6.7 Scatter Graphs and Correlation: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A scatter graph is drawn from these points: (2, 21), (8, 50), (9, 55), (11, 64), (13, 74), (14, 63), (19, 105). The line of best fit for the other points is y = 5x + 10.
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: (6, 19), (8, 6), (9, 14), (11, 14), (12, 9), (16, 2), (17, 16), (18, 18).
Describe the correlation shown by the points.

(2)

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3 A scatter graph is drawn from these points: (3, 24), (7, 58), (8, 51), (9, 54), (11, 65), (15, 84), (16, 90). The line of best fit for the other points is y = 5x + 10.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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4 The scatter graph for hours of revision (x) and test mark (y) uses data with x values from 2 to 24. The line of best fit is y = 5x + 21. Katie uses the line to predict y when x = 34. Is this prediction likely to be reliable? Give a reason.

(2)

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5 A scatter graph is drawn from these points: (3, 20), (6, 35), (8, 44), (10, 53), (11, 41), (12, 63), (17, 90). The line of best fit for the other points is $y = 5x + 4$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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6 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 7 cases. The points are: (4, 18), (7, 25), (8, 29), (10, 31), (11, 40), (13, 45), (17, 54).
Describe the correlation shown by the points.

(2)

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7 A scatter graph is drawn from these points: (3, 18), (6, 29), (10, 41), (11, 42), (15, 42), (16, 57), (19, 66). The line of best fit for the other points is $y = 3x + 10$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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8 A line of best fit for temperature (x) and ice creams sold (y) has equation $y = 3x + 13$.
Write down what the gradient 3 means in this context.

(2)

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9 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 9 cases. The points are: (2, 68), (7, 46), (11, 37), (12, 31), (13, 30), (14, 31), (16, 18), (18, 15), (19, 16).
Describe the correlation shown by the points.

(2)

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10 A scatter graph is drawn from these points: (5, 36), (7, 44), (11, 58), (12, 62), (14, 72), (16, 97), (19, 92). The line of best fit for the other points is y = 4x + 15.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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11 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 9 cases. The points are: (4, 16), (5, 14), (7, 8), (9, 6), (11, 7), (15, 16), (16, 10), (18, 14), (19, 6).
Describe the correlation shown by the points.

(2)

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12 Use the pairs: (2, 5), (4, 9), (6, 13). Draw (or imagine) the scatter and write down the equation of the straight line that fits these points exactly in the form y = mx + c.

(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 4 to 24. The line of best fit is y = 4x + 11. Katie uses the line to predict y when x = 34. Is this prediction likely to be reliable? Give a reason.

(2)

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14 A scatter graph is drawn from these points: (2, 23), (3, 28), (7, 43), (8, 67), (9, 52), (10, 56), (16, 78). The line of best fit for the other points is y = 4x + 15.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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15 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 9 cases. The points are: (2, 8), (3, 4), (5, 18), (6, 5), (7, 9), (9, 6), (15, 3), (17, 15), (18, 9).
Describe the correlation shown by the points.

(2)

16 A scatter graph is drawn from these points: (2, 22), (5, 34), (10, 54), (11, 59), (14, 60), (17, 83), (19, 91). The line of best fit for the other points is $y = 4x + 15$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

17 A line of best fit for temperature (x) and ice creams sold (y) has equation $y = 6x + 7$.
Write down what the gradient 6 means in this context.

(2)

18 A scatter graph is drawn from these points: (5, 24), (6, 10), (7, 34), (11, 49), (13, 58), (16, 70), (19, 80). The line of best fit for the other points is $y = 4x + 5$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

19 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 7 cases. The points are: (2, 10), (3, 14), (6, 20), (8, 31), (15, 49), (16, 51), (19, 61).
Describe the correlation shown by the points.

(2)

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20 A scatter graph is drawn from these points: (3, 19), (8, 29), (10, 15), (11, 35), (12, 38), (16, 46), (17, 48). The line of best fit for the other points is y = 2x + 13.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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21 The scatter graph plots shoe size (x) and reading score (y) for 8 cases. The points are: (6, 20), (7, 24), (8, 33), (9, 31), (11, 41), (12, 43), (14, 48), (16, 54).
Describe the correlation shown by the points.

(2)

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22 A line of best fit for hours of revision (x) and test mark (y) has equation y = 6x + 7. Use the line to estimate y when x = 11.

