Statistics: Five-Number Summary & Box Plots (Grade 10)

MEMORANDUM

Name: ..... Class: .....

Date: .....

MARK ____ / 17

Answer all questions. Show all your working — marks are awarded for method as well as the final answer. **Teacher copy: accept any correct equivalent method.**

1 The mean of 23, 31, 27, 35, 29 and x is 29. Solve for x. **(3)**

$\frac{23 + 31 + 27 + 35 + 29 + x}{6} = 29$ *(1)*

$145 + x = 29 \times 6 = 174$ *(1)*

$\mathbf{x = 174 - 145 = 29}$ *(1)* ✓✓✓ (3)

2 Find the mean of 4, 8, 9, 11, 13. **(2)**

$45 \div 5 = \mathbf{9}$ ✓✓ (2)

3 Find the median of 3, 7, 9, 12, 15, 18. **(2)**

$(9 + 12) \div 2 = \mathbf{10{,}5}$ ✓✓ (2)

4 Find the mode of 2, 5, 5, 7, 9, 5. **(1)**

5 ✓ (1)

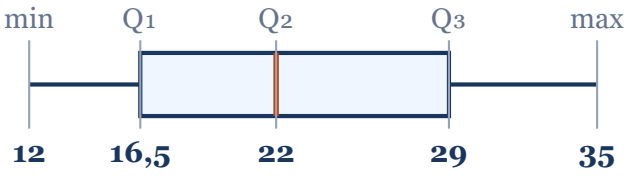
5 Find the range of 12, 15, 18, 20, 35. **(1)**

$35 - 12 = \mathbf{23}$ ✓ (1)

6 For 12, 15, 18, 20, 22, 25, 28, 30, 35 find Q_1, Q_2 and Q_3. **(3)**

$\mathbf{Q_1 = 16{,}5 \cdot Q_2 = 22 \cdot Q_3 = 29}$ ✓✓✓ (3)

7 Using the box plot below of that summary, find the IQR. (1)



> $29 - 16{,}5 = \mathbf{12{,}5}$ ✓ (1)

8 What does the line inside the box represent? (1)

> The **median** (Q_2) ✓ (1)

9 What fraction of the data lies inside the box? (1)

> The middle **50%** ✓ (1)

10 A box plot has minimum 4, $Q_1 = 9$, median 14, $Q_3 = 21$ and maximum 30. Calculate the interquartile range, and state what fraction of the data lies inside the box. (2)

> IQR $= 21 - 9 = \mathbf{12}$; the box holds the middle **50%** ✓✓ (2)

TOTAL: 17 marks

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