6.7 Scatter Graphs and Correlation: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A scatter graph is drawn from these points: (2, 11), (5, 19), (8, 29), (11, 39), (12, 59), (16, 53), (19, 61). The line of best fit for the other points is y = 3x + 5.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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2 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 8 cases. The points are: (3, 20), (7, 15), (9, 11), (11, 14), (12, 15), (14, 6), (16, 15), (17, 20).
Describe the correlation shown by the points.

(2)

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3 The scatter graph plots shoe size (x) and reading score (y) for 9 cases. The points are: (2, 61), (4, 58), (7, 52), (8, 45), (10, 42), (12, 32), (13, 32), (14, 26), (16, 24).
Describe the correlation shown by the points.

(2)

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4 A line of best fit for hours of revision (x) and test mark (y) has equation y = 6x + 24. Write down what the gradient 6 means in this context.

(2)

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5 A line of best fit for age of a car in years (x) and price in hundreds of pounds (y) has equation $y = 3x + 22$. Use the line to estimate y when $x = 6$.

(2)

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6 The scatter graph plots shoe size (x) and reading score (y) for 8 cases. The points are: (1, 14), (2, 5), (5, 11), (7, 20), (10, 15), (12, 16), (13, 5), (19, 12).
Describe the correlation shown by the points.

(2)

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7 A line of best fit for temperature (x) and ice creams sold (y) has equation $y = 3x + 29$. Use the line to estimate y when $x = 20$.

(2)

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8 The scatter graph plots age of a car in years (x) and its value in hundreds of pounds (y) for 7 cases. The points are: (3, 60), (7, 52), (10, 39), (11, 34), (12, 37), (17, 19), (18, 16).
Describe the correlation shown by the points.

(2)

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9 The scatter graph for temperature (x) and ice creams sold (y) uses data with x values from 4 to 20. The line of best fit is $y = 4x + 29$. Katie uses the line to predict y when $x = 30$. Is this prediction likely to be reliable? Give a reason.

(2)

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10 A scatter graph is drawn from these points: (5, 27), (7, 36), (8, 41), (9, 44), (13, 61), (14, 79), (19, 84). The line of best fit for the other points is y = 4x + 8.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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11 The scatter graph plots shoe size (x) and reading score (y) for 7 cases. The points are: (2, 15), (5, 23), (8, 26), (9, 34), (10, 33), (12, 39), (17, 55).
Describe the correlation shown by the points.

(2)

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12 A line of best fit for age of a car in years (x) and price in hundreds of pounds (y) has equation y = 5x + 11. Use the line to estimate y when x = 14.

(2)

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13 The scatter graph for age of a car in years (x) and price in hundreds of pounds (y) uses data with x values from 2 to 18. The line of best fit is y = 4x + 27. Katie uses the line to predict y when x = 28. Is this prediction likely to be reliable? Give a reason.

(2)

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14 The scatter graph plots shoe size (x) and reading score (y) for 9 cases. The points are: (1, 8), (2, 15), (4, 21), (6, 20), (7, 25), (10, 34), (11, 39), (17, 54), (18, 57).
Describe the correlation shown by the points.

(2)

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15 A scatter graph is drawn from these points: (3, 21), (7, 40), (10, 55), (13, 85), (14, 76), (16, 87), (17, 91). The line of best fit for the other points is $y = 5x + 6$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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16 A scatter graph is drawn from these points: (3, 10), (7, 20), (8, 21), (13, 45), (14, 32), (15, 34), (17, 39). The line of best fit for the other points is $y = 2x + 5$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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17 The scatter graph for hours of revision (x) and test mark (y) uses data with x values from 3 to 20. The line of best fit is $y = 2x + 16$. Katie uses the line to predict y when $x = 30$. Is this prediction likely to be reliable? Give a reason.

(2)

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18 A line of best fit for age of a car in years (x) and price in hundreds of pounds (y) has equation $y = 3x + 8$. Use the line to estimate y when $x = 6$.

