

Name

ANSWERS

Class



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Scatter graphs

(9 – 1) Topic booklet

Foundation

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

Total Marks

Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided
 - there may be more space than you need.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must show all your working out.
- If the question is a 1F question you are not allowed to use a calculator.
- If the question is a 2F or a 3F question, you may use a calculator to help you answer.

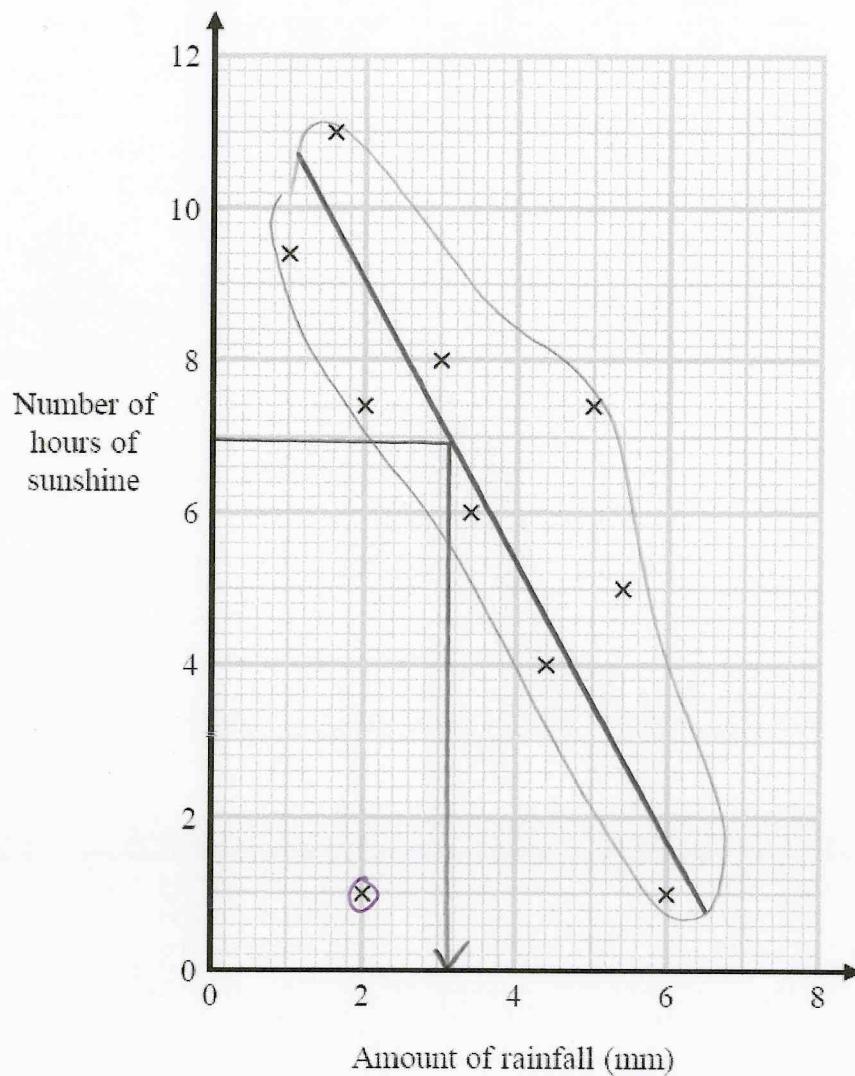
Information

- The marks for each question are shown in brackets
 - use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

18 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.

2 1
(1)

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

The more hours of sunshine, the less rainfall.

