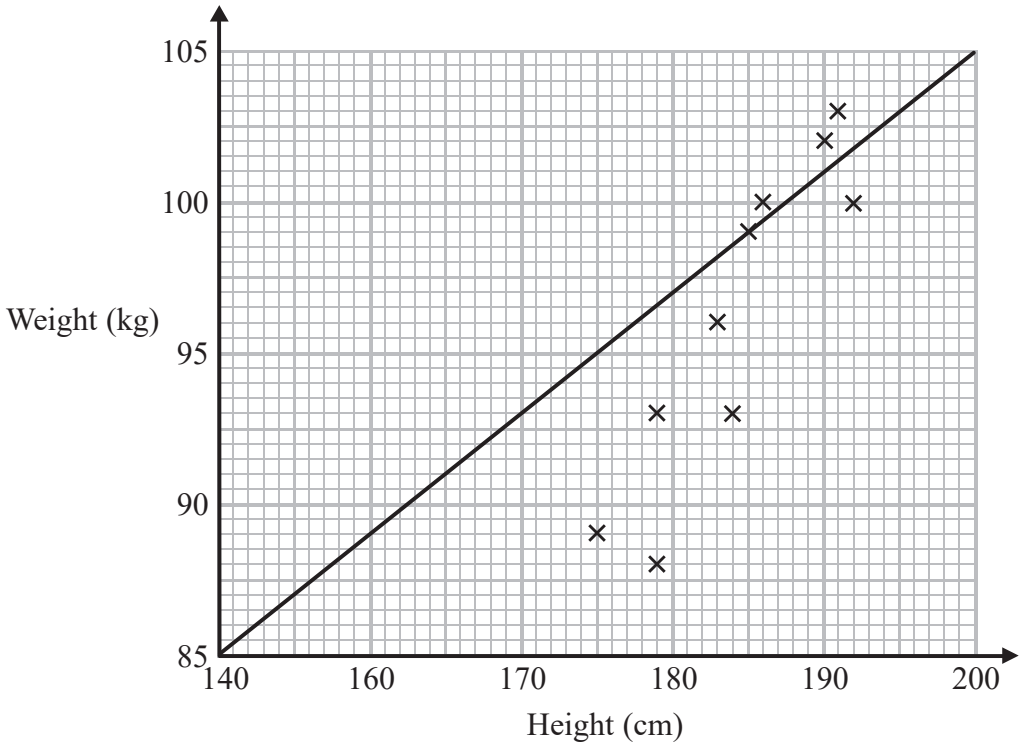
1 Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players.

He is asked to draw a scatter graph and a line of best fit for this information.

Here is his answer.



Sean has plotted the points accurately.

Write down two things that are wrong with his answer.

1 .....

.....

