FOUNDATION & HIGHER

SAME AT BOTH TIERS

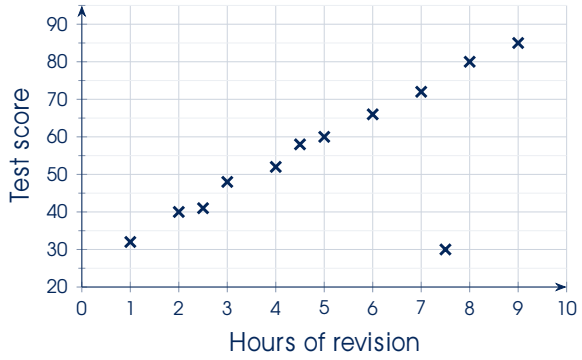
Name ..... Class .....

S6: Scatter graphs

Scatter graphs, correlation, lines of best fit, interpolation and extrapolation

20 marks · 25 minutes · Non-calculator

1) The scatter graph shows the hours of revision and test scores of 12 students.



(a) What type of correlation does the graph show?

.....

(1)

(b) One point does not fit the pattern. Write down its coordinates.

.....

(1)

(c) Draw a line of best fit on the graph.

(1)

(d) Use your line to estimate the score of a student who revised for 6.5 hours.

.....

(1)

(e) Why would it be unreliable to use your line for a student who revised for 20 hours?

.....

(1)

[Question 1: 5 marks]

2) Describe the type of correlation you would expect between

(a) temperature and ice-cream sales

.....

(1)

(b) the age of a car and its value

.....

(1)

(c) shoe size and score in a maths test

.....

(1)

[Question 2: 3 marks]

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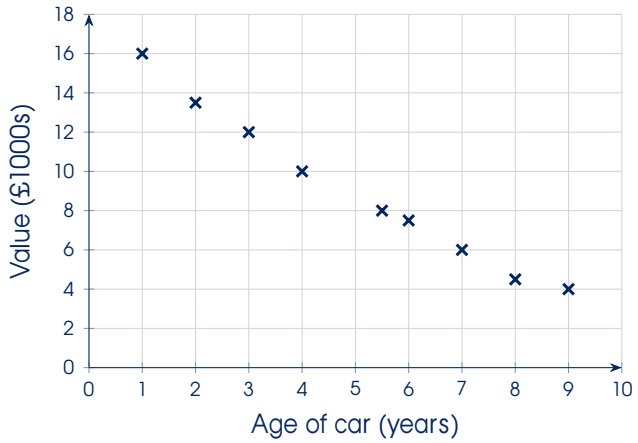
3) Towns with more doctors have more deaths. Does this mean doctors cause deaths? Explain.

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[Question 3: 1 marks]

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4) The scatter graph shows the ages and values of some cars.



(a) Describe the relationship between age and value.

(1)

(b) Draw a line of best fit.

(1)

(c) Estimate the value of a car that is 5 years old.

£ .....

(1)

(d) Would it be sensible to use your line for a car that is 20 years old? Give a reason.

.....

.....

(1)

[Question 4: 4 marks]

5) Which is usually more reliable: interpolation or extrapolation?

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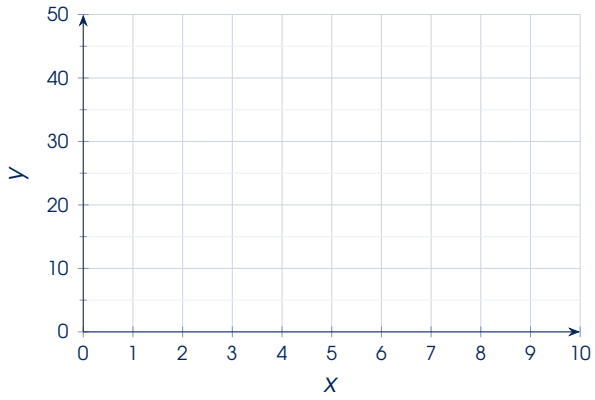
[Question 5: 1 marks]

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6) The table shows some data.

x	2	3	5	7	9
y	12	18	25	34	44

(a) Plot the points on the grid.



(2)

(b) Describe the correlation.

.....

(1)

(c) Draw a line of best fit and use it to estimate y when $x = 6$

.....

(1)

[Question 6: 4 marks]

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7) Where should a line of best fit go?

.....

[Question 7: 1 marks]

8) Should you draw a line of best fit when there is no correlation?

.....

[Question 8: 1 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) positive (b) (7.5, 30) (c) line through the points (d) about 69 (e) it is outside the data (extrapolation)	B1 each; (d) accept 64 to 74.
2	(a) positive (b) negative (c) none	B1 each.
3	No; correlation does not show causation (bigger towns have more of both)	B1.
4	(a) Older cars are worth less (negative correlation) (b) line (c) about £8000 (d) No; it is outside the data and the value cannot fall below zero	B1 each; (c) accept £7000 to £9000.
5	Interpolation	B1.
6	(a) points plotted (b) positive (c) about 29	(a) B2 (B1 for 3 or 4 correct). (b) B1. (c) 27 to 31 (B1).
7	Through the middle of the points, with about the same number on each side	B1.
8	No	B1.