(1)

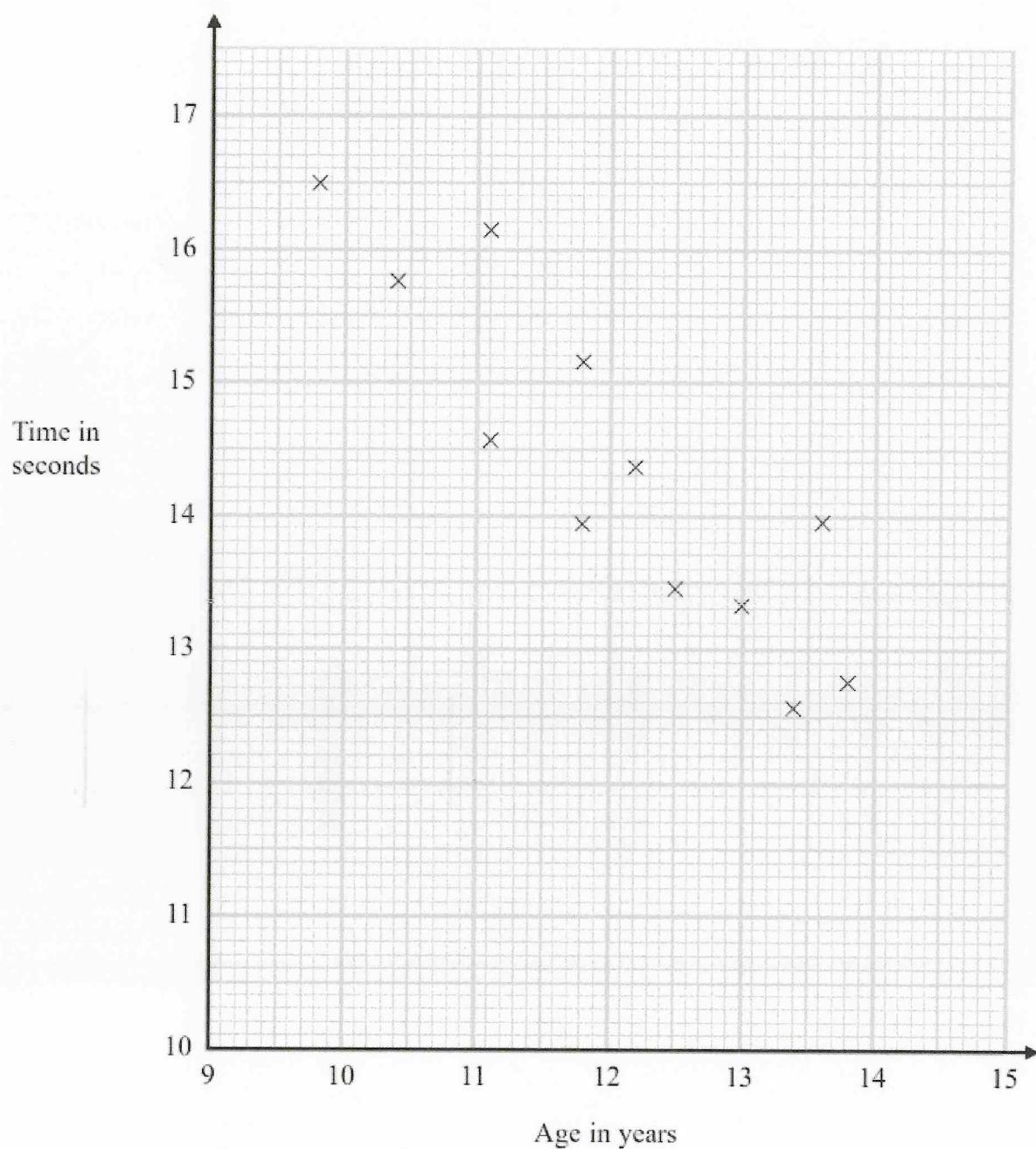
On the same day in another English town there were 7 hours of sunshine.

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

3 mm
(2)

19 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.

Negative

(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.

Kristinas data doesn't follow the trend
of the others.

(1)

Debbie is 15 years old.

