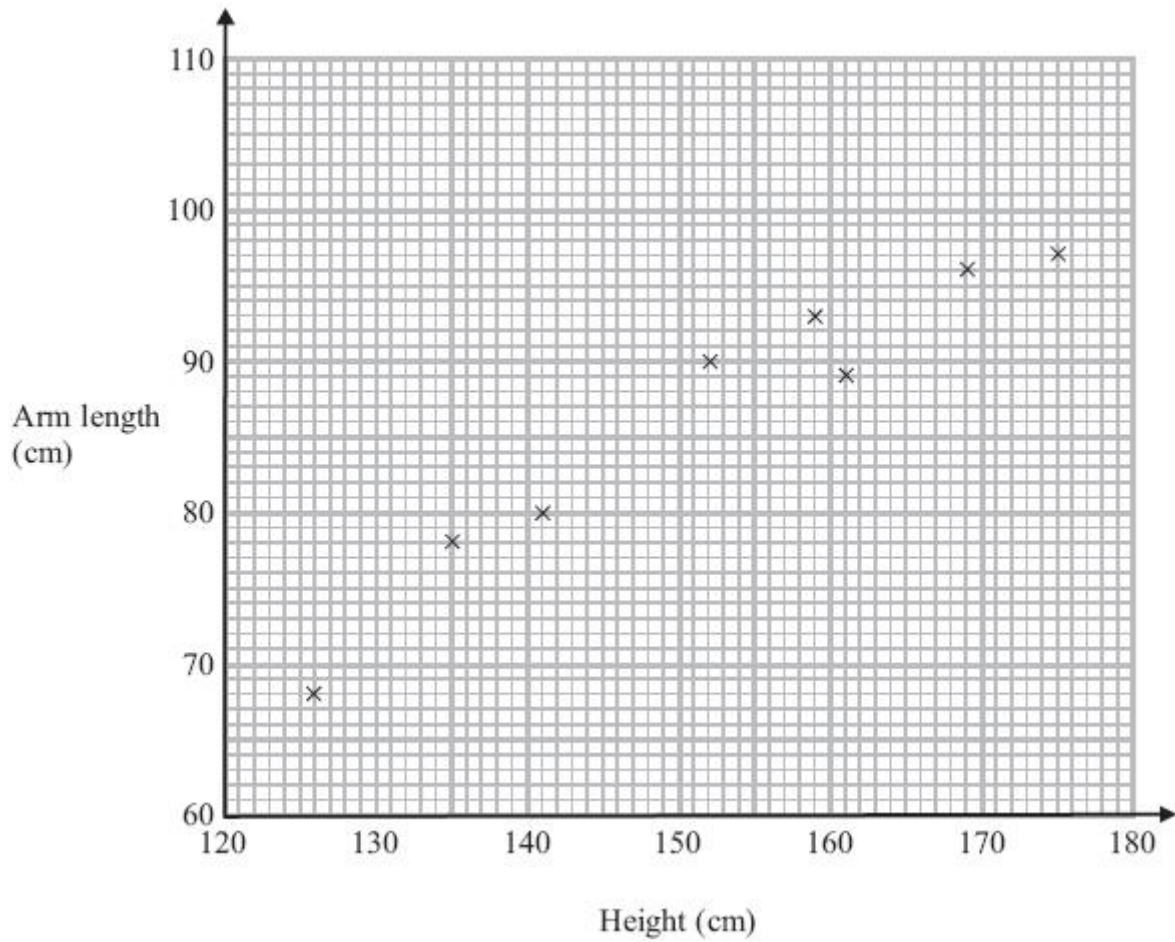
(2)

**(Total for Question is 4 marks)**



**Q14.**

The scatter graph shows information about the height and the arm length of each of 8 students in Year 11



(a) What type of correlation does this scatter graph show?

.....  
.....  
(1)

A different student in Year 11 has a height of 148 cm.