(2)

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23 A line of best fit for temperature (x) and ice creams sold (y) has equation y = 4x + 19.
Write down what the gradient 4 means in this context.

(2)

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24 A scatter graph is drawn from these points: (5, 21), (7, 24), (10, 15), (11, 32), (12, 35), (14, 40), (15, 41). The line of best fit for the other points is y = 2x + 11.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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25 The scatter graph plots age of a car in years (x) and its value in hundreds of pounds (y) for 8 cases. The points are: (1, 11), (2, 11), (3, 16), (4, 11), (5, 10), (12, 18), (14, 8), (18, 11).
Describe the correlation shown by the points.

(2)

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26 The scatter graph for age of a car in years (x) and price in hundreds of pounds (y) uses data with x values from 6 to 24. The line of best fit is $y = 6x + 24$. Katie uses the line to predict y when $x = 34$. Is this prediction likely to be reliable? Give a reason.

(2)

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27 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 7 cases. The points are: (2, 19), (3, 5), (7, 6), (8, 7), (15, 10), (17, 8), (18, 15).
Describe the correlation shown by the points.

(2)

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28 A scatter graph is drawn from these points: (3, 12), (7, 25), (8, 27), (10, 52), (12, 40), (15, 47), (19, 59). The line of best fit for the other points is $y = 3x + 3$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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29 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 9 cases. The points are: (1, 70), (3, 64), (4, 54), (9, 40), (11, 41), (13, 35), (14, 31), (17, 21), (19, 13). Describe the correlation shown by the points.

(2)

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30 A scatter graph is drawn from these points: (3, 9), (4, 12), (5, 13), (8, 21), (14, 43), (16, 36), (18, 41). The line of best fit for the other points is $y = 2x + 4$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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31 The scatter graph for temperature (x) and ice creams sold (y) uses data with x values from 2 to 20. The line of best fit is $y = 6x + 14$. 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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32 A scatter graph is drawn from these points: (3, 25), (6, 49), (10, 51), (15, 73), (16, 77), (18, 85), (19, 89). The line of best fit for the other points is $y = 4x + 12$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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33 The scatter graph plots shoe size (x) and reading score (y) for 7 cases. The points are: (3, 59), (5, 54), (7, 46), (8, 49), (11, 39), (13, 31), (18, 13).
Describe the correlation shown by the points.

(2)

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34 A scatter graph is drawn from these points: (4, 16), (5, 20), (6, 22), (7, 4), (10, 35), (15, 50), (19, 61). The line of best fit for the other points is $y = 3x + 4$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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35 A line of best fit for age of a car in years (x) and price in hundreds of pounds (y) has equation $y = 5x + 8$. Write down what the gradient 5 means in this context.

(2)

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36 A scatter graph is drawn from these points: (2, 18), (3, 3), (5, 25), (7, 33), (11, 45), (16, 60), (19, 67). The line of best fit for the other points is $y = 3x + 11$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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37 The scatter graph plots age of a car in years (x) and its value in hundreds of pounds (y) for 9 cases. The points are: (5, 54), (9, 41), (11, 40), (13, 34), (14, 27), (15, 25), (16, 18), (18, 16), (19, 15).
Describe the correlation shown by the points.

(2)

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38 A line of best fit for temperature (x) and ice creams sold (y) has equation $y = 4x + 13$.
Write down what the gradient 4 means in this context.

(2)

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39 A scatter graph is drawn from these points: (3, 18), (5, 23), (9, 47), (10, 33), (12, 36), (14, 39), (15, 41). The line of best fit for the other points is y = 2x + 12.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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40 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 8 cases. The points are: (1, 14), (3, 13), (4, 11), (6, 15), (13, 16), (15, 3), (16, 19), (18, 14).
Describe the correlation shown by the points.

(2)

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41 A scatter graph is drawn from these points: (4, 13), (6, 17), (7, 19), (9, 24), (15, 36), (16, 53), (18, 42). 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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42 A line of best fit for temperature (x) and ice creams sold (y) has equation y = 4x + 11.
Write down what the gradient 4 means in this context.

(2)

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43 A scatter graph is drawn from these points: (4, 14), (5, 18), (8, 22), (10, 27), (11, 43), (13, 32), (15, 37). The line of best fit for the other points is y = 2x + 7.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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44 The scatter graph plots hours of sunshine (x) and ice creams sold (y) for 7 cases. The points are: (2, 66), (4, 55), (6, 54), (8, 49), (14, 32), (17, 19), (18, 16).
Describe the correlation shown by the points.