Debbie says,

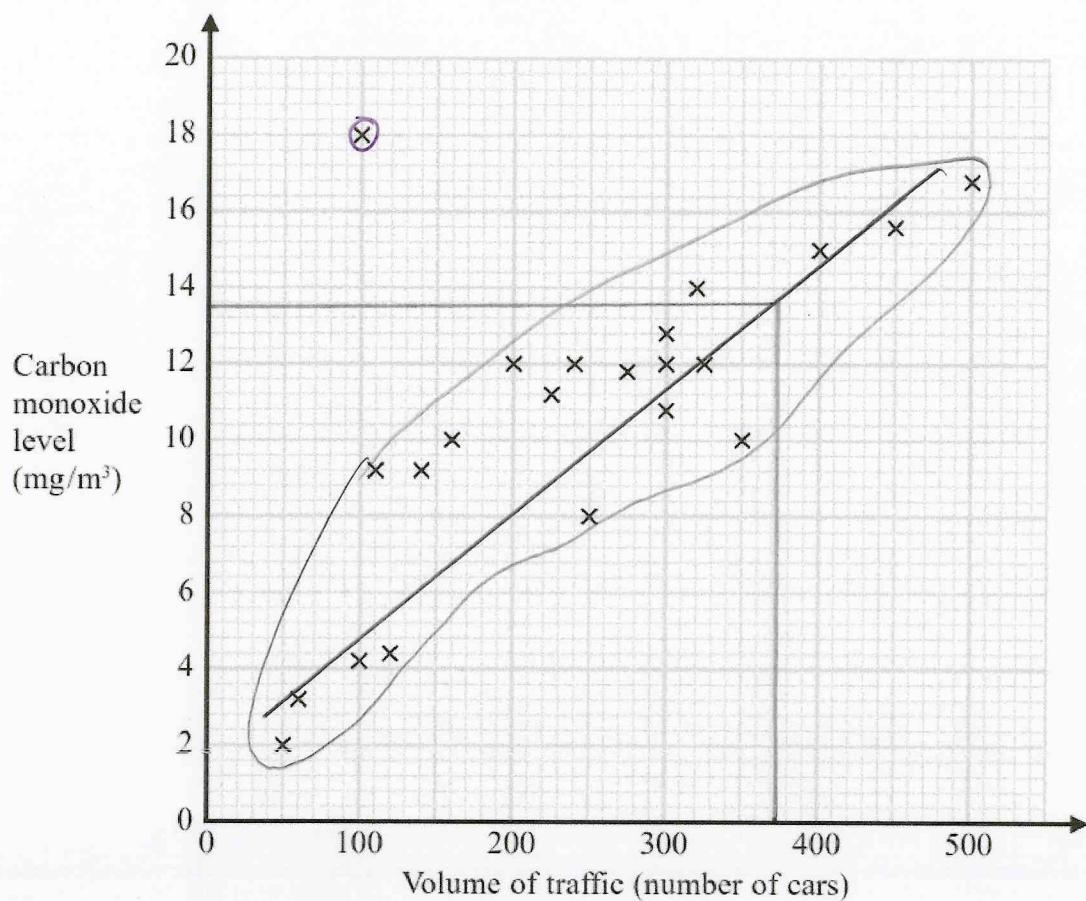
"The scatter diagram shows I should take less than 12 seconds to run 100 metres."

(c) Comment on what Debbie says.

We don't have any data for 15 years old
so we can't comment.

(1)

21 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.

(100, 18)
(1)

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

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

13.5 mg/m³
(2)