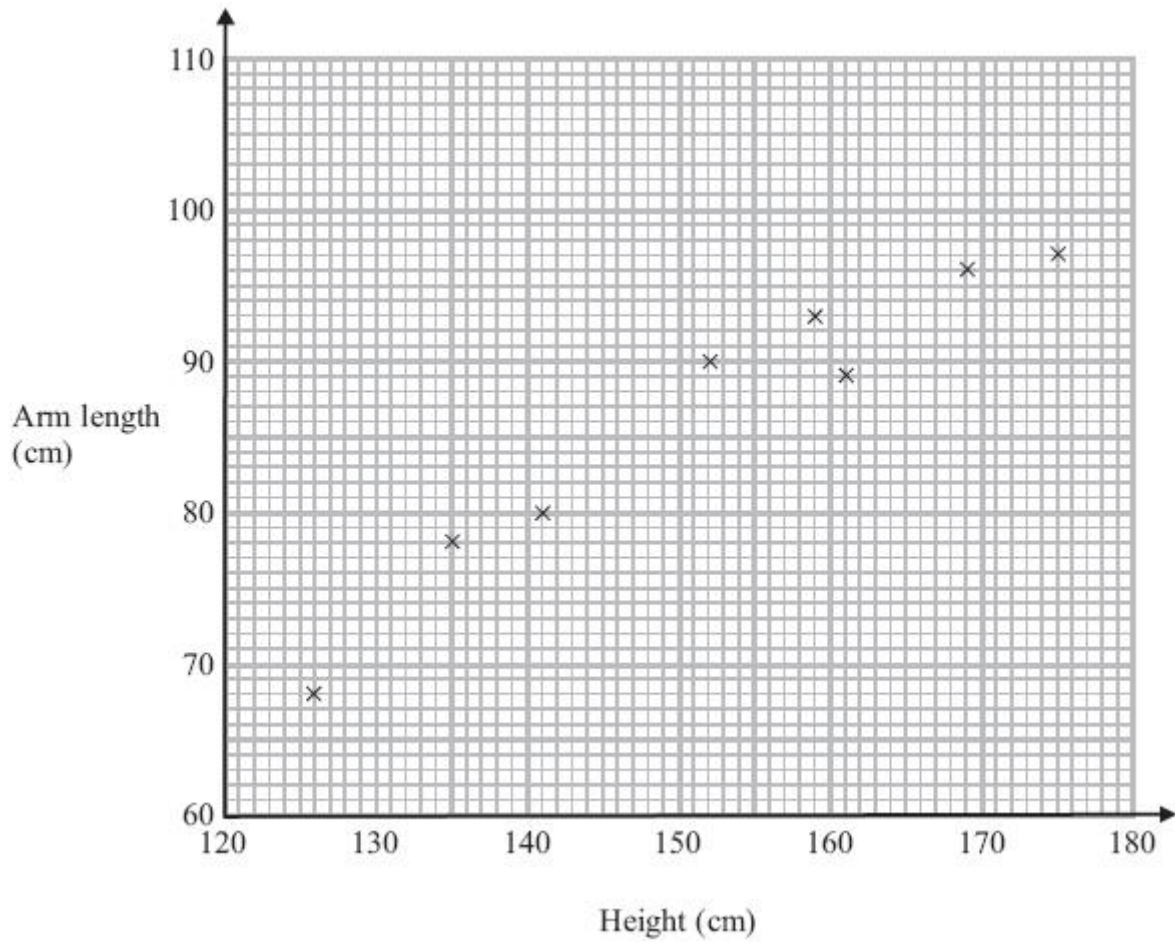
(b) Estimate the arm length of this student.

.....cm  
(2)

**(Total for Question is 3 marks)**

**Q15.**

The scatter graph shows information about the height and the arm length of each of 8 students in Year 11



(a) What type of correlation does this scatter graph show?

.....  
(1)

A different student in Year 11 has a height of 148 cm.

