



S31-10min Scatter Graphs and Line of Best Fit: 10-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 10 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 For each statement about scatter graphs, write down whether it is True or False.

(i) A scatter graph is used to display the relationship between two numerical (quantitative) variables. (1)

.....

(ii) A line of best fit should always be drawn so that it passes exactly through every single point on a scatter graph. (1)

.....

(iii) The points on a scatter graph should not be joined up from one point to the next with straight lines. (1)

.....

(Total for Question 1 is 3 marks)

2 A student wants to draw a scatter graph to show the relationship between the age of 15 dogs (from 1 to 14 years) and their resting heart rate (from 70 to 130 beats per minute).

A) Horizontal axis 0 to 14 in steps of 2; vertical axis 60 to 140 in steps of 20, both axes numbered

B) Horizontal axis 0 to 100 in steps of 10; vertical axis 0 to 10 in steps of 1

C) Horizontal axis starting at 1 with an uneven, unnumbered scale; vertical axis 0 to 140 in steps of 20

D) Horizontal axis 0 to 14 in steps of 2; vertical axis starting at 65 with no numbers marked on the axis

(a) Write down the letter of the axis plan that would be most suitable for this scatter graph. **(1)**

☐ A

☐ B

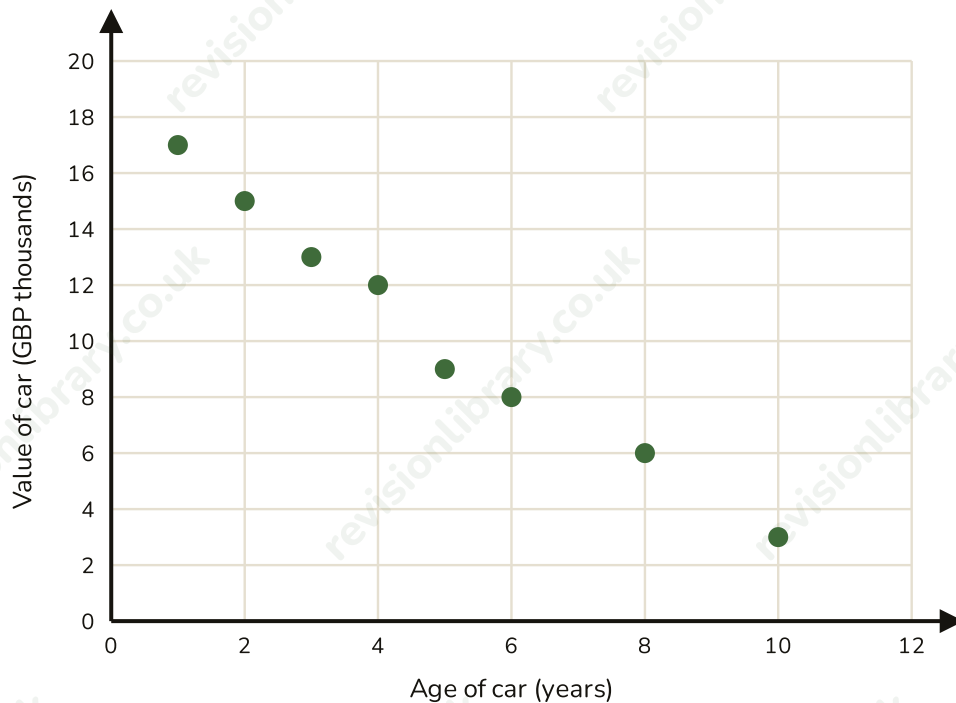
☐ C

☐ D

(b) Give one reason why plan C would not be suitable. **(1)**

(Total for Question 2 is 2 marks)