Alfie says,

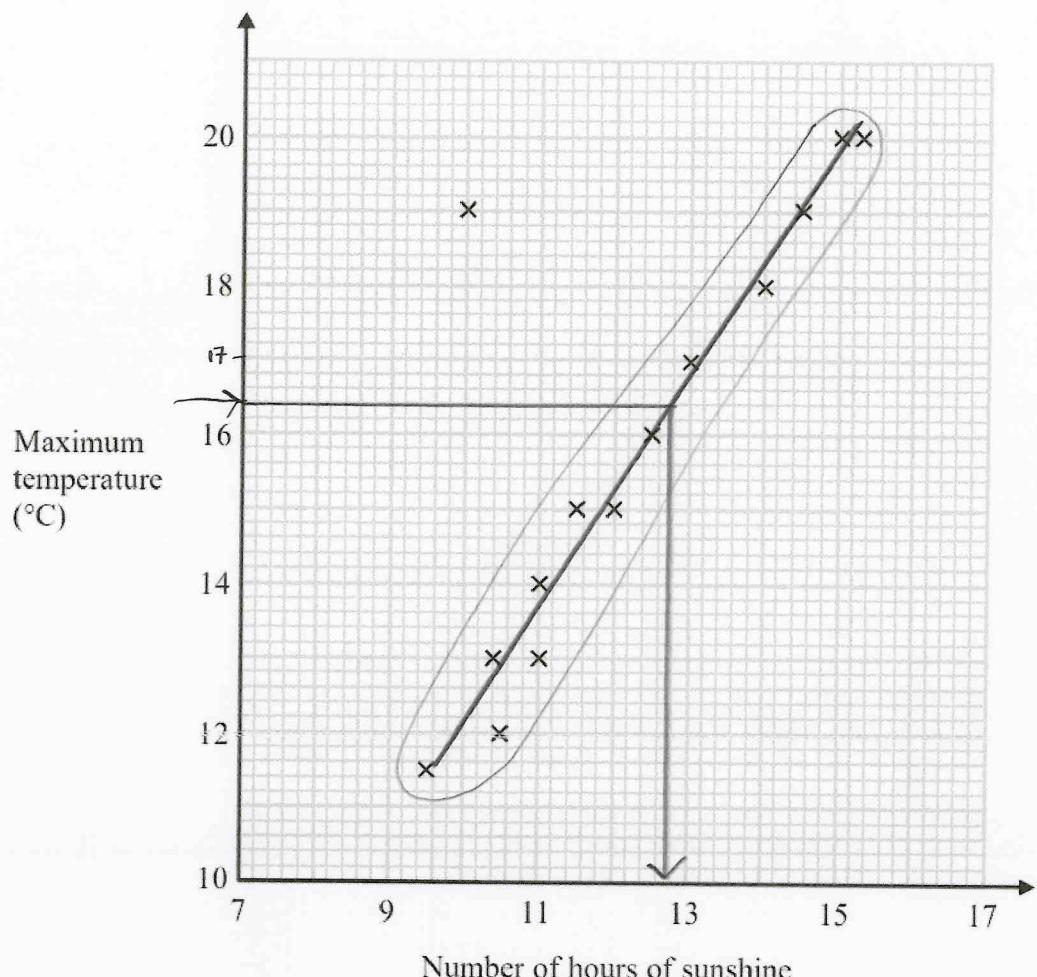
“Because there is an outlier, there is no correlation.”

(c) Is Alfie correct?

You must give a reason for your answer.

There is still a positive correlation

21 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.

(10, 19)
(1)

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

Positive
(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.

12.5

..... 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.

Yes it does support this claim.

(1)

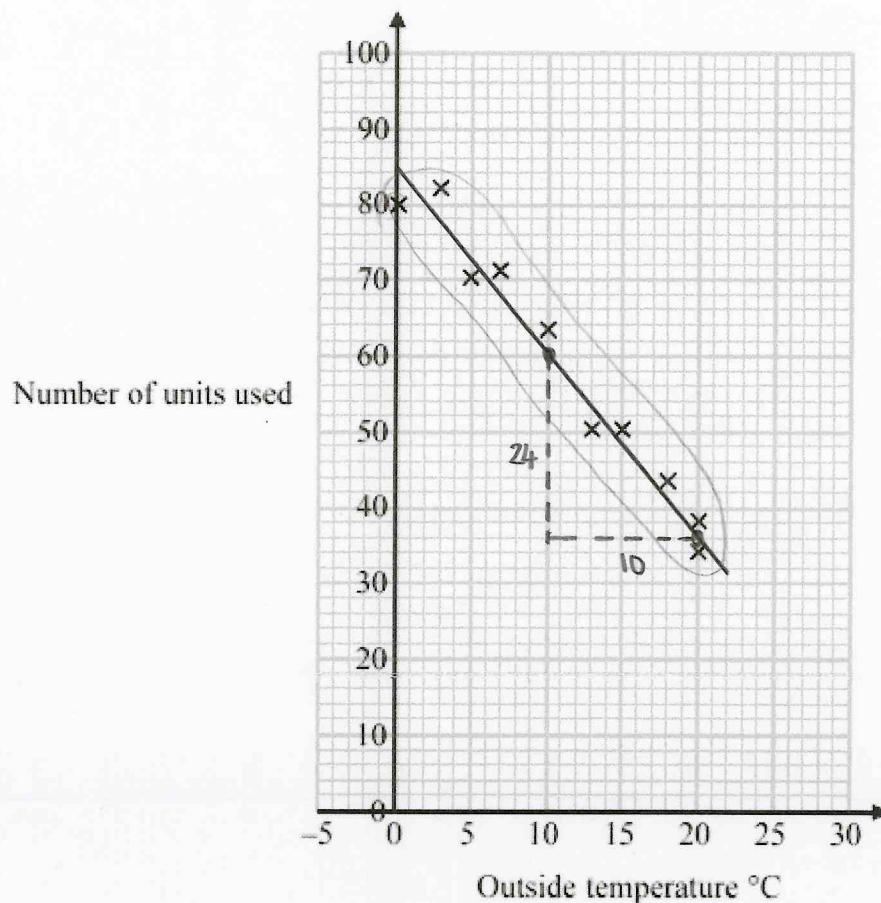
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(Total for Question 21 is 5 marks)