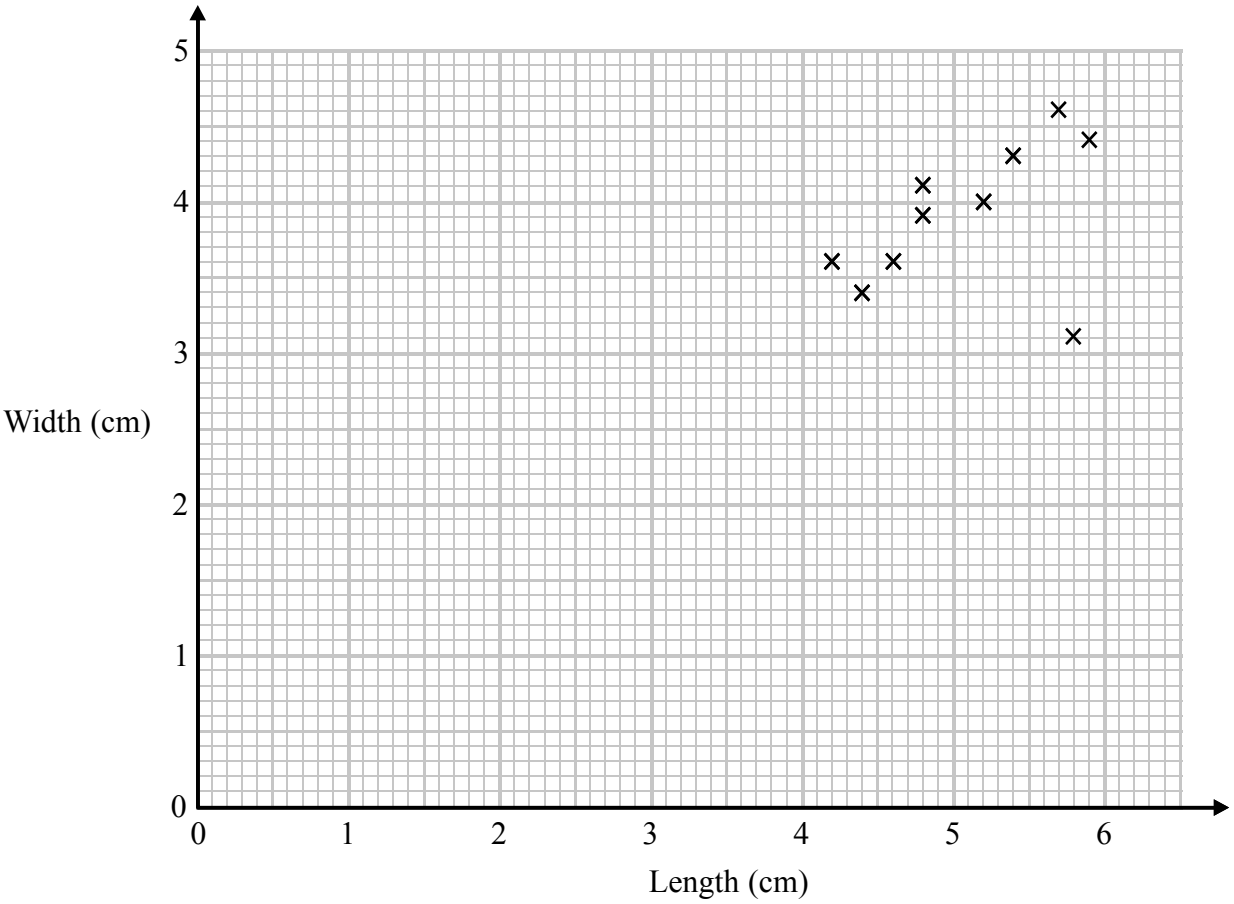
2 .....

.....

(Total for Question 1 is 2 marks)

2 Katie measured the length and the width of each of 10 pine cones from the same tree.

She used her results to draw this scatter graph.



(a) Describe one improvement Katie can make to her scatter graph.

.....

.....

(1)

The point representing the results for one of the pine cones is an outlier.

(b) Explain how the results for this pine cone differ from the results for the other pine cones.