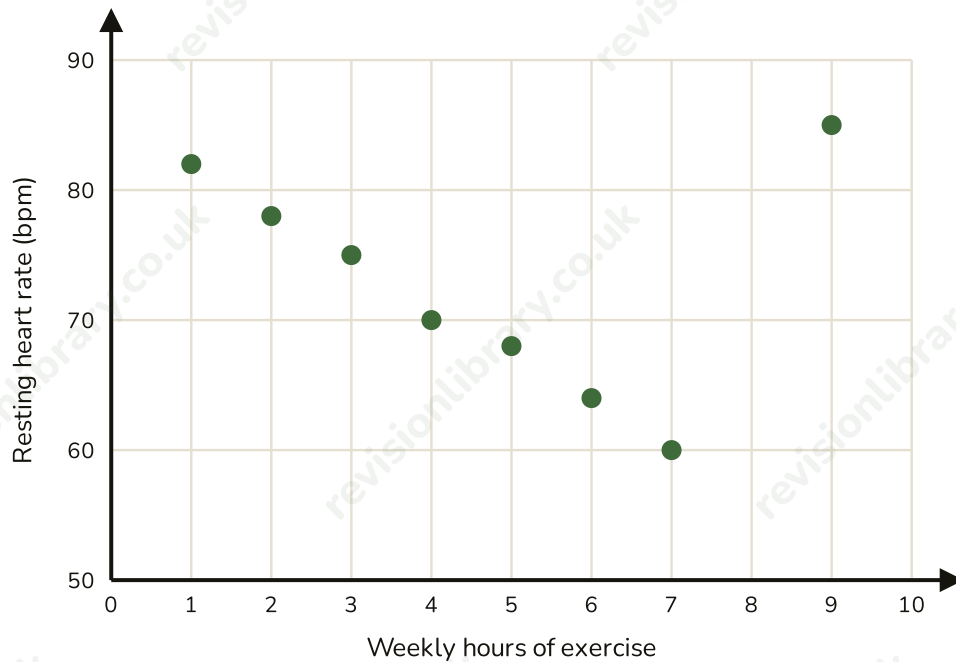
- 3** The scatter graph shows, for 8 used cars of the same model, the age of the car and its current value.



- (a) Describe the type of correlation shown by the scatter graph. (1)
- (b) Interpret what this scatter graph shows about the relationship between the age of a car and its value. (1)
- (c) Explain whether it would be sensible to use the scatter graph to estimate the value of a 7-year-old car of this model. (1)

(Total for Question 3 is 3 marks)

- 4 The scatter graph shows, for 8 adults, the number of hours of exercise taken per week and their resting heart rate.



- (a) Write down the coordinates of the point that does not fit the pattern of the other points. (1)
- (b) Suggest one possible reason for this outlier. (1)
- (c) Explain the effect that including this point would have on a line of best fit, and suggest how it should be treated. (1)

(Total for Question 4 is 3 marks)

Mark scheme · S31-10min Scatter Graphs and Line of Best Fit: 10-minute Pack

Question 1

- (i) **B1** True cao
- **(i) Answer: True**
- (ii) **B1** False cao
- **(ii) Answer: False**
- (iii) **B1** True cao
- **(iii) Answer: True**

Question 2

- (a) **B1** A cao
- **(a) Answer: A**
- (b) **B1** identifies that the horizontal scale is uneven and/or unnumbered, oe (e.g. this would make points impossible to plot or read accurately)
- **(b) Answer: The horizontal axis has an uneven scale with no numbers, so points could not be plotted or read accurately.**

Question 3

- (a) **B1** Negative correlation cao
- **(a) Answer: Negative correlation**
- (b) **B1** correct context statement, e.g. as a car gets older, its value tends to fall/decrease, oe
- **(b) Answer: As a car gets older, its value tends to decrease.**
- (c) **B1** yes, with a valid reason, e.g. 7 years lies within the range of ages in the data (1 to 10 years), so this is interpolation and is reasonably reliable
- **(c) Answer: Yes - 7 years is within the range of the data (1 to 10 years), so this would be interpolation and a reasonably reliable estimate.**

Question 4

- (a) **B1** (9, 85) cao
- **(a) Answer: (9, 85)**
- (b) **B1** any plausible context reason, e.g. this adult may have been unwell, stressed or measured straight after a meal, so their heart rate was unusually high that day, oe
- **(b) Answer: The adult may have been unwell or measured under unusual conditions, giving an unusually high heart rate despite exercising a lot.**
- (c) **B1** including it would pull the line away from the trend of the other 7 points, so it should usually be ignored/excluded when drawing the line of best fit, oe
- **(c) Answer: Including it would drag the line of best fit away from the true trend, so it should usually be ignored when the line is drawn.**