

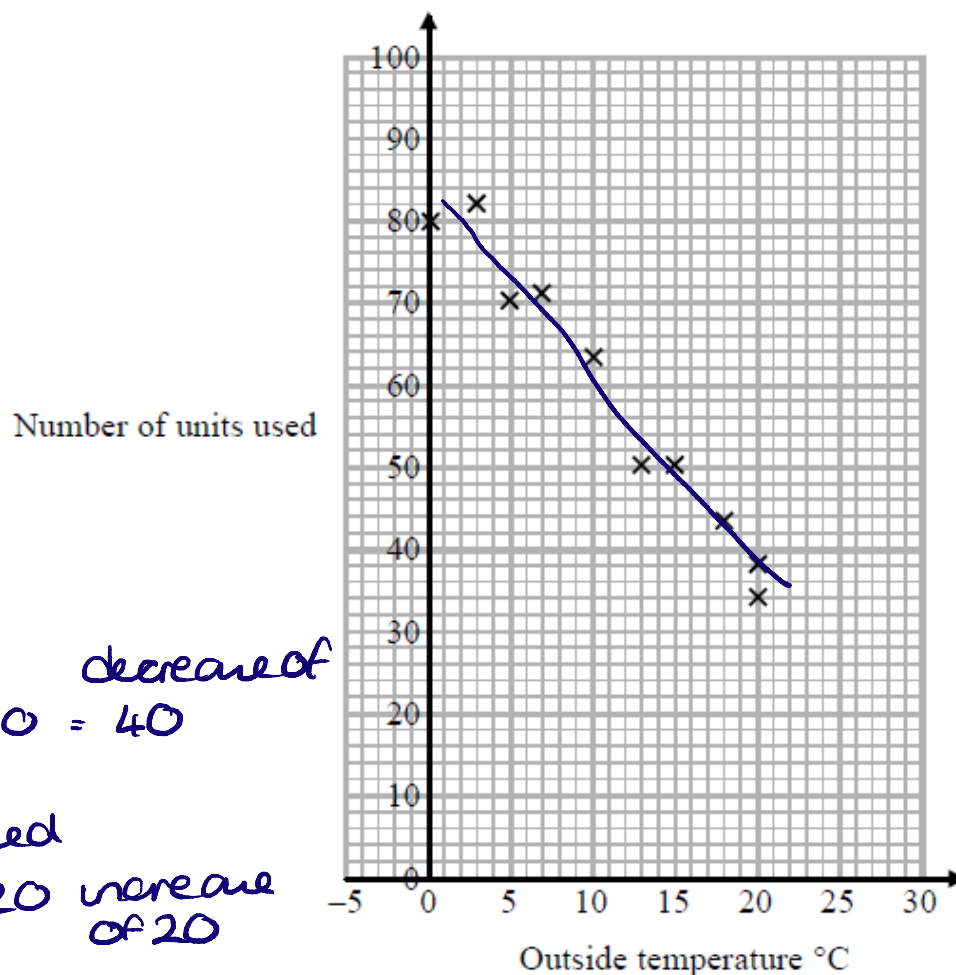
Scatter Graphs (H & F)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

Name:	Mel@JustMaths
Total Marks:	

1. 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.



decreased of
 $80 \rightarrow 40 = 40$
 units used
 $0 \rightarrow 20$ increase of 20

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?

decrease 40 units increase 20°C
 $\div 20 \downarrow 2$ units $\div 20$

Show how you get your answer.

no, molly is incorrect. The number of units used decreases by 2 units for each °C increase.

[3]