(2)

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19 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 7 cases. The points are: (1, 70), (10, 38), (11, 39), (13, 27), (14, 24), (17, 15), (19, 14).
Describe the correlation shown by the points.

(2)

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20 A line of best fit for hours of revision (x) and test mark (y) has equation $y = 3x + 29$. Use the line to estimate y when $x = 12$.

(2)

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21 A line of best fit for temperature (x) and ice creams sold (y) has equation $y = 6x + 24$. Write down what the gradient 6 means in this context.

(2)

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22 The scatter graph plots shoe size (x) and reading score (y) for 8 cases. The points are: (2, 68), (4, 60), (6, 48), (10, 36), (15, 21), (16, 21), (18, 19), (19, 10).
Describe the correlation shown by the points.

(2)

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23 The scatter graph for hours of revision (x) and test mark (y) uses data with x values from 3 to 18. The line of best fit is $y = 5x + 30$. Katie uses the line to predict y when $x = 28$. Is this prediction likely to be reliable? Give a reason.

(2)

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Mark scheme · 6.7 Scatter Graphs and Correlation: 1-hour Pack

Question 1

compares the points with the line of best fit **M1**

(12, 59) cao **A1**

Answer: **(12, 59)**

Question 2

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

no correlation cao **A1**

Answer: **no correlation**

Question 3

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

negative correlation cao **A1**

Answer: **negative correlation**

Question 4

refers to the change in y for each 1 unit increase in x **M1**

y increases by 6 for each extra unit of x **A1**

Answer: **test mark increases by 6 for each extra unit of hours of revision**

Question 5

substitutes x = 6 **M1**

40 cao **A1**

Answer: **40**

Question 6

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

no correlation cao **A1**

Answer: **no correlation**

Question 7

substitutes x = 20 **M1**

89 cao **A1**

Answer: **89**

Question 8

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

negative correlation cao **A1**

Answer: **negative correlation**

Question 9

notes that 30 is outside the range of the data **M1**

No, because it is extrapolation **A1**

Answer: **No, it is outside the range of the data (extrapolation)**

Question 10

compares the points with the line of best fit **M1**

(14, 79) cao **A1**

Answer: **(14, 79)**

Question 11

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

positive correlation cao **A1**

Answer: **positive correlation**

Question 12

substitutes x = 14 **M1**

81 cao **A1**

Answer: **81**

Question 13

notes that 28 is outside the range of the data **M1**

No, because it is extrapolation **A1**

Answer: **No, it is outside the range of the data (extrapolation)**

Question 14

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

positive correlation cao **A1**

Answer: **positive correlation**

Question 15

compares the points with the line of best fit **M1**

(13, 85) cao **A1**

Answer: **(13, 85)**

Question 16

compares the points with the line of best fit **M1**

(13, 45) cao **A1**

Answer: **(13, 45)**

Question 17

notes that 30 is outside the range of the data **M1**

No, because it is extrapolation **A1**

Answer: **No, it is outside the range of the data (extrapolation)**

Question 18

substitutes x = 6 **M1**

26 cao **A1**

Answer: **26**

Question 19

describes the trend (as x increases, y ...) in words or the type of correlation **M1**

negative correlation cao **A1**

Answer: **negative correlation**

Question 20

substitutes x = 12 **M1**

65 cao **A1**

Answer: **65**

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Question 21

refers to the change in y for each 1 unit increase in x	**M1**
y increases by 6 for each extra unit of x	**A1**

Answer: **ice creams sold increases by 6 for each extra unit of temperature**

Question 22

describes the trend (as x increases, y ...) in words or the type of correlation	**M1**
negative correlation cao	**A1**

Answer: **negative correlation**

Question 23

notes that 28 is outside the range of the data	**M1**
No, because it is extrapolation	**A1**

Answer: **No, it is outside the range of the data (extrapolation)**

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