

KS3 – Correlation – Answers

Section A – Correlation

Q1

Accept labels matching the three diagrams the user inserts.

Positive correlation: points generally rise from left to right.

Negative correlation: points generally fall from left to right.

No correlation: no clear upward or downward trend.

Strongest correlation = the diagram whose points lie closest to a straight-line pattern.

Q2

a) Positive — students who revise more would generally be expected to score higher.

b) Negative — as outside temperature rises, heating use/spending would generally fall.

c) No correlation — there is no sensible relationship between shoe size and books read.

Q3

a) As one variable increases, the other tends to increase.

b) As one variable increases, the other tends to decrease.

c) There is no clear relationship between the variables.

d) No. Correlation shows an association, not proof of cause.

e) Strong negative correlation.

Q4

a) As the age of the car increases, its selling price generally decreases.

b) Lower.

c) An outlier.

d) For example: unusually low mileage, rare model, excellent condition or valuable modifications.

e) This is extrapolation; the pattern may not continue beyond the observed data.

Section B – Line of Best Fit

Q5

All eight points correctly plotted.

A sensible upward-sloping line of best fit should pass through the middle of the data with a roughly balanced number of points above and below.

Positive correlation.

Estimate at $x = 5.5$ should be about 9–10, depending on the line drawn. Accept a reasonable value consistent with the student's line.

Q6

All eight points correctly plotted.

A sensible downward-sloping line of best fit should pass through the middle of the data.

Negative correlation.

At $x = 4$, a reasonable estimate is about $y = -3$, depending on the line drawn. Accept a sensible value consistent with the student's line.

Q7

All seven points correctly plotted with suitable labels/scales.

A sensible downward-sloping line of best fit.

Negative correlation.

At 11°C , a reasonable estimate is about 8 hot drinks, depending on the student's line.

Q8

a) Based on the overall trend, a person exercising for 4 hours per week would be predicted to have a resting heart rate of about 68 bpm.

b) An outlier.

c) It represents the overall trend, so it should pass through the middle of the points rather than through every individual point.

d) Interpolation stays within observed data; extrapolation assumes the trend continues beyond the data and is less reliable.