FOUNDATION & HIGHER

HIGHER EXTENDS

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

S4: Averages and spread

Solve problems involving averages, spread and comparing distributions

20 marks · 25 minutes · Non-calculator

1) The mean of 5 numbers is 12. Four of them are 8, 10, 15 and 16. Find the fifth.

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[Question 1: 2 marks]

2) Class 1 has 20 pupils with a mean score of 64. Class 2 has 30 pupils with a mean of 59. Find the mean score of all 50 pupils.

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[Question 2: 3 marks]

3) The numbers 3, 7, 8, 10 and 12 have a mean of 8. What sixth number would make the mean 9?

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[Question 3: 2 marks]

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4) Five positive integers have a mode of 4, a median of 5, a mean of 6.2 and a range of 8. Find the numbers.

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[Question 4: 4 marks]

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5) Box plot A: median 45, IQR 12, range 40. Box plot B: median 52, IQR 20, range 35. Make two comparisons.

[Question 5: 2 marks]

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6) Estimate the mean: $0 < x \leqslant 10$: 4; $10 < x \leqslant 20$: 10; $20 < x \leqslant 30$: 16; $30 < x \leqslant 40$: 10.

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[Question 6: 3 marks]

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7) For a data set, LQ = 20 and UQ = 30. An outlier is more than 1.5 × IQR above the UQ. Is 48 an outlier?

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[Question 7: 2 marks]

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8) 9 workers have a mean salary of £30 000. A manager earning £120 000 joins them. Find the new mean salary.

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[Question 8: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	11	Total 60 (P1); A1.
2	61	1280 + 1770 (P1, P1); ÷50 (A1).
3	14	New total 54 (P1); A1.
4	4, 4, 5, 6, 12	Total 31 (P1); 4, 4, 5 and largest 12 (P1, P1); 6 (A1).
5	Comparison	B higher median (C1); A more consistent (smaller IQR) (C1).
6	23	Midpoints (P1); $\sum fx = 920$ (P1); A1.
7	Yes	30 + 15 = 45 (P1); 48 > 45 (C1).
8	£39 000	Total £390 000 (P1); A1.