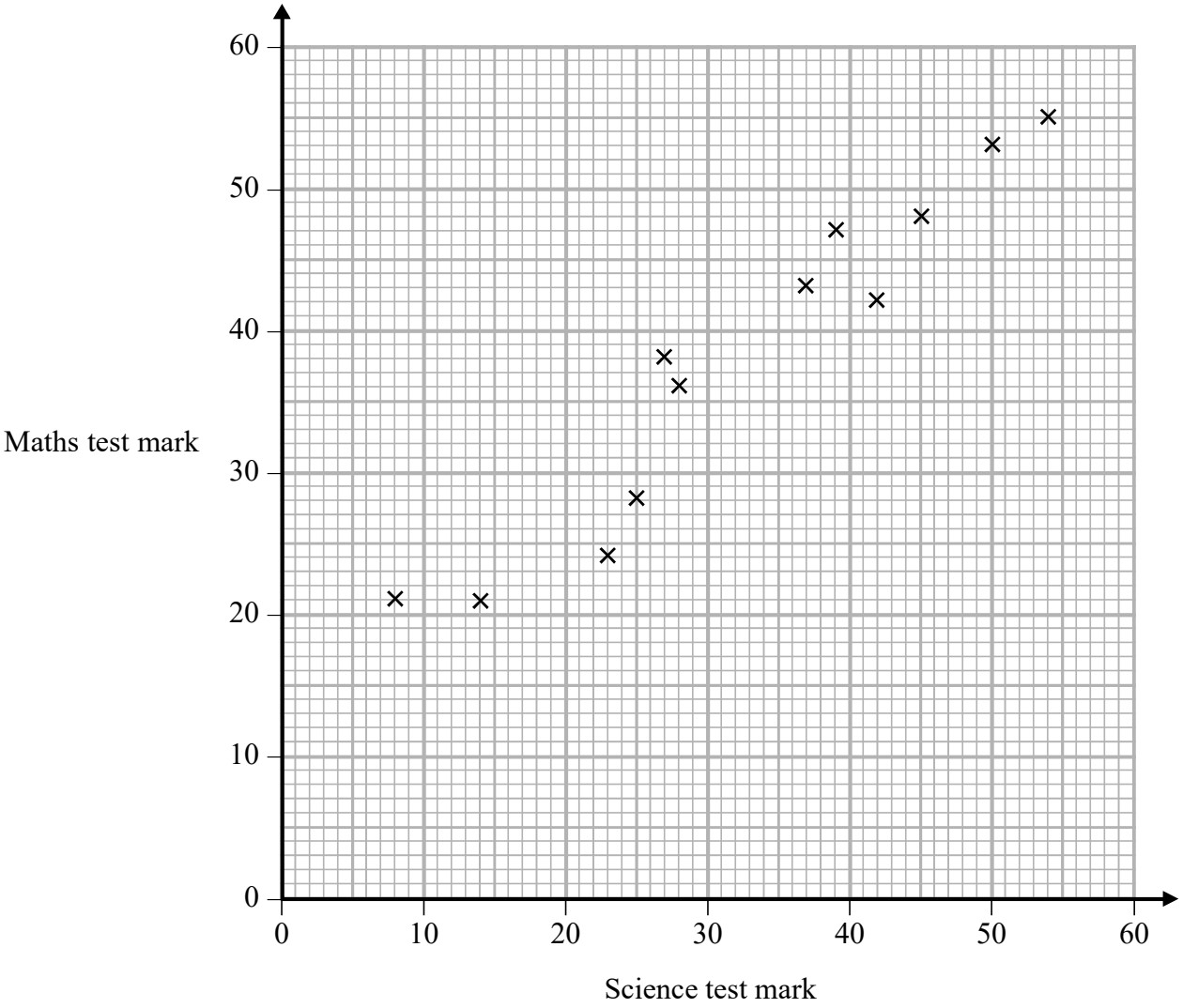
.....

.....

(1)

(Total for Question 2 is 2 marks)

3 The scatter graph shows information about the marks a group of students got in a Science test and in a Maths test.



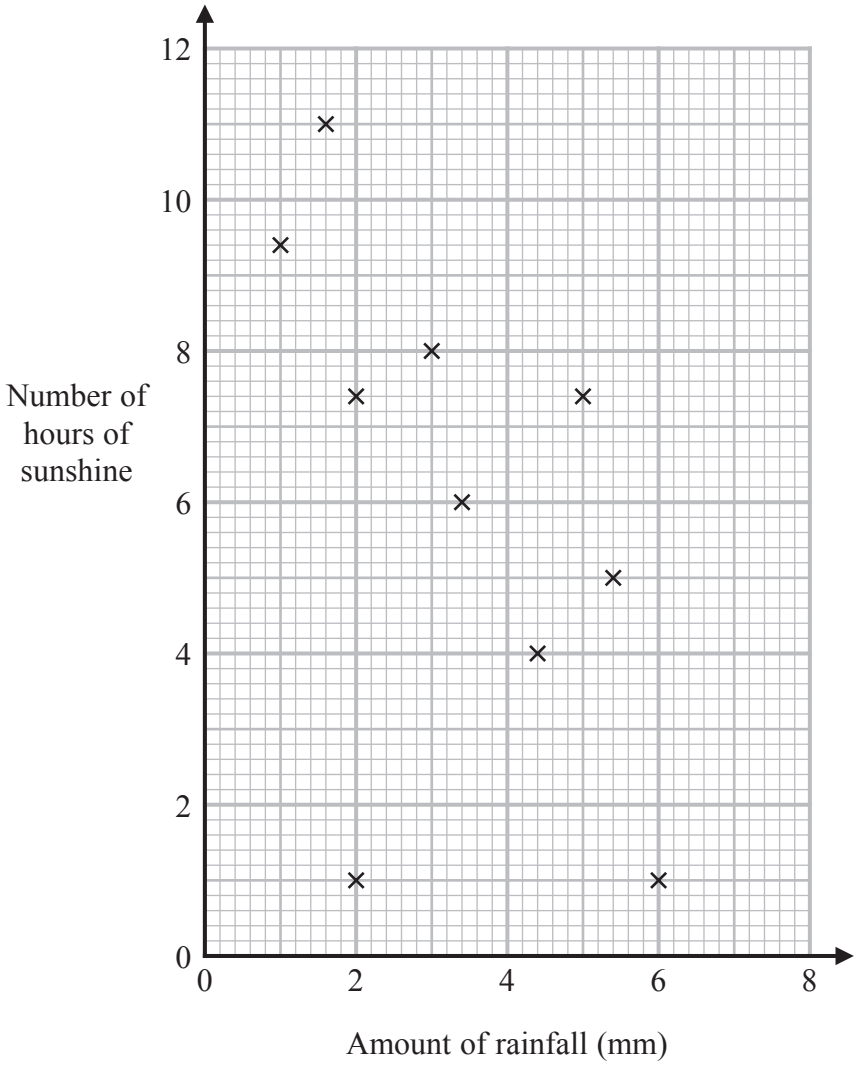
Jamie got a mark of 34 in the Science test.