21 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.



$$m = \frac{24}{10} = 2.4$$

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.

Molly is wrong, the units of electricity decreases by around 2.4 units for each °C increase.

(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.

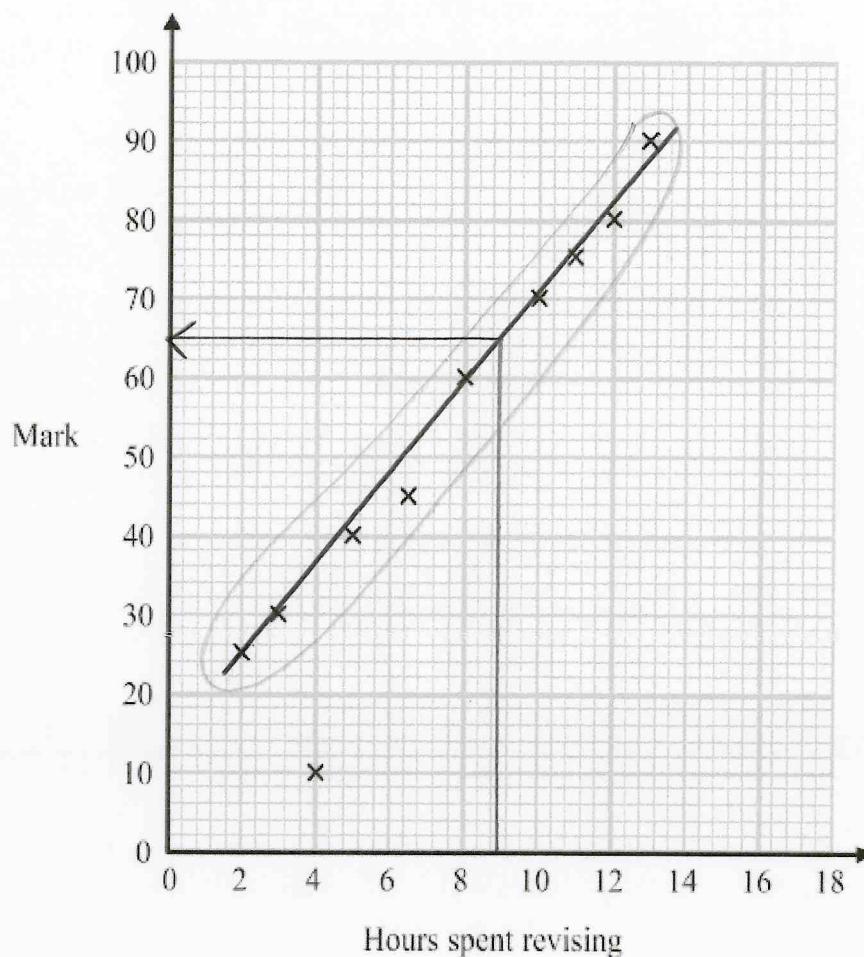
Give one reason why.

It is outside of the data set.

(1)

21 The scatter diagram shows information about 10 students.

For each student, it shows the number of hours spent revising and the mark the student achieved in a Spanish test.



One of the points is an outlier.