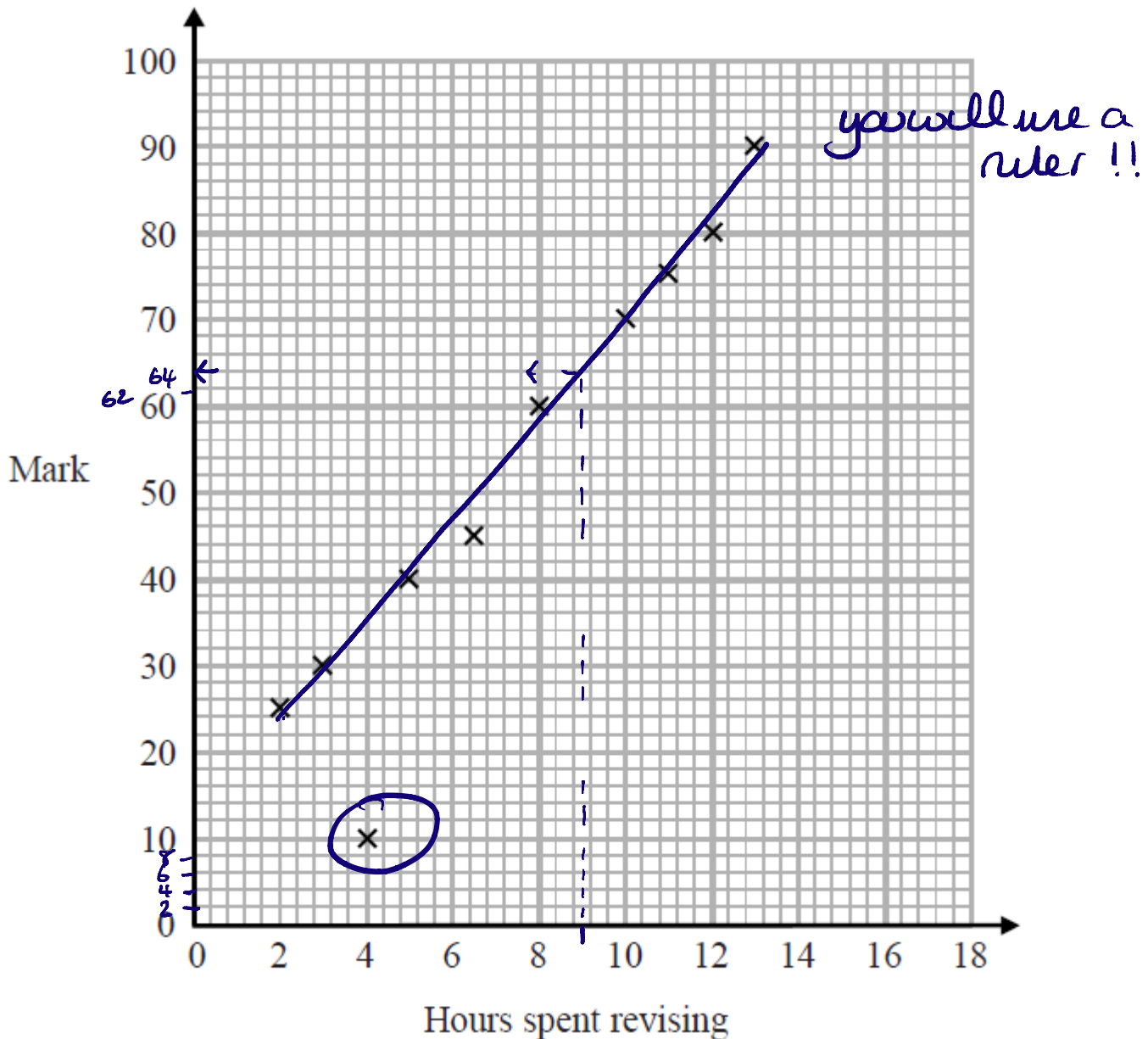
(b) You should not use a line of best fit to predict the number of units of electricity used for heating when the outside temperature is 30°C .

Give one reason why. *any predictions out the given data would be unreliable.*

[1]

2. 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.

Strong positive correlation

[2]

A different student revised for 9 hours.

(c) Estimate the mark this student got

64

[1]