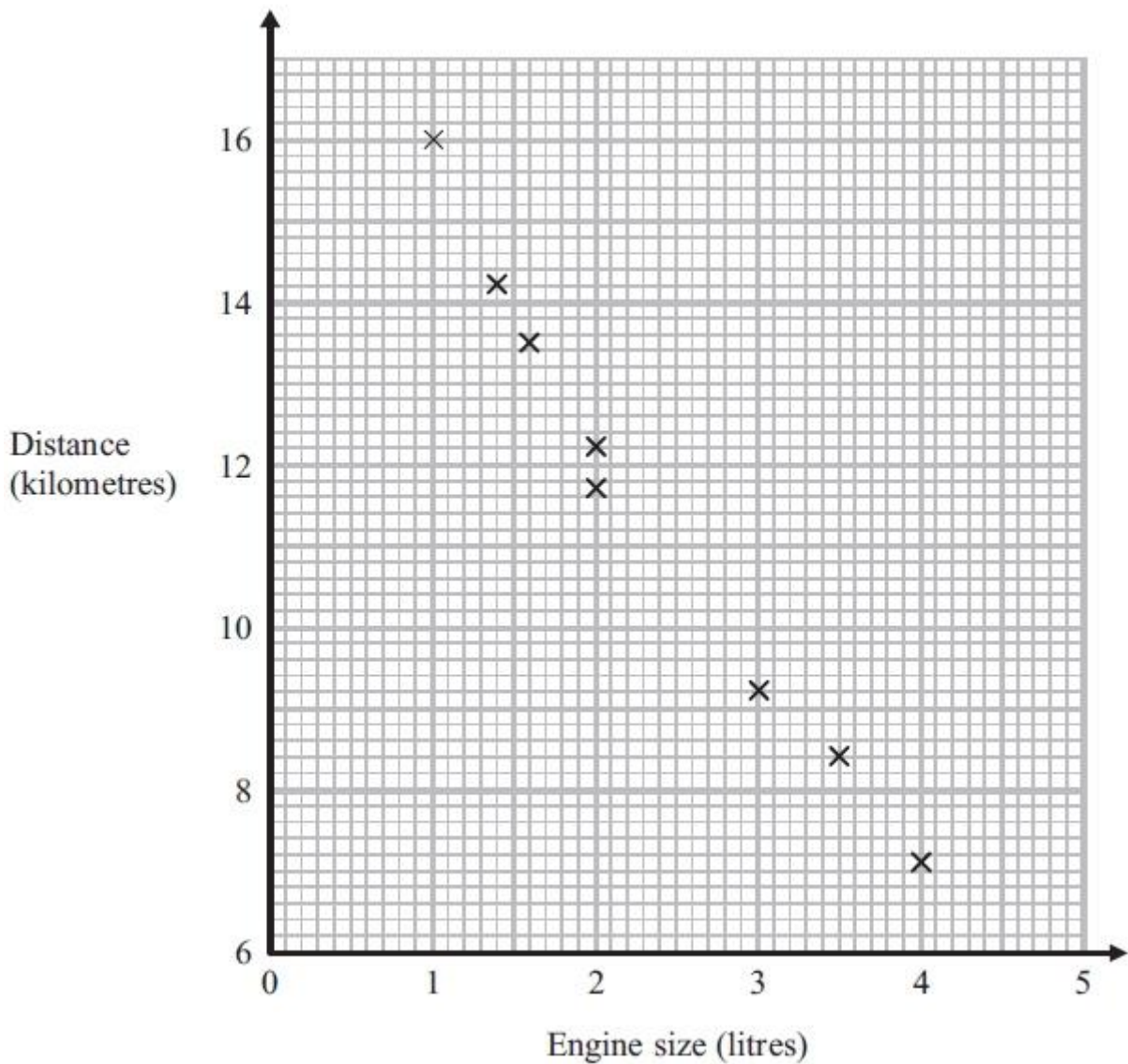
(b) Estimate the arm length of this student.

.....cm  
(2)

**(Total for Question is 3 marks)**

**Q16.**

The scatter graph shows some information about 8 cars.  
For each car it shows the engine size, in litres, and the distance, in kilometres, the car travels on one litre of petrol.



(a) What type of correlation does the scatter graph show?

.....

(1)

A different car of the same type has an engine size of 2.5 litres.

(b) Estimate the distance travelled on one litre of petrol by this car.

