FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

S6: Scatter graphs and correlation

Interpret scatter graphs, correlation and lines of best fit

20 marks · 25 minutes · Non-calculator

1) Explain, with an example, why correlation does not prove causation.

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[Question 1: 2 marks]

2) Ice cream sales and sunburn cases are positively correlated. Explain why ice cream does not cause sunburn.

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[Question 2: 2 marks]

3) Explain why using a line of best fit outside the range of the data (extrapolation) is unreliable.

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[Question 3: 2 marks]

4) Kim says negative correlation means there is no relationship. Explain her mistake.

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[Question 4: 2 marks]

5) Explain how to draw a line of best fit.

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[Question 5: 2 marks]

6) Should an outlier be used when drawing a line of best fit? Explain.

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[Question 6: 2 marks]

7) Explain why predictions within the range of the data are more reliable.

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[Question 7: 2 marks]

8) Explain the difference between strong and weak correlation.

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[Question 8: 2 marks]

9) Explain why you would not expect correlation between shoe size and maths score for adults.

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[Question 9: 2 marks]

10) A line of best fit for hours of revision and test score is $y = 6.5x + 26$. Explain what the 6.5 and the 26 mean.

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[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	Two things can be linked through a third factor (C1); example (C1).
2	Explanation	Both increase in hot sunny weather (C2).
3	Explanation	The pattern may not continue beyond the data (C2).
4	Explanation	As one increases the other decreases (C2).
5	Explanation	Straight line following the trend (C1); about equal numbers of points on each side (C1).
6	No	It does not fit the pattern and would distort the line (C2).
7	Explanation	Interpolation uses the known pattern (C2).
8	Explanation	Strong: points close to a line (C1); weak: widely scattered (C1).
9	Explanation	No reason for one to affect the other (C2).
10	Explanation	6.5 extra marks per hour (C1); 26 marks with no revision (C1).