The Spanish test was marked out of 100

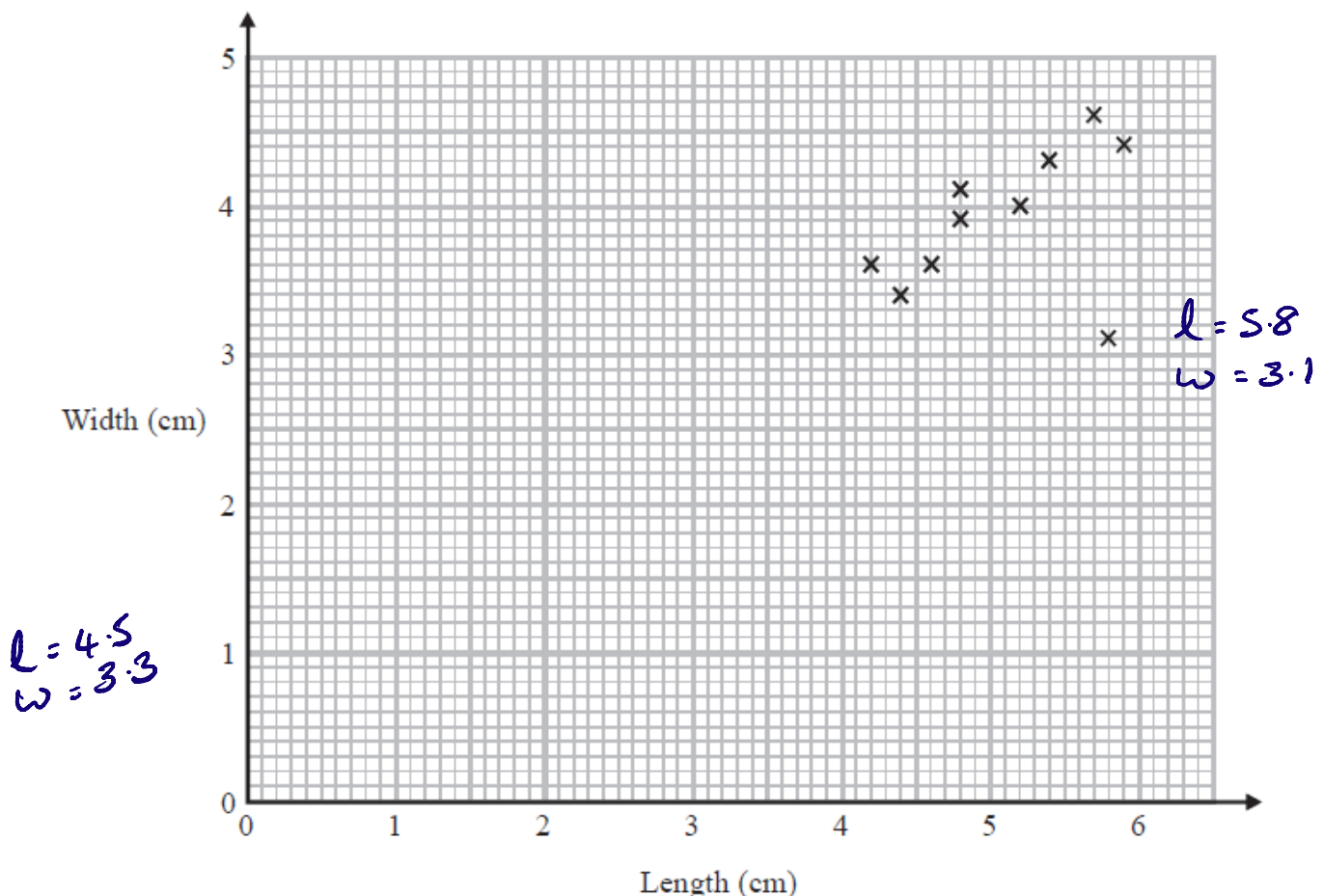
Lucia says: "I can see from the graph that had I revised for 18 hours I would have got full marks."

(d) Comment on what Lucia says.

Lucia would be wrong in extrapolating the line of best fit outside the range of the given data. It would be unreliable

[1]

3. 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 could have changed the scales on the axis to start at 4cm (x axis) and 3cm (y axis)

[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. *It is so much longer than the other cones compared to its width.* [1]

4. The scatter graph shows the number of driving lessons and the number of tests needed to pass by 10 people.



(a) What proportion of the 10 people passed on their first test?

$$\frac{3}{10}$$

[1]

(b) Describe the correlation.

Circle your answer.

strong positive

weak positive

weak negative

strong negative

[1]

(c) Use a line of best fit to estimate the number of tests needed to pass by a person who has 50 lessons.

4 tests

[2]

(d) Meera says,

"I can use the trend to predict the number of driving tests needed to pass for any number of driving lessons."

Comment on her statement.

Meera is incorrect. It is unreliable to ^{make} predictions outside the given data as there is no supporting evidence ^[1] at the extremes or it just doesn't make logical sense.

For example someone who had 25 lessons the line of best fit would suggest they need 0 tests to pass which is impossible.

CREDITS AND NOTES

Question	Awarding Body
1	Pearson Edexcel
2	Pearson Edexcel
3	Pearson Edexcel
4	AQA

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board's (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.



Links:

AQA <http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300>

OCR <http://ocr.org.uk/gcsemaths>

Pearson Edexcel <http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html>

WJEC Eduqas <http://www.eduqas.co.uk/qualifications/mathematics/gcse/>

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material