(a) Write down the coordinates of the outlier.

(4, 10)

(1)

For all the **other** points

(b) (i) draw the line of best fit,
(ii) describe the correlation.

Positive correlation

(2)

A different student revised for 9 hours.

(c) Estimate the mark this student got

65

(1)

The Spanish test was marked out of 100

Lucia says,

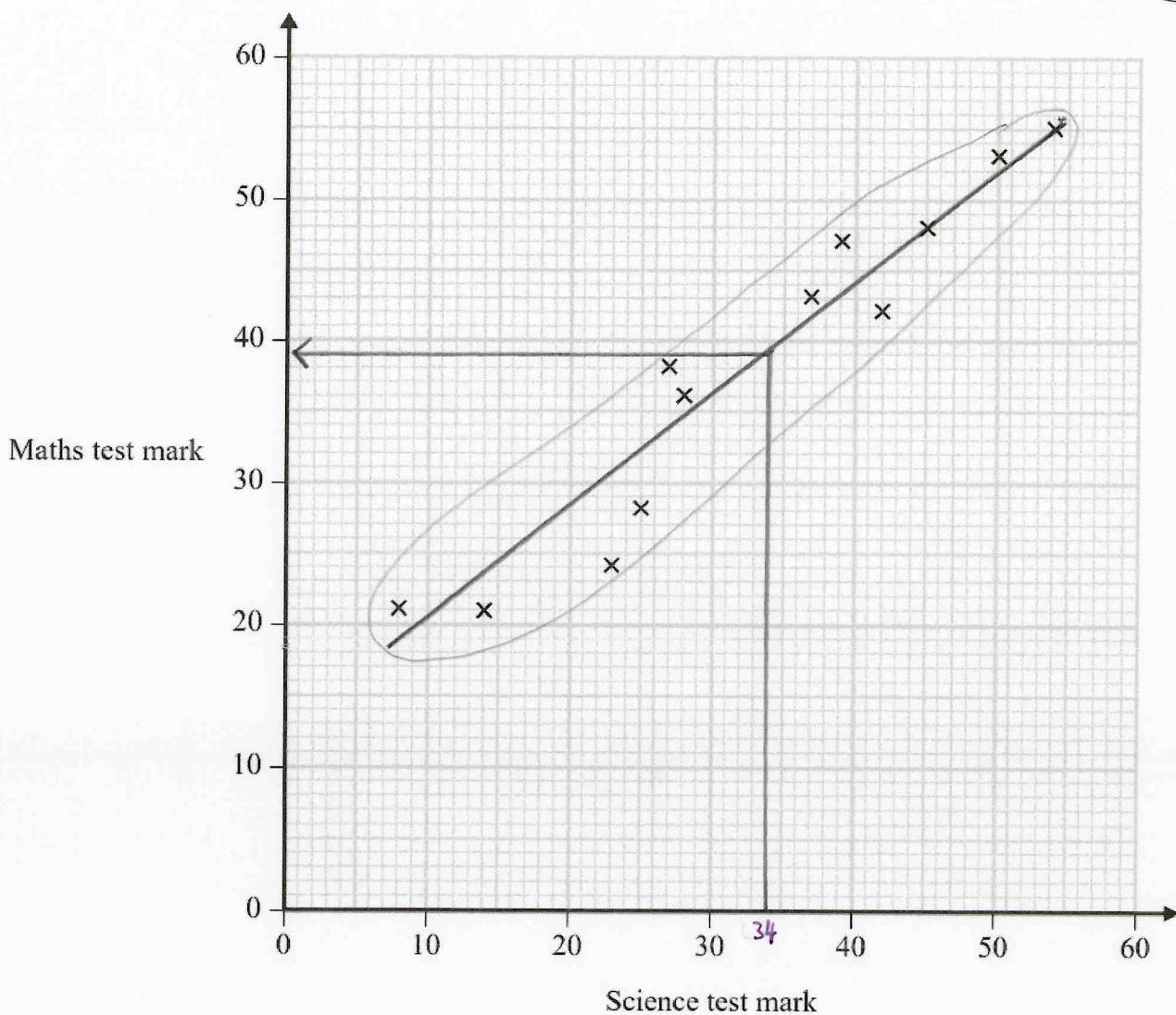
"I can see from the graph that had I revised for 18 hours I would have got full marks."

