

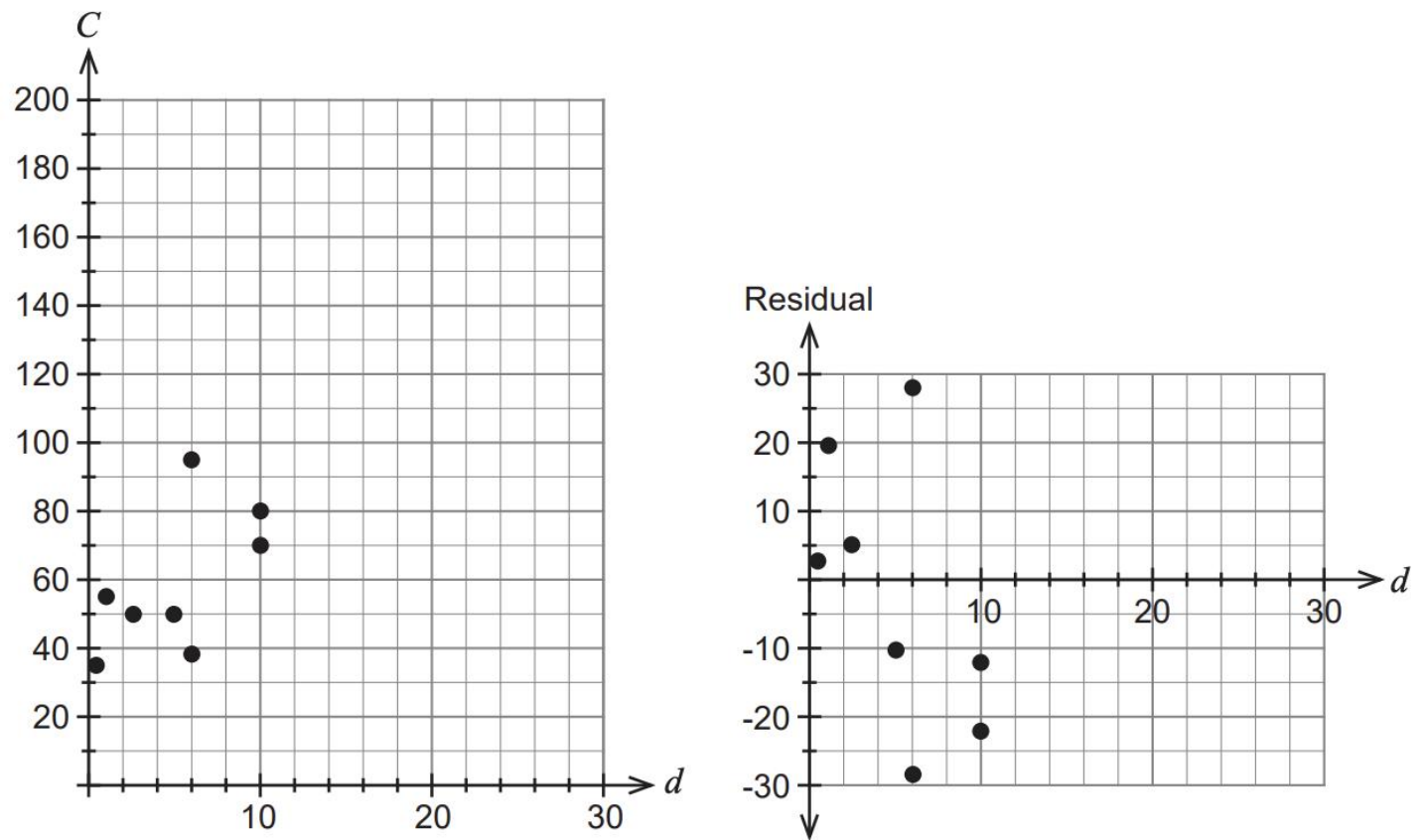
Question 15

(12 marks)

Ali is researching mobile phone carriers and has found several plans with monthly contracts. The table below shows the data allowance, GB ( $d$ ) and the monthly cost \$ ( $C$ ), of ten plans that he is considering.

Data allowance GB ( $d$ )	10	2.5	0.5	15	5	1	6	6	25	10
Monthly cost \$ ( $C$ )	70	50	35	135	50	55	95	38	195	80

The graphs below show a scatterplot and a residual plot for the information in the table, with two points missing on both graphs.



(a) Plot the two missing points on the scatterplot.

(2 marks)

- (b) (i) Determine the equation of the least-squares line for the information in the table and state the correlation coefficient. (2 marks)

(ii) Describe the linear association between Data allowance and Monthly cost.  
(2 marks)

(iii) Approximately how much does the cost change for every additional GB of data allowance?  
(1 mark)

(iv) What percentage of the variation in monthly cost can be explained by the variation in the data allowance?  
(1 mark)

(c) (i) Calculate the two missing residuals and include them on the residual plot.  
(2 marks)

(ii) What feature of the residual plot indicates that a linear model would be appropriate for the data? (1 mark)

(d) Predict the monthly cost of a plan with a data allowance of 20 GB. (1 mark)