

Scatter graphs

Foundation and Higher tiers | Total marks: 46

Marks

- M** Method mark, for a correct method. It can be implied by a correct answer.
- A** Accuracy mark, for a correct answer. It needs the method mark before it.
- B** A mark for a correct value or statement, with or without working.
- ft** Follow through: the mark is given for using an earlier wrong answer correctly.
- oe** Or equivalent.
- [a, b]** Any value from a to b inclusive.

Questions

Q	Skill	Spec	Tier	Grade	Calculator	Marks
1	Types of correlation	S6	Foundation	2	No	2
2	Plotting points and describing a relationship	S6	Foundation	3	No	2
3	Recognising negative correlation in context	S6	Foundation	3	No	1
4	Describing correlation and spotting an outlier	S6	Foundation	3	No	2
5	Correlation is not causation	S6	Foundation	4	No	2
6	Line of best fit: estimating both ways	S6	Common	4	No	3
7	Criticising a line of best fit	S6	Common	4	No	2
8	Interpolation and the danger of extrapolation	S6	Common	5	No	2
9	Making a decision with a line of best fit	S6	Common	5	No	3
10	Describing a relationship; a percentage of the points	S6 R9	Foundation	3	Yes	3
11	Using a line of best fit, with a percentage	S6 R9	Common	4	Yes	4
12	Using a scatter graph to compare two measures	S6 R9	Foundation	5	Yes	3
13	Plotting, an outlier and a line of best fit	S6	Common	5	Yes	5
14	Interpreting the gradient of a line of best fit	S6 R14	Common	6	Yes	3
15	A line of best fit in a cost problem	S6 R1 N13	Common	6	Yes	4
16	The equation of a line of best fit	S6 A9	Common	6	Yes	5
	Total					46

Question 1 S6 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
1(a)	C	B1	
1(b)	positive	B1	accept strong positive

Question 2 S6 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
2(a)	both points plotted correctly	B1	± half a small square
2(b)	the larger the area, the longer it takes to mow	B1	oe, or positive correlation

Question 3 S6 · Foundation · Grade 3 · 1 mark

Q	Answer	Mark	Comments
3	people sharing a pizza and slices each person gets	B1	

Question 4 S6 · Foundation · Grade 3 · 2 marks

Q	Answer	Mark	Comments
4(a)	negative	B1	accept strong negative
4(b)	1200	B1	

Question 5 S6 · Foundation · Grade 4 · 2 marks

Q	Answer	Mark	Comments
5(a)	7	B1	
5(b)	No, with a reason	B1	eg correlation does not mean one causes the other; both go up in sunny weather when there is more pollen

Question 6 S6 · Common · Grade 4 · 3 marks

Q	Answer	Mark	Comments
6(a)	a single ruled line of best fit	B1	between (260, [56.2, 58.2]) and (440, [66.6, 68.6])
6(b)	61.4	B1ft	accept [60.3, 62.4], or ft their line
6(c)	414	B1ft	accept [399, 430], or ft their line

Question 7 S6 · Common · Grade 4 · 2 marks

Q	Answer	Mark	Comments
7(a)	a correct reason	B1	eg most of the points are above her line; she has joined the first and last points; it does not follow the middle of the points
7(b)	too low, with a reason	B1	eg her line is below the points

Question 8 S6 · Common · Grade 5 · 2 marks

Q	Answer	Mark	Comments
8(a)	57	B1	accept [54, 61]
8(b)	a correct reason	B1	eg 40 weeks is outside the range of the data; the plants may not keep growing at the same rate

Question 9 S6 · Common · Grade 5 · 3 marks

Q	Answer	Mark	Comments
9	draws a line of best fit	M1	or uses the points near 5 °C
	reads about 266 units at 5 °C	A1	accept [230, 300]
	Yes, with a comparison	B1ft	eg 380 is about 110 units more than the graph suggests. ft their reading

Question 10 S6 R9 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
10(a)	the more hours of sunshine, the more ice lollies sold	B1	oe, or positive correlation
10(b)	$\frac{5}{14} \times 100$	M1	oe
	35.7	A1	accept 35.7 or [35.71, 35.72]

Question 11 S6 R9 · Common · Grade 4 · 4 marks

Q	Answer	Mark	Comments
11(a)	point at (64, 1140)	B1	± half a small square
11(b)	1308	B1	accept [1287, 1328]
11(c)	reads about £983 at 52 m ² and works out $\frac{1235 - \text{their reading}}{\text{their reading}} \times 100$	M1	oe, eg $\frac{1235}{\text{their reading}}$ (= 1.256)
	26	A1	accept [23, 29]

Question 12 S6 R9 · Foundation · Grade 5 · 3 marks

Q	Answer	Mark	Comments
12	a method to compare the two marks	M1	eg draws the line through (0, 0) and (50, 50), or lists points with Paper 2 > Paper 1
	7 students	A1	
	35	A1ft	ft their number of students $\div 20 \times 100$

Question 13 S6 · Common · Grade 5 · 5 marks

Q	Answer	Mark	Comments
13(a)	all three points plotted correctly	B2	$\pm$ half a small square. B1 for one or two correct
13(b)	9	B1	
13(c)	a line of best fit that ignores the delivery of 9 km	M1	may be implied by the answer
	27	A1	accept [25, 30]

Question 14 S6 R14 · Common · Grade 6 · 3 marks

Q	Answer	Mark	Comments
14(a)	362	B1	accept [350, 375]
14(b)	a method for the gradient using two points on the line	M1	eg $(587 - 138) \div 7$ from the line at 0 and 7 years, or reads the fall over a whole number of years
	64	A1	accept [56, 73]

Question 15 S6 R1 N13 · Common · Grade 6 · 4 marks

Q	Answer	Mark	Comments
15	reads about 48 miles per gallon at 1.6 litres	M1	accept [47, 49]
	$280 \div$ their reading (= 5.80 gallons)	M1	oe
	their gallons $\times 4.546 \times 143.9 \div 100$	M1	oe, eg $\times 4.546 \times 1.439$
	£37.93	A1	accept [37.38, 38.98]

Question 16

S6 A9 · Common · Grade 6 · 5 marks

Q	Answer	Mark	Comments
16(a)	a method for the gradient using two points on the line	M1	eg $(230 - 20) \div 50$
	gradient 4.2	A1	accept [4.1, 4.3]
	$C = 4.2A + 20$	A1	oe, ft their gradient with intercept 20
16(b)	42	B1ft	ft their equation, from 195 cm
16(c)	the circumference increases by about 4.2 cm each year	B1	oe, ft their gradient