..... kilometres

(2)

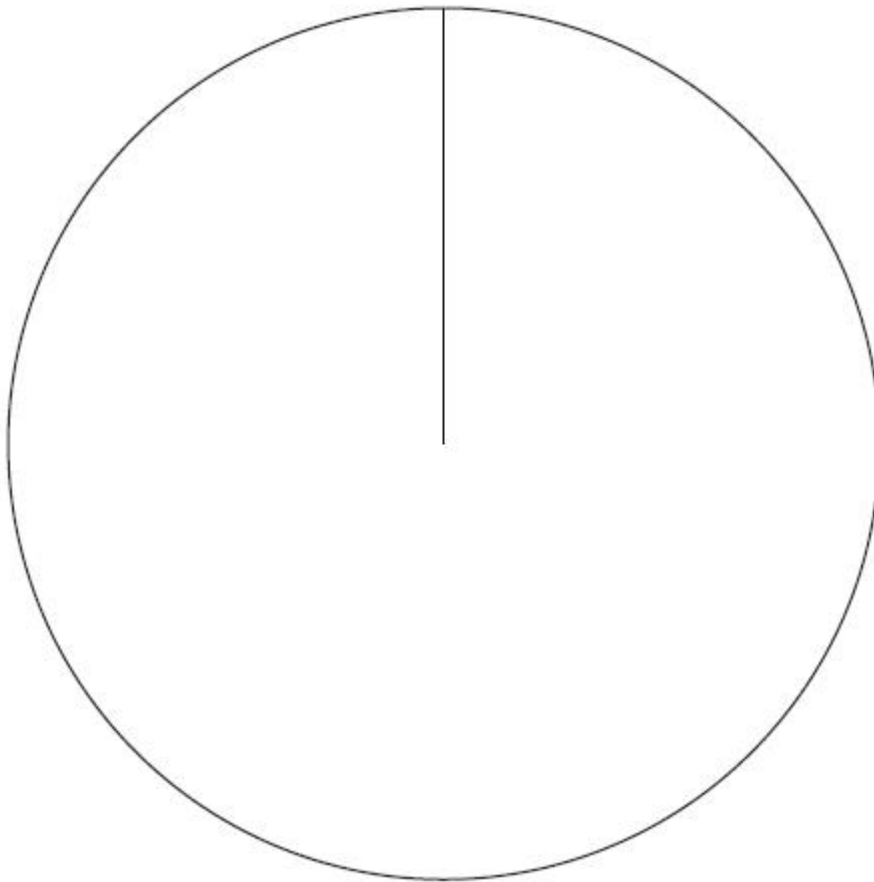
**(Total for Question is 3 marks)**

**Q17.**

The table gives information about the results of the matches a football team played.

<b>Result</b>	<b>Frequency</b>	
Won	28	
Drawn	12	
Lost	20	

Draw an accurate pie chart to show this information.

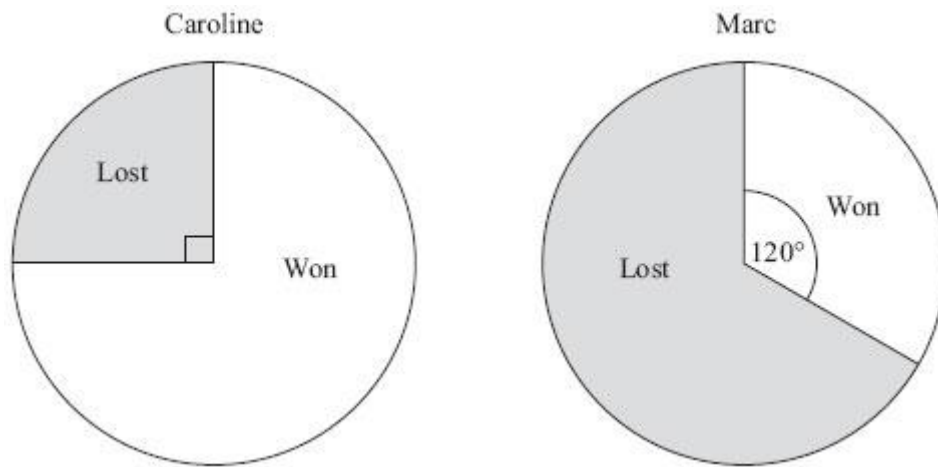


**(Total for Question is 4 marks)**

**Q18.**

Caroline and Marc are in a darts team.

The pie charts show information about the number of games Caroline and Marc each won last year. They also show information about the number of games Caroline and Marc each lost last year.



Caroline played 52 games.

Marc played 150 games.

Marc won more games than Caroline.

How many more?