(2)

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45 A scatter graph is drawn from these points: (7, 22), (8, 43), (9, 26), (10, 30), (16, 41), (17, 44), (18, 46). The line of best fit for the other points is $y = 2x + 9$.
One point is an outlier. Write down the coordinates of the outlier.

(2)

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46 A line of best fit for hours of revision (x) and test mark (y) has equation $y = 5x + 17$. Write down what the gradient 5 means in this context.

(2)

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Mark scheme · 6.7 Scatter Graphs and Correlation: 2-hour Pack

Question 1

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

(14, 63) cao **A1**

Answer: **(14, 63)**

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

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

(7, 58) cao **A1**

Answer: **(7, 58)**

Question 4

notes that 34 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 5

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

(11, 41) cao **A1**

Answer: **(11, 41)**

Question 6

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

positive correlation cao **A1**

Answer: **positive correlation**

Question 7

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

(15, 42) cao **A1**

Answer: **(15, 42)**

Question 8

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

y increases by 3 for each extra unit of x **A1**

Answer: **ice creams sold increases by 3 for each extra unit of temperature**

Question 9

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

negative correlation cao **A1**

Answer: **negative correlation**

Question 10

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

(16, 97) cao **A1**

Answer: **(16, 97)**

Question 11

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

no correlation cao **A1**

Answer: **no correlation**

Question 12

find gradient m = (9-5)/(4-2) = 2 or equivalent **M1**

y = 2x + 1 cao **A1**

Answer: **y = 2x + 1**

Question 13

notes that 34 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

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

(8, 67) cao **A1**

Answer: **(8, 67)**

Question 15

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

no correlation cao **A1**

Answer: **no correlation**

Question 16

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

(14, 60) cao **A1**

Answer: **(14, 60)**

Question 17

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 18

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

(6, 10) cao **A1**

Answer: **(6, 10)**

Question 19

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

positive correlation cao **A1**

Answer: **positive correlation**

Question 20

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

(10, 15) cao **A1**

Answer: **(10, 15)**

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Question 21

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

positive correlation cao — **A1**

Answer: **positive correlation**

Question 22

substitutes x = 11 — **M1**

73 cao — **A1**

Answer: **73**

Question 23

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

y increases by 4 for each extra unit of x — **A1**

Answer: **ice creams sold increases by 4 for each extra unit of temperature**

Question 24

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

(10, 15) cao — **A1**

Answer: **(10, 15)**

Question 25

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

no correlation cao — **A1**

Answer: **no correlation**

Question 26

notes that 34 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 27

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

no correlation cao — **A1**

Answer: **no correlation**

Question 28

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

(10, 52) cao — **A1**

Answer: **(10, 52)**

Question 29

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

negative correlation cao — **A1**

Answer: **negative correlation**

Question 30

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

(14, 43) cao — **A1**

Answer: **(14, 43)**

Question 31

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 32

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

(6, 49) cao — **A1**

Answer: **(6, 49)**

Question 33

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

negative correlation cao — **A1**

Answer: **negative correlation**

Question 34

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

(7, 4) cao — **A1**

Answer: **(7, 4)**

Question 35

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

y increases by 5 for each extra unit of x — **A1**

Answer: **price in hundreds of pounds increases by 5 for each extra unit of age of a car in years**

Question 36

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

(3, 3) cao — **A1**

Answer: **(3, 3)**

Question 37

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

negative correlation cao — **A1**

Answer: **negative correlation**

Question 38

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

y increases by 4 for each extra unit of x — **A1**

Answer: **ice creams sold increases by 4 for each extra unit of temperature**

Question 39

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

(9, 47) cao — **A1**

Answer: **(9, 47)**

Question 40

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

no correlation cao — **A1**

Answer: **no correlation**

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Question 41

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

(16, 53) cao **A1**

Answer: **(16, 53)**

Question 42

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

y increases by 4 for each extra unit of x **A1**

Answer: **ice creams sold increases by 4 for each extra unit of temperature**

Question 43

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

(11, 43) cao **A1**

Answer: **(11, 43)**

Question 44

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

negative correlation cao **A1**

Answer: **negative correlation**

Question 45

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

(8, 43) cao **A1**

Answer: **(8, 43)**

Question 46

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

y increases by 5 for each extra unit of x **A1**

Answer: **test mark increases by 5 for each extra unit of hours of revision**

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