Using the scatter graph, find an estimate for Jamie's mark in the Maths test.

.....

(Total for Question 3 is 2 marks)

4 The scatter graph shows information about the amount of rainfall, in mm, and the number of hours of sunshine for each of ten English towns on the same day.



One of the points is an outlier.

(a) Write down the coordinates of this point.

(..... , ...)

(1)

(b) Ignoring the outlier, describe the relationship between the amount of rainfall and the number of hours of sunshine.

.....

.....

.....

(1)

On the same day in another English town there were 7 hours of sunshine.

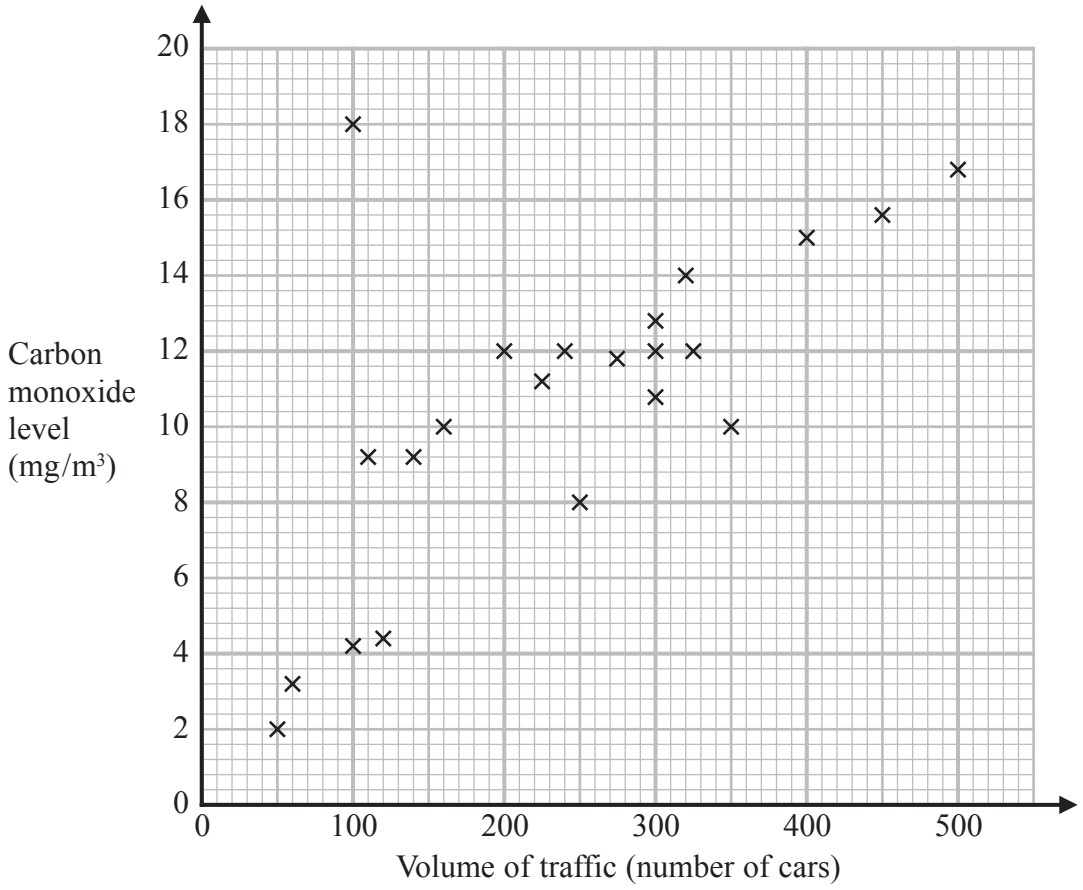
(c) Using the scatter graph, estimate the amount of rainfall in this town on this day.