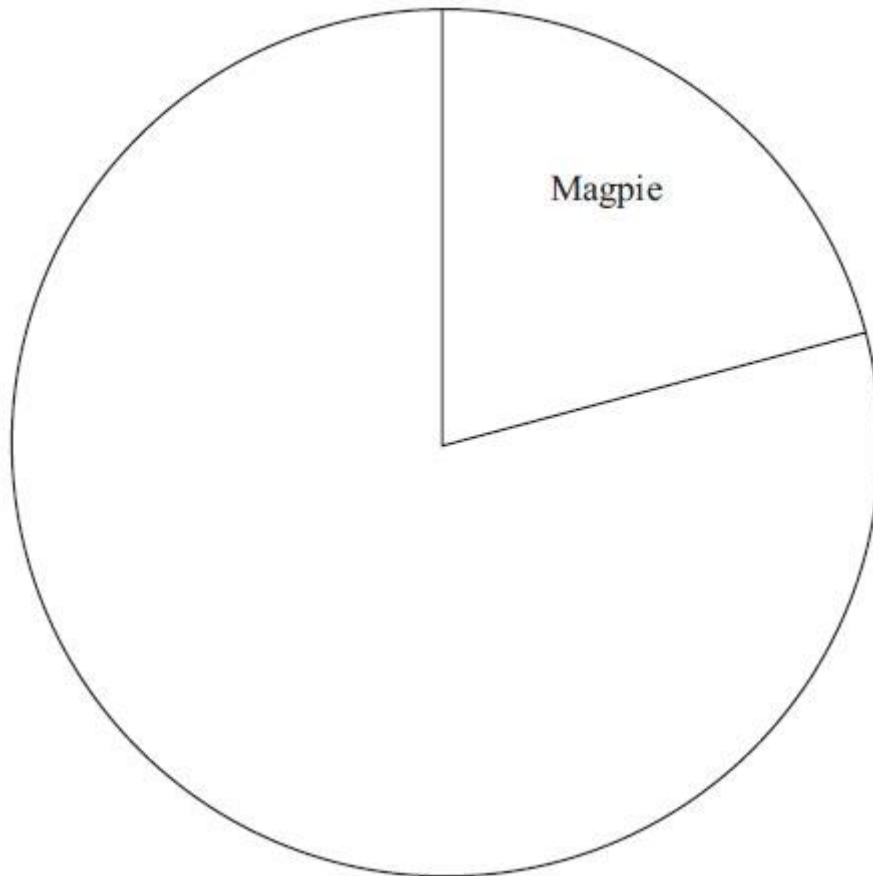
.....  
**(Total for Question is 3 marks)**

**Q19.**

The table gives some information about the birds Paula sees in her garden one day.

<b>Bird</b>	<b>Frequency</b>
Magpie	15
Thrush	10
Starling	20
Sparrow	27

Complete the accurate pie chart.