(d) Comment on what Lucia says.

This is wrong as we cannot comment on data outside the data range.

(1)

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

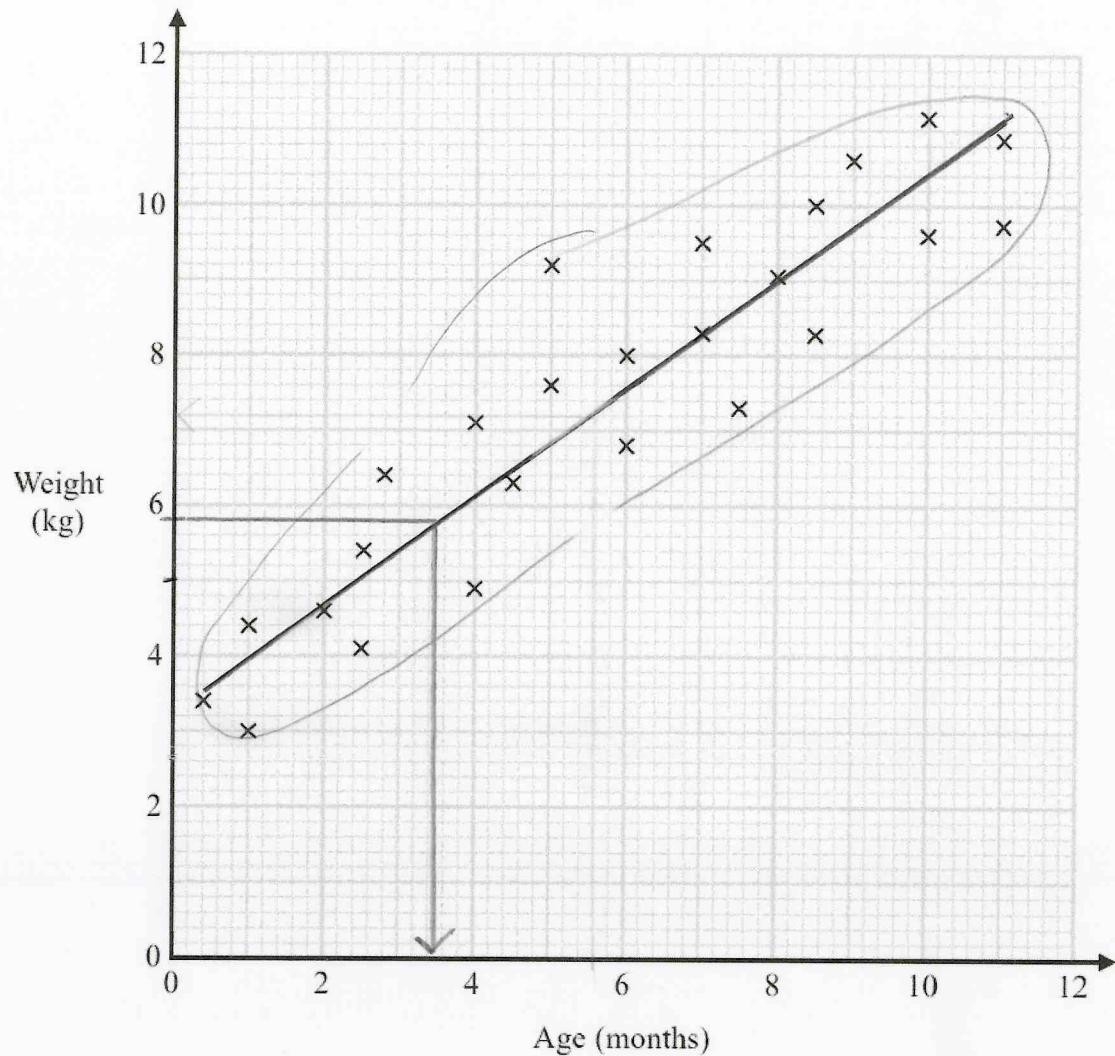


Jamie got a mark of 34 in the Science test.

