

1

- (a)
- Lower quartile: $Q_1 = 35$. (B1)
 - Median: 53. (B1)
 - Upper quartile: $Q_3 = 60$. (B1)

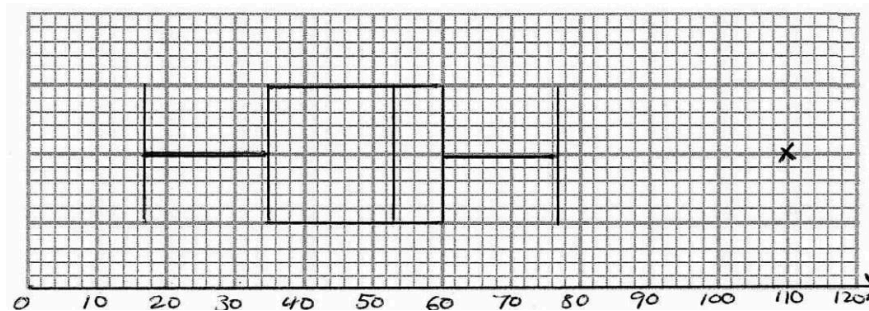
- (b)
- Calculates the outlier boundaries:

$$60 + 1.5(60 - 35) = 97.5$$

$$35 - 1.5(60 - 35) = -2.5$$

(M1)

- Since $110 > 97.5$ and every other value lies between -2.5 and 97.5 , concludes that 110 is the only outlier. (A1)
- (c)
- Draws a box from 35 to 60 with the median at 53. (B1)
 - Draws whiskers to the minimum value 17 and the greatest non-outlier value 77. (B1)
 - Marks 110 separately and clearly as an outlier. (B1)



(Total for question 1 is 8 marks)

2

- (a)
- Lower quartile: $Q_1 = 62$. (B1)
 - Median: 94. (B1)
 - Upper quartile: $Q_3 = 159$. (B1)

- (b)
- Calculates the outlier boundaries:

$$159 + 1.5(159 - 62) = 304.5$$

$$62 - 1.5(159 - 62) = -83.5$$

(M1)

- Since every data value lies between -83.5 and 304.5 , concludes that there are no outliers.

(A1)

- (c)
- Draws a box from 62 to 159 with the median at 94. (B1)
 - Draws the lower whisker to the minimum value 6. (B1)
 - Draws the upper whisker to the maximum value 251. (B1)

(Total for question 2 is 8 marks)

3

- (a) • The upper quartile is 17 minutes, so 75% of the children had completed the puzzle by this time. (B1)
- (b) • States that the crosses represent outliers. (B1)
• Interprets them as children who took much longer than the other children to complete the puzzle. (B1)
- (c) • Calculates the interquartile range: $17 - 12 = 5$. (M1)
• Calculates the outlier boundaries:
$$12 - 1.5(17 - 12) = 4.5$$
$$17 + 1.5(17 - 12) = 24.5$$

(M1)
• Since 6 and 22 are within the boundaries, concludes that there are no outliers. (A1)
- (d) • Draws a box from 12 to 17 with the median at 15. (B1)
• Draws the lower whisker to 6. (B1)
• Draws the upper whisker to 22. (B1)
- (e) • The median time for school B is greater than for school A: 15 minutes compared with 14 minutes. (B1)
• Interprets this as children in school B taking longer on average to complete the puzzle. (C1)
• School B's times are less spread out because its IQR is $17 - 12 = 5$ minutes, compared with an IQR of $17 - 11 = 6$ minutes for school A. (B1)

(Total for question 3 is 12 marks)