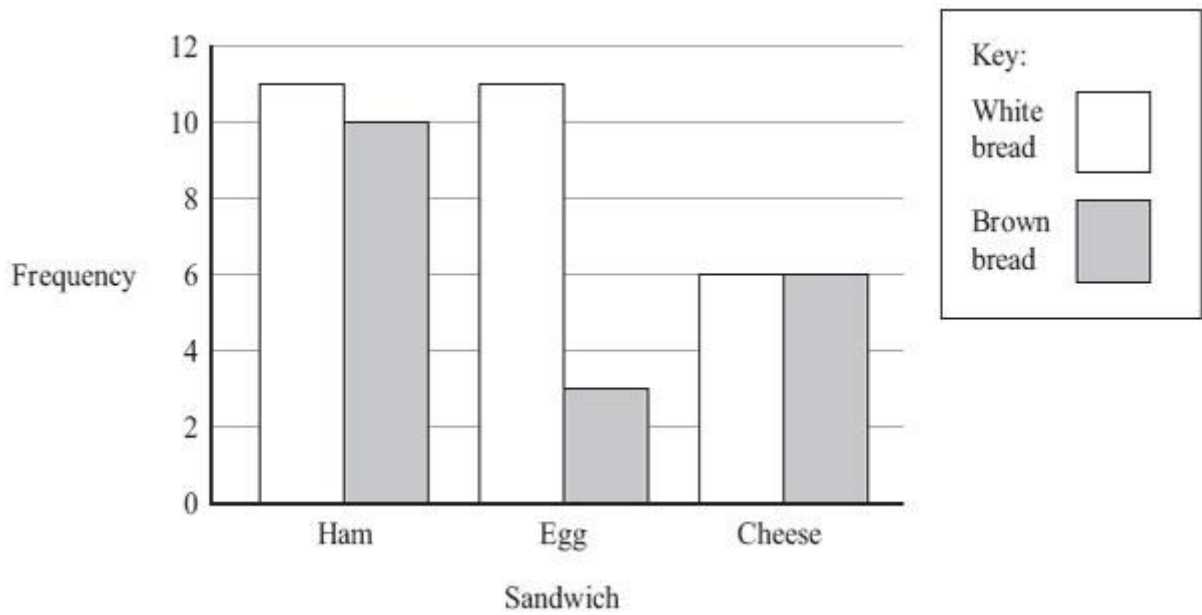


**(Total for Question is 3 marks)**

**Q20.**

Ann works in a sandwich shop.

The dual bar chart shows information about the sandwiches sold.



(a) Write down the total number of cheese sandwiches sold.

.....  
(1)

More white bread sandwiches were sold than brown bread sandwiches.

(b) Work out how many more white bread sandwiches.

.....  
(2)

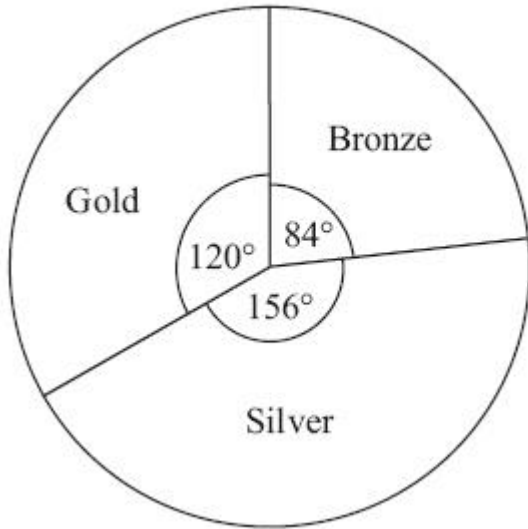
**(Total for Question is 3 marks)**



**Q21.**

The pie charts show some information about the numbers of medals won by Germany and by the Russian Federation in the 2010 Winter Olympics.

Medals won by Germany



Medals won by the Russian Federation



Germany won 7 bronze medals.

(a) How many gold medals did Germany win?

.....

(2)

(b) Graham says,  
 'The pie charts show that Germany won more gold medals than the Russian Federation'.  
 Is Graham right? .....  
 You must explain your answer.

.....

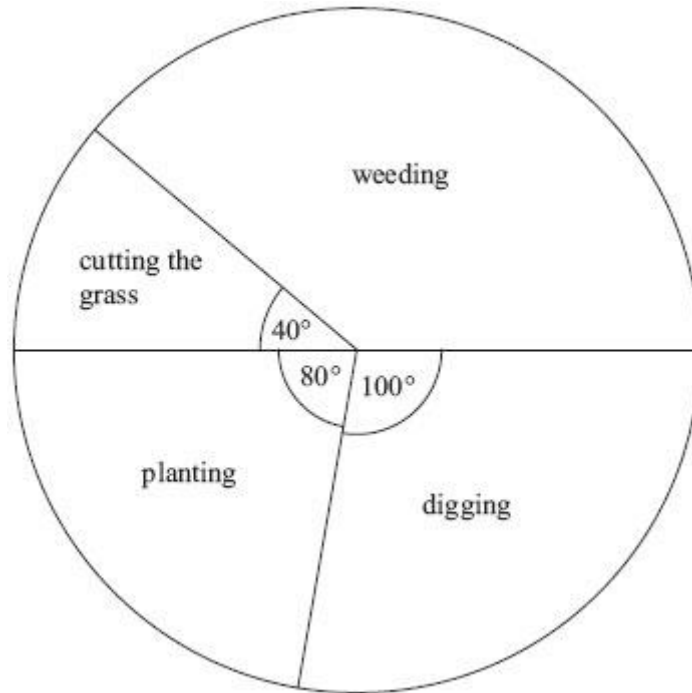
.....