..... mm

(2)

(Total for Question 4 is 4 marks)

5 The scatter graph shows information about the volume of traffic and the carbon monoxide level at a point on a road each day for 22 days.



One point is an outlier.

(a) Write down the coordinates of this point.

(..... , ...)

(1)

For another day, 370 cars pass the point on the road.

(b) Estimate the carbon monoxide level for this day.

..... mg/m³

(2)

Alfie says,

"Because there is an outlier, there is no correlation."

(c) Is Alfie correct?
You must give a reason for your answer.

.....

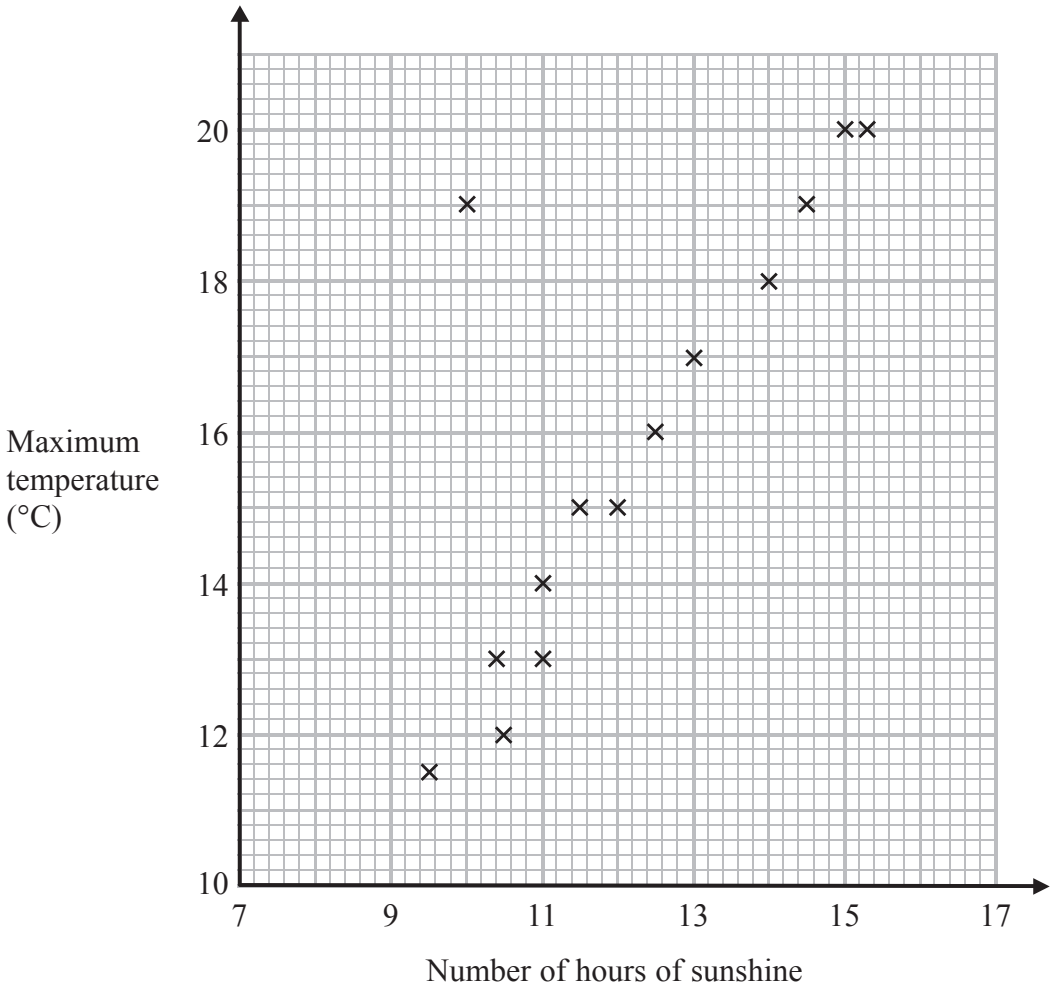
.....

