

Surname	
Other Names	
Candidate Signature	

Centre Number						Candidate Number				
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Examiner Comments	

Total Marks

MATHEMATICS

AS PAPER 2

CM

Bronze Set B (Edexcel Version)

Time allowed: 1 hour and 15 minutes

Instructions to candidates:

- In the boxes above, write your centre number, candidate number, your surname, other names and signature.
- Answer ALL of the questions.
- You must write your answer for each question in the spaces provided.
- You may use a calculator.

Information to candidates:

- Full marks may only be obtained for answers to ALL of the questions.
- The marks for individual questions and parts of the questions are shown in round brackets.
- There are 9 questions in this question paper. The total mark for this paper is 60.

Advice to candidates:

- You should ensure your answers to parts of the question are clearly labelled.
- You should show sufficient working to make your workings clear to the Examiner.
- Answers without working may not gain full credit.



- 4 Nikita is investigating the relationship between daily mean temperature, T °C, and rainfall, r mm, for different regions around the world over a 10 year period.

She takes a random sample of 10 days from 2015 for Leeming from the large data set.

She obtained the following data.

T	17.6	12.5	17.1	14.4	14.5	18.4	19.7	16.6	16.2	17.2
r	2.6	1.6	1.8	10	2.6	4.6	15.2	1.8	10.4	2.0

Nikita drew the scatter graph in Figure 1 for T and r and calculated the quartiles.

	Q_1	Q_2	Q_3
T	14.5	16.9	17.8
r	1.8	2.6	10.1

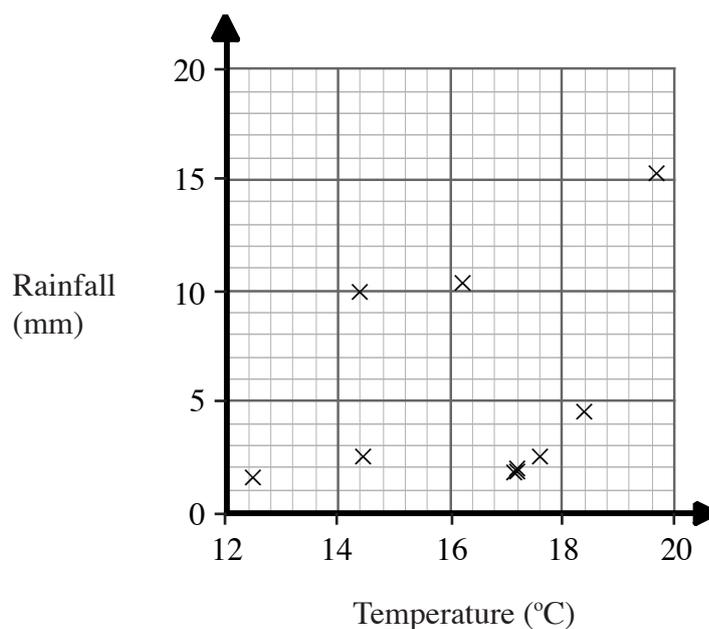


Figure 1

A data point is considered an outlier if it more than 1.5 times the interquartile range above the upper quartile or less than 1.5 times the interquartile range below the lower quartile.

- (a) Determine whether the data has any outliers according to this measure. (2)

Mark is familiar with the large data set and believes Nikita's sample is unlikely to be random.

- (b) Using your knowledge of the large data set, give a reason to justify Mark's belief. (1)

- (c) Interpret Figure 1 in relation to Nikita's investigation. (1)



Mark uses all the data from Leeming in 2015 to calculate the equation of the regression line for r on T . He calculates the equation of the regression line to be

$$r = 2.767 - 0.0424T$$

(d) Explain the meaning of the figure -0.0424 in the regression line. (1)

Figure 2 below shows a scatter graph drawn for T and r using all the data from Leeming in 2015.

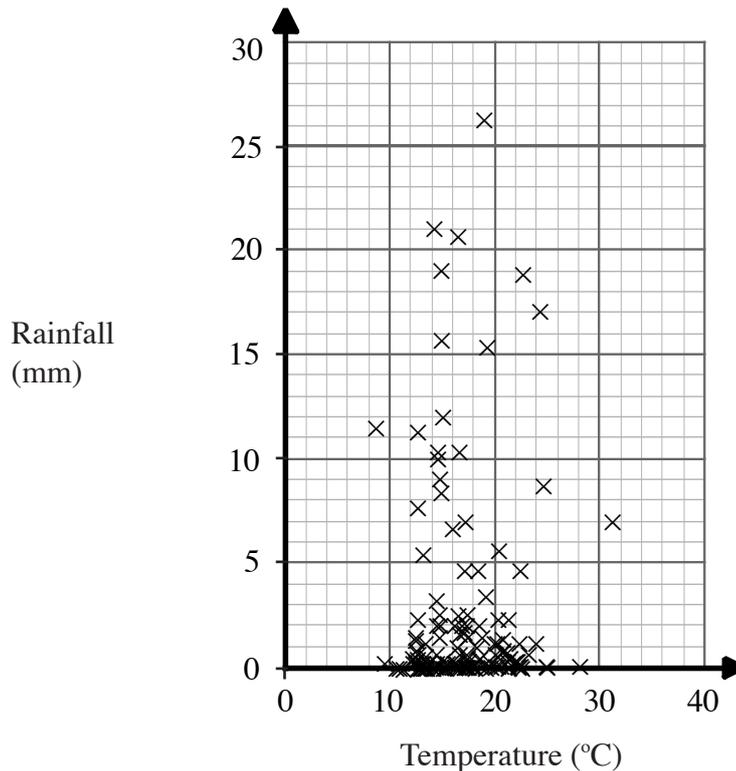


Figure 2

(e) Use Figure 2 to comment on the suitability of Mark's regression line for these data. (1)

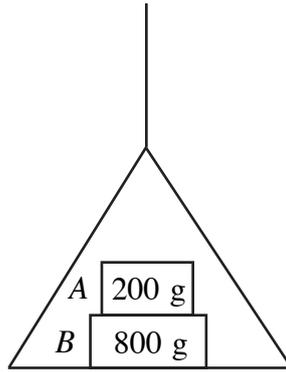
(f) (i) Explain how Figure 2 is inconsistent with Figure 1 in relation to Nikita's investigation. (1)

(ii) Suggest how Nikita can improve her data collection method to avoid these inconsistencies. (1)

(g) Outline **two** limitations of the large data set for the purposes of Nikita's investigation. (2)



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**Figure 4**

A light lift is attached to a vertical light inextensible string. The lift carries the masses *A* and *B*. The mass of *A* is 200 g and the mass of *B* is 800 g. Mass *A* rests on top of mass *B* as shown in Figure 4 above. The lift is raised vertically at 3 m s^{-2} .

- (a) Find the tension in the string. (2)
- (b) Calculate the magnitude of the force exerted on *A* by *B*. (3)
- (c) Write down the magnitude of the force exerted on *B* by *A*. (1)
- (d) Explain how you have used the fact that lift is light in your calculations. (1)



