



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Scatter Graphs & Correlation · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Scatter Graphs & Correlation

Total marks available: 76

● Scatter Graphs & Correlation

✓(20, 25)

Q1 · ● Developing · 1 mark

METHOD

Read the point directly above 20 on the graph: (20, 25)

✓(9, 64)

Q2 · ● Developing · 1 mark

METHOD

Read the point directly above 9 on the graph: (9, 64)

✓(8, 51)

Q3 · ● Developing · 1 mark

METHOD

Read the point directly above 8 on the graph: (8, 51)

✓No correlation

Q4 · ● Developing · 1 mark

METHOD

The points show no clear pattern or trend.

✓(25, 17)

Q5 · ● Developing · 1 mark

METHOD

Read the point directly above 25 on the graph: (25, 17)

✓(9, 35)

Q6 · ● Developing · 1 mark

METHOD

Read the point directly above 9 on the graph: (9, 35)

✓(22, 31)

Q7 · ● Developing · 1 mark

METHOD

Read the point directly above 22 on the graph: (22, 31)

✓Positive correlation

Q8 · ● Developing · 1 mark

METHOD

The points show a clear positive correlation pattern.

✓(11, 62)

Q9 · ● Developing · 1 mark

METHOD

Read the point directly above 11 on the graph: (11, 62)

✓(6, 59)

Q10 · ● Developing · 1 mark

METHOD

Read the point directly above 6 on the graph: (6, 59)

✓ $y = -x + 14$

Q11 · ● Secure · 3 marks

METHOD

Gradient = $(7 - 12) \div (7 - 2) = -1$

$12 = -1 \times 2 + c \rightarrow c = 14$

Equation: $y = -x + 14$

✓ $y = -2x + 44$

Q12 · ● Secure · 3 marks

METHOD

Gradient = $(24 - 36) \div (10 - 4) = -2$

$36 = -2 \times 4 + c \rightarrow c = 44$

Equation: $y = -2x + 44$

✓(18, 62)

Q13 · ● Secure · 1 mark

METHOD

The point (18, 62) lies well away from the trend of the other points.

✓ $y = -x + 13$

Q14 · ● Secure · 3 marks

METHOD

$$\text{Gradient} = (7 - 11) \div (6 - 2) = -1$$

$$11 = -1 \times 2 + c \rightarrow c = 13$$

$$\text{Equation: } y = -x + 13$$

✓ $y = 2.5x + 20$

Q15 · ● Secure · 3 marks

METHOD

$$\text{Gradient} = (60 - 30) \div (16 - 4) = 2.5$$

$$30 = 2.5 \times 4 + c \rightarrow c = 20$$

$$\text{Equation: } y = 2.5x + 20$$

✓(1, 44)

Q16 · ● Secure · 1 mark

METHOD

The point (1, 44) lies well away from the trend of the other points.

✓ $y = -3x + 26$

Q17 · ● Secure · 3 marks

METHOD

$$\text{Gradient} = (5 - 17) \div (7 - 3) = -3$$

$$17 = -3 \times 3 + c \rightarrow c = 26$$

$$\text{Equation: } y = -3x + 26$$

✓ $y = -0.5x + 25$

Q18 · ● Secure · 3 marks

METHOD

$$\text{Gradient} = (17 - 21) \div (16 - 8) = -0.5$$

$$21 = -0.5 \times 8 + c \rightarrow c = 25$$

$$\text{Equation: } y = -0.5x + 25$$

✓ $y = 1.5x + 4$

Q19 · ● Secure · 3 marks

METHOD

$$\text{Gradient} = (28 - 16) \div (16 - 8) = 1.5$$

$$16 = 1.5 \times 8 + c \rightarrow c = 4$$

$$\text{Equation: } y = 1.5x + 4$$

✓ $y = -x + 25$

Q20 · ● Secure · 3 marks

METHOD

$$\text{Gradient} = (18 - 24) \div (7 - 1) = -1$$

$$24 = -1 \times 1 + c \rightarrow c = 25$$

$$\text{Equation: } y = -x + 25$$

✓ $y = 3x + 18$; estimate = 54;
extrapolation — may not be reliable.

Q21 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (48 - 21) \div (10 - 1) = 3$$

$$\text{Equation: } y = 3x + 18$$

$$y = 3 \times 12 + 18 = 54$$

12 is outside the data range 1 to 10, so this is extrapolation and may not be reliable.

✓ $y = -x + 44$; estimate = 31;
extrapolation — may not be reliable.

Q22 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (35 - 41) \div (9 - 3) = -1$$

$$\text{Equation: } y = -x + 44$$

$$y = -1 \times 13 + 44 = 31$$

13 is outside the data range 3 to 9, so this is extrapolation and may not be reliable.

✓ $y = -3x + 71$; estimate = 50

Q23 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (32 - 62) \div (13 - 3) = -3$$

$$\text{Equation: } y = -3x + 71$$

$$y = -3 \times 7 + 71 = 50$$

✓ $y = -3x + 71$; estimate = 29;
extrapolation — may not be reliable.

Q24 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (44 - 65) \div (9 - 2) = -3$$

$$\text{Equation: } y = -3x + 71$$

$$y = -3 \times 14 + 71 = 29$$

14 is outside the data range 2 to 9, so this is extrapolation and may not be reliable.

✓ $y = -1.5x + 41$; estimate = 20

Q25 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (11 - 32) \div (20 - 6) = -1.5$$

$$\text{Equation: } y = -1.5x + 41$$

$$y = -1.5 \times 14 + 41 = 20$$

✓ $y = -x + 45$; estimate = 36

Q26 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (35 - 44) \div (10 - 1) = -1$$

$$\text{Equation: } y = -x + 45$$

$$y = -1 \times 9 + 45 = 36$$

✓ $y = -x + 34$; estimate = 26

Q27 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (22 - 31) \div (12 - 3) = -1$$

$$\text{Equation: } y = -x + 34$$

$$y = -1 \times 8 + 34 = 26$$

✓ $y = -x + 30$; estimate = 25

Q28 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (21 - 27) \div (9 - 3) = -1$$

$$\text{Equation: } y = -x + 30$$

$$y = -1 \times 5 + 30 = 25$$

✓ $y = x + 18$; estimate = 30; extrapolation
— may not be reliable.

Q29 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (27 - 20) \div (9 - 2) = 1$$

$$\text{Equation: } y = x + 18$$

$$y = 1 \times 12 + 18 = 30$$

12 is outside the data range 2 to 9, so this is extrapolation and may not be reliable.

✓ $y = x + 28$; estimate = 42; extrapolation — may not be reliable. Q30 · ● Greater Depth · 4 marks

METHOD

$$\text{Gradient} = (37 - 29) \div (9 - 1) = 1$$

$$\text{Equation: } y = x + 28$$

$$y = 1 \times 14 + 28 = 42$$

14 is outside the data range 1 to 9, so this is extrapolation and may not be reliable.