.....

(1)

(Total for Question 5 is 4 marks)

6 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.



One of the points is an outlier.

(a) Write down the coordinates of this point.

(..... , ...)

(1)

(b) For all the other points write down the type of correlation.

.....

(1)

On the same day, in another British town, the maximum temperature was 16.4 °C.

(c) Estimate the number of hours of sunshine in this town on this day.

..... hours

(2)

A weatherman says,

"Temperatures are higher on days when there is more sunshine."

(d) Does the scatter graph support what the weatherman says?
Give a reason for your answer.

.....

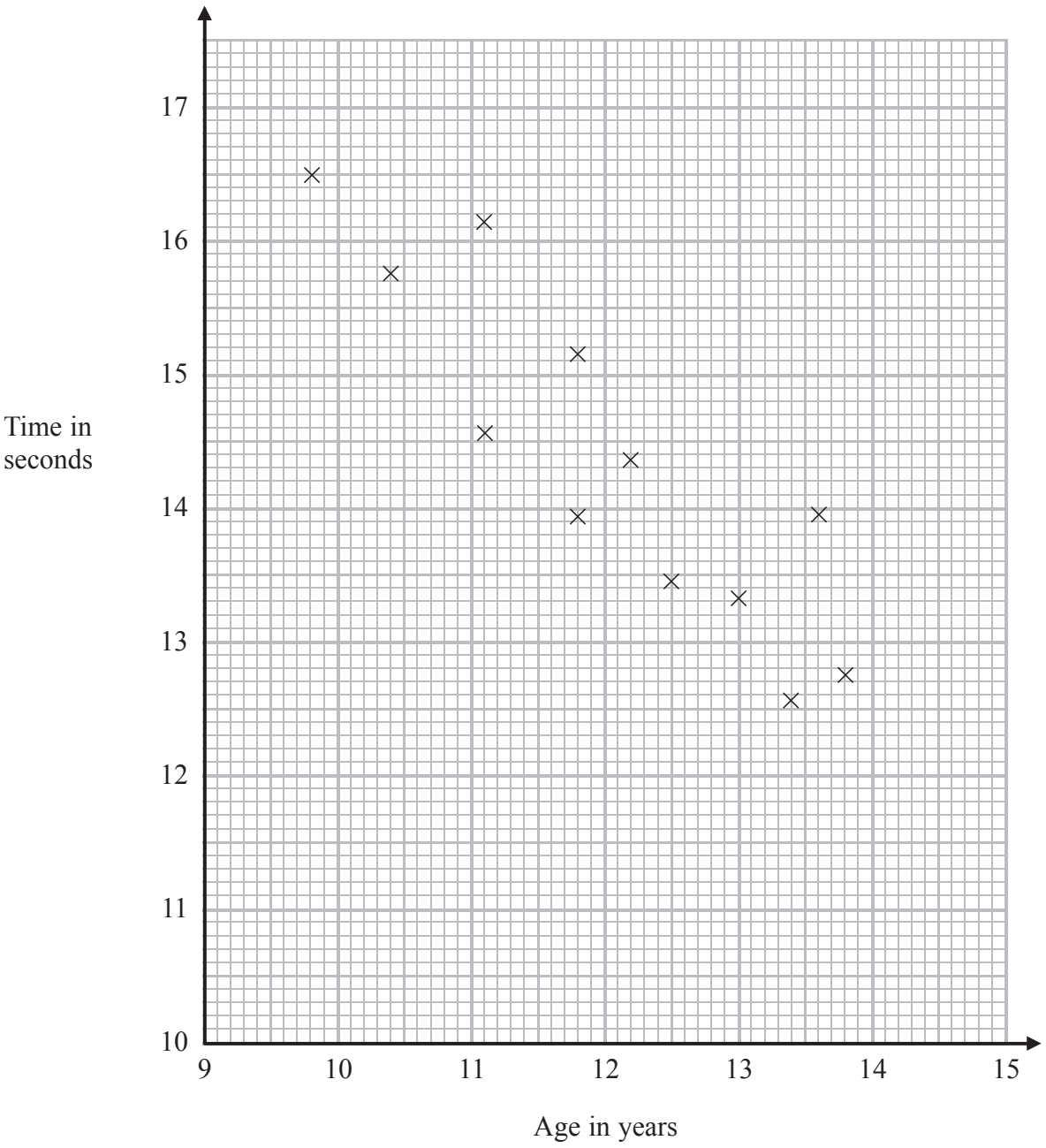
.....

