

- 1** In a study of how students use their mobile telephones, the phone usage of a random sample of 11 students was examined for a particular week.

The total length of calls,  $y$  minutes, for the 11 students was

17, 23, 35, 36, 51, 53, 54, 55, 60, 77, 110

A value greater than  $Q_3 + 1.5(Q_3 - Q_1)$  or smaller than  $Q_1 - 1.5(Q_3 - Q_1)$  is defined as an outlier.

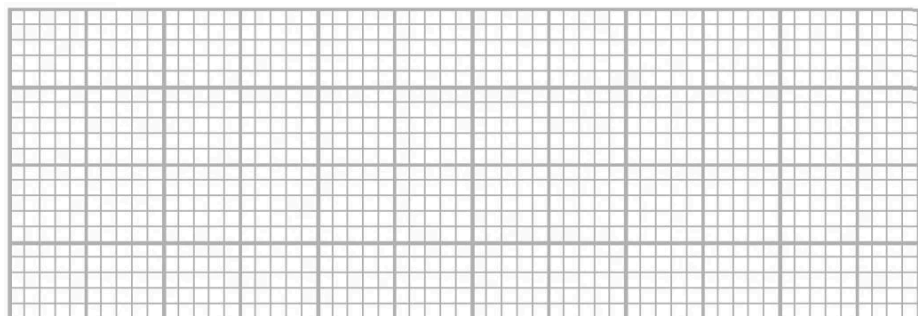
- (a) Find the median and quartiles for these data.

**(3)**

- (b) Show that 110 is the only outlier.

**(2)**

- (c) Draw a box plot for these data, indicating clearly the position of the outlier.



**(3)**

**(Total for question 1 is 8 marks)**

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- 2** In a study of how much time students spend on social media, usage of a random sample of 15 students was examined for a particular day.

The total time of usage,  $x$  minutes, for the 15 students was

6, 25, 39, 62, 65, 74, 80, 94, 125, 127, 154, 159, 184, 210, 251

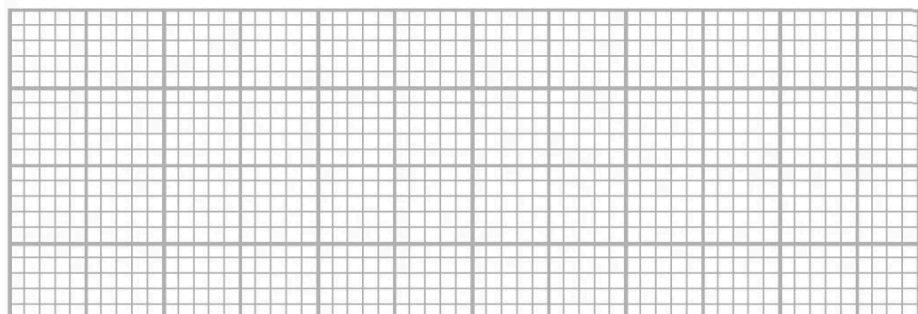
- (a) Find the median and quartiles for these data.

**(3)**

- (b) Show that there are no outliers.

**(2)**

(c) Draw a box plot for these data.

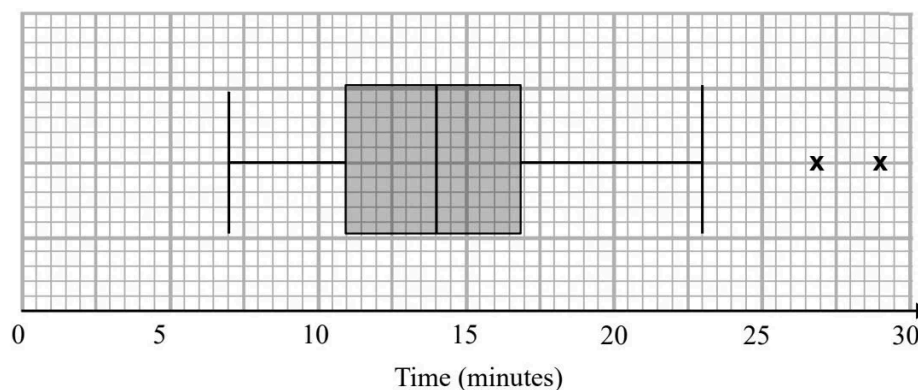


(3)

(Total for question 2 is 8 marks)

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- 3 Children from two schools A and B took part in a competition to complete a puzzle. The distribution of times taken, to the nearest minute, by children in school A is shown in the box plot below.



- (a) Write down the time by which 75% of the children in school A had completed the puzzle.

(1)

- (b) State what the two crosses (x) represent on the box plot above. Interpret these in context.

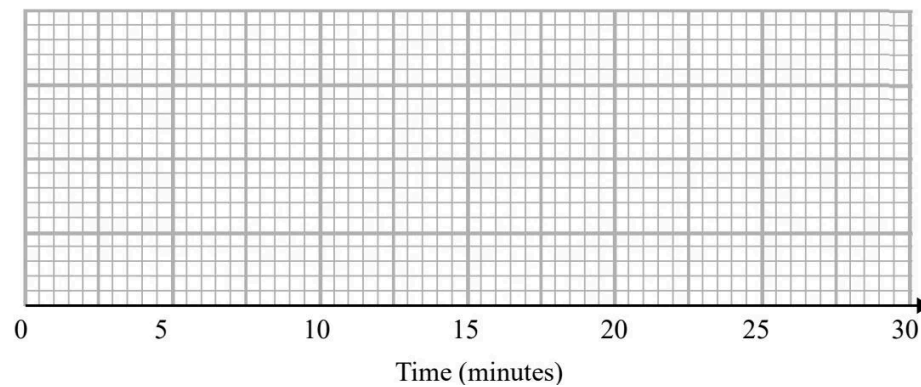
(2)

- (c) For school B, the shortest time taken was 6 minutes, the longest time taken was 22 minutes, and the quartiles were 12, 15 and 17 minutes respectively.

Determine if there are any outliers.

(3)

- (d) Draw a box plot for this information.



(3)

(e) Compare the two distributions.

**(3)**

**(Total for question 3 is 12 marks)**

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