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

39

25 The scatter graph shows information about the ages and weights of some babies.



(a) Describe the relationship between the age and the weight of the babies.

The older the baby, the heavier they are.

(1)

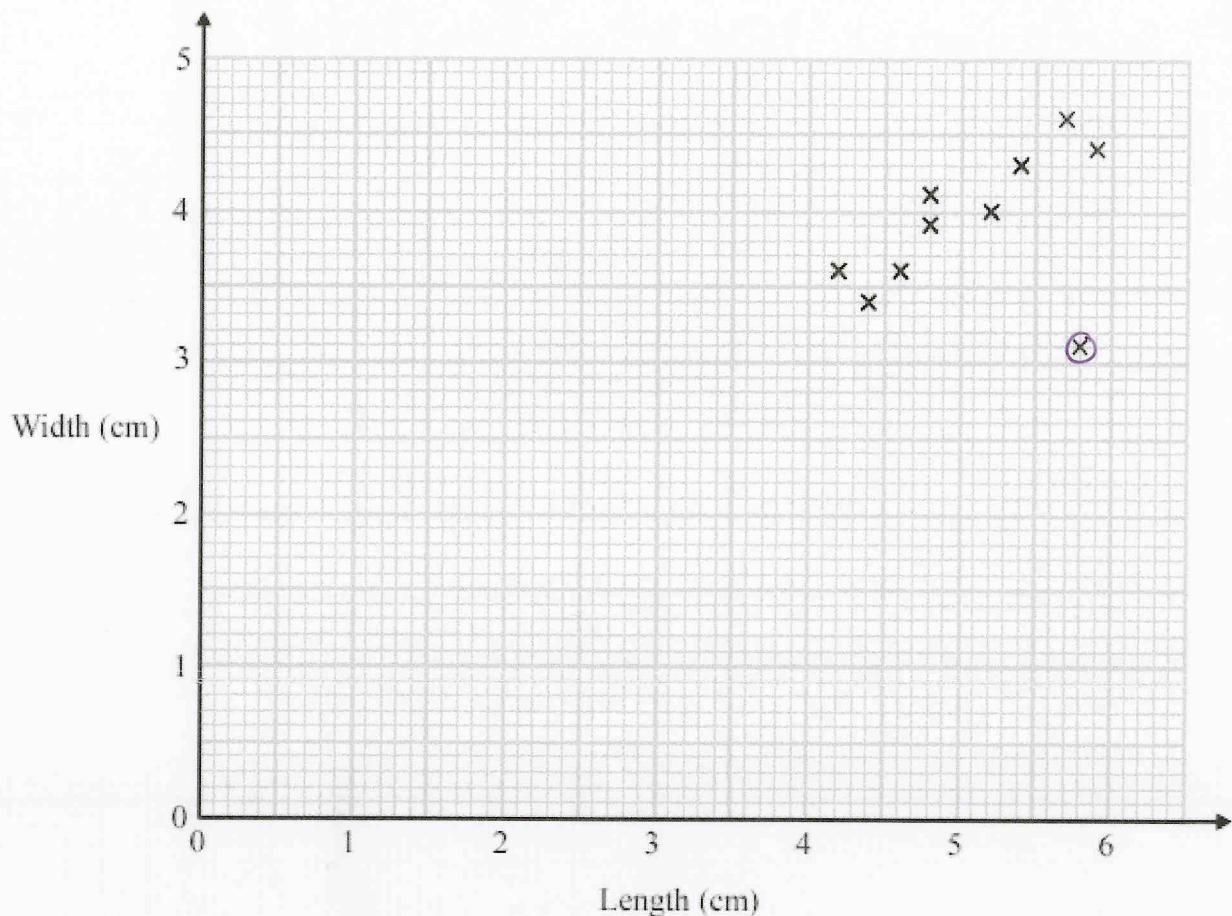
Another baby has a weight of 5.8 kg

(b) Using the scatter graph, find an estimate for the age of this baby.

3.5 months
(2)

26 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.

She should start her axes at (3,3)

(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.

This pine cone is thinner, compared to others of a similar length.

(1)