(1)

(Total for Question 6 is 5 marks)

7 The scatter diagram shows information about 12 girls.

It shows the age of each girl and the best time she takes to run 100 metres.



(a) Write down the type of correlation.

.....

(1)

Kristina is 11 years old.
Her best time to run 100 metres is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why.

.....

.....

(1)

Debbie is 15 years old.
Debbie says,

"The scatter diagram shows I should take less than 12 seconds to run 100 metres."

(c) Comment on what Debbie says.

.....

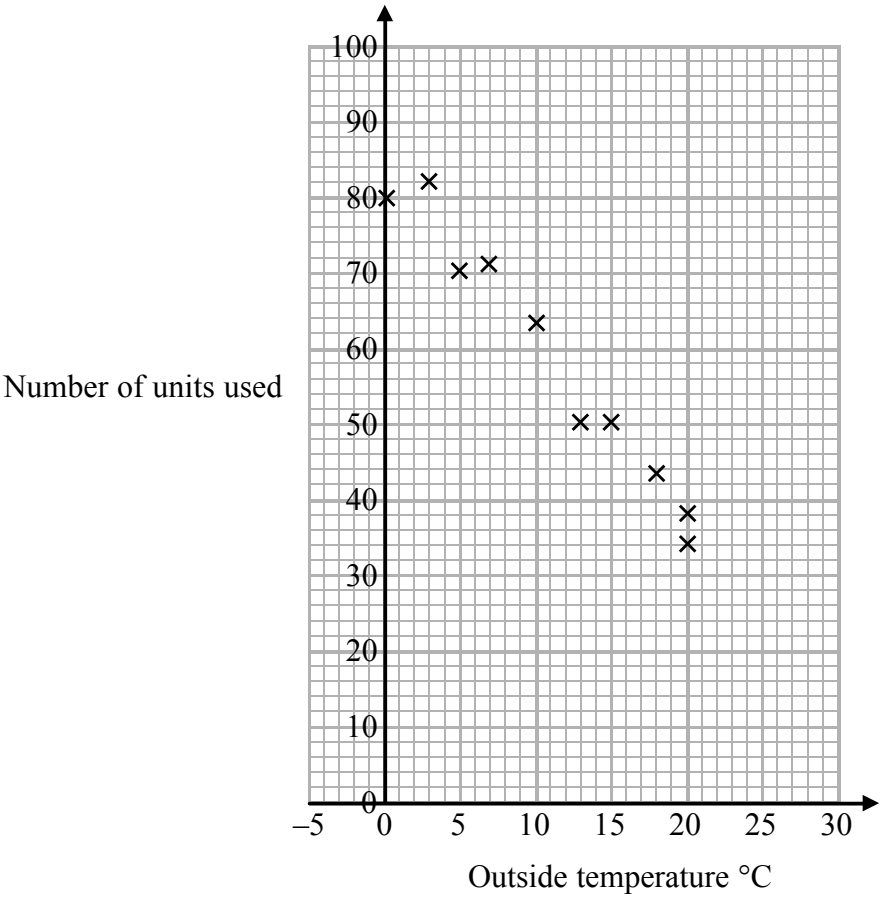
.....

(1)

(Total for Question 7 is 3 marks)

8 In a survey, the outside temperature and the number of units of electricity used for heating were recorded for ten homes.

The scatter diagram shows this information.



Molly says,

"On average the number of units of electricity used for heating decreases by 4 units for each °C increase in outside temperature."

(a) Is Molly right?
Show how you get your answer.

.....

.....

(3)

(b) You should **not** use a line of best fit to predict the number of units of electricity used for heating when the outside temperature is 30 °C.

Give one reason why.

.....

(1)

(Total for Question 8 is 4 marks)