(1)

**(Total for Question is 3 marks)**

**Q22.**

The pie chart shows some information about the time Gill spent working in her garden one month.



(a) What fraction of the time did Gill spend cutting the grass?

.....

(1)

Gill spent 7 hours weeding.

(b) How much time did Gill spend planting?

.....

(3)

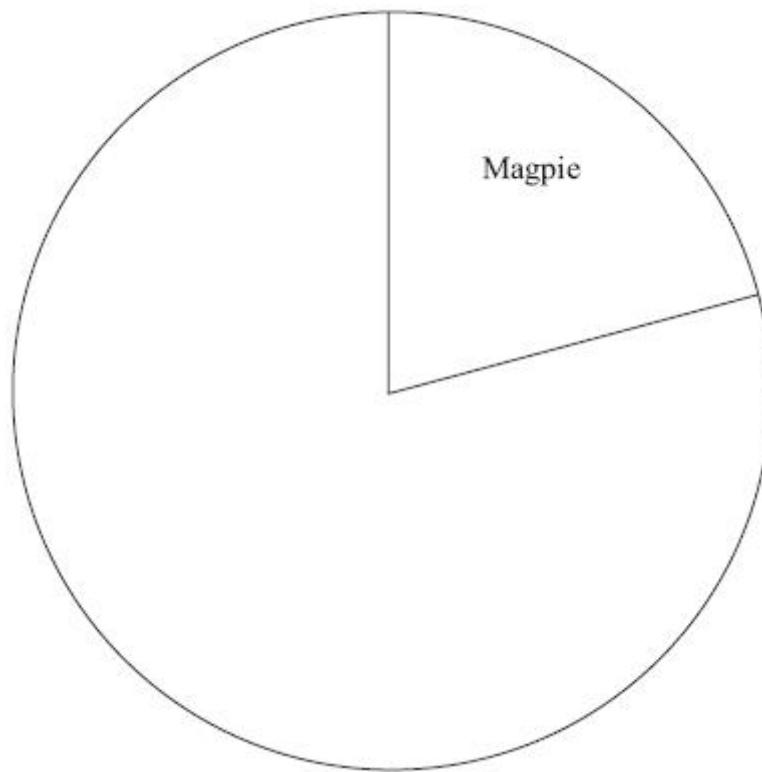
**(Total for Question is 4 marks)**

**Q23.**

The table gives some information about the birds Paula sees in her garden one day.

<b>Bird</b>	<b>Frequency</b>
Magpie	15
Thrush	10
Starling	20
Sparrow	27

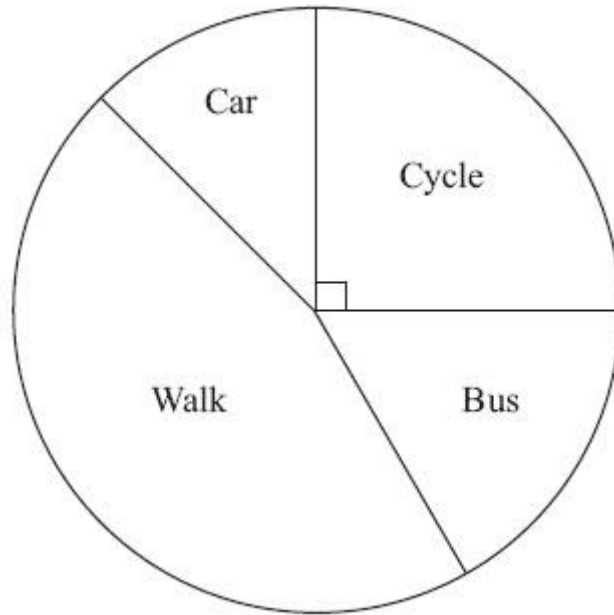
Complete the accurate pie chart.



**(Total for Question is 3 marks)**

**Q24.**

Harry asked each student in his class how they travelled to school that day. He used the results to draw this pie chart.



(a) How did most of the students travel to school?

.....  
(1)

Harry asked a total of 24 students.

(b) Work out the number of students who cycled to school.

.....  
(2)

**(Total for Question is 3 marks)**