FOUNDATION & HIGHER

HIGHER EXTENDS

Name ..... Class .....

S4: Averages, spread and box plots

Mean, median, mode, range, quartiles, interquartile range, outliers and box plots

20 marks · 25 minutes · Calculator allowed

1) Here are 7 numbers: 4, 7, 7, 9, 12, 15, 18

(a) Find the mean. Give your answer to 1 decimal place.

.....

(2)

(b) Find the median.

.....

(1)

(c) Find the mode.

.....

(1)

(d) Find the range.

.....

(1)

[Question 1: 5 marks]

2) The table shows the goals scored in 20 matches.

Goals	0	1	2	3	4
Frequency	3	5	6	2	4

(a) Find the mean number of goals.

.....

(2)

(b) Find the median.

.....

(1)

[Question 2: 3 marks]

---

3) The table shows the ages of 30 people.

Age, a (years)	Frequency
$0 < a \leqslant 10$	5
$10 < a \leqslant 20$	8
$20 < a \leqslant 30$	12
$30 < a \leqslant 40$	5

(a) Estimate the mean age. Give your answer to 1 decimal place.

..... years

(3)

(b) Write down the modal class.

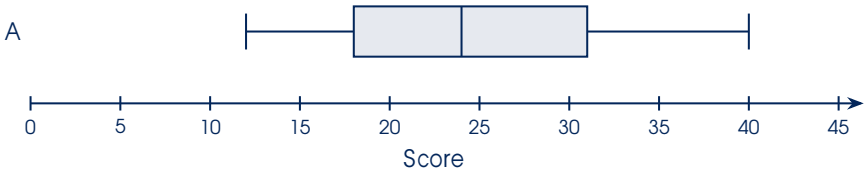
.....

(1)

[Question 3: 4 marks]

---

4) The box plot shows some test scores.



(a) Write down the median.

.....

(1)

(b) Find the interquartile range.

.....

(1)

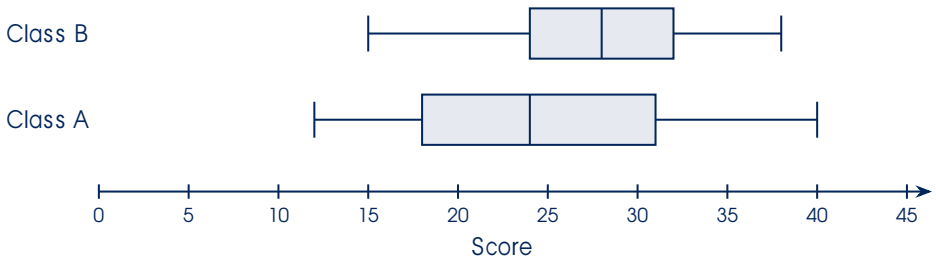
(c) Find the range.

.....

(1)

[Question 4: 3 marks]

5) The box plots show the scores of two classes. Make two comparisons between the scores.



.....

.....

.....

[Question 5: 2 marks]

---

6) Here are some data: 3, 5, 6, 6, 7, 8, 42

(a) Which value is an outlier?

.....

(1)

(b) Which average would best represent the data? Give a reason.

.....

(1)

[Question 6: 2 marks]

---

7) Find the lower and upper quartiles of 2, 4, 5, 7, 8, 10, 13

..... LQ ..... UQ

[Question 7: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) 10.3 (b) 9 (c) 7 (d) 14	(a) $72 \div 7$ (M1); A1. (b)–(d) B1 each.
2	(a) 1.95 (b) 2	(a) $\frac{39}{20}$ (M1); A1. (b) B1.
3	(a) 20.7 (b) $20 < a \leqslant 30$	(a) Midpoints 5, 15, 25, 35 (M1); $620 \div 30$ (M1); A1. (b) B1.
4	(a) 24 (b) 13 (c) 28	B1 each.
5	e.g. B has a higher median so did better on average; B has a smaller IQR so is more consistent	B1 for an average comparison; B1 for a spread comparison.
6	(a) 42 (b) median, because it is not affected by the outlier	B1 each.
7	LQ 4, UQ 10	B1 both.