GCSE Maths: Scatter graphs (Higher): worksheet

GCSE Maths - Statistics - Higher - Lesson 24.10

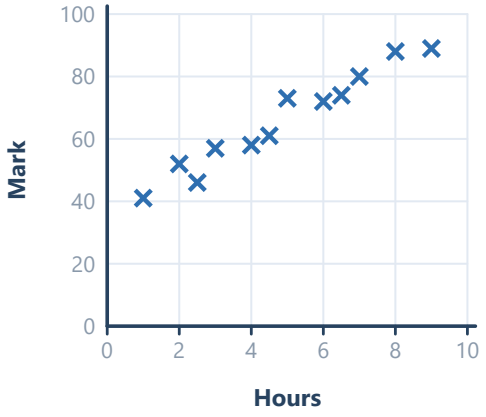
Name: _____ Date: _____ Score: _____

15 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch24-statistics/higher/scatter-graphs/**

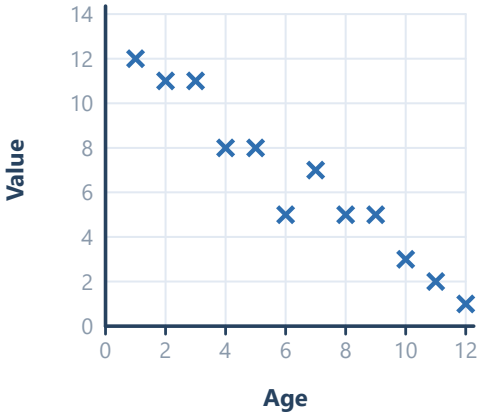
Exercise 24J Scatter graphs Non-calculator

1 Describe the correlation shown by each scatter graph. Choose from: positive, negative, no correlation (and say strong or weak where it applies).

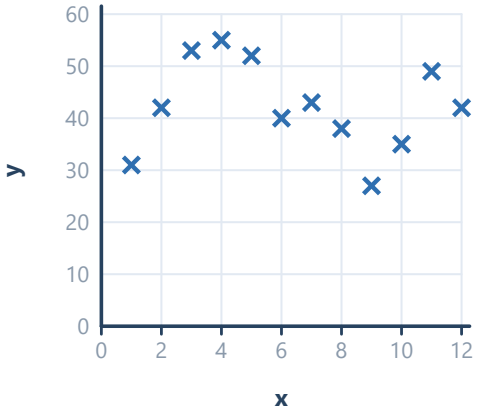
(a)



(b)



(c)



(a) Graph (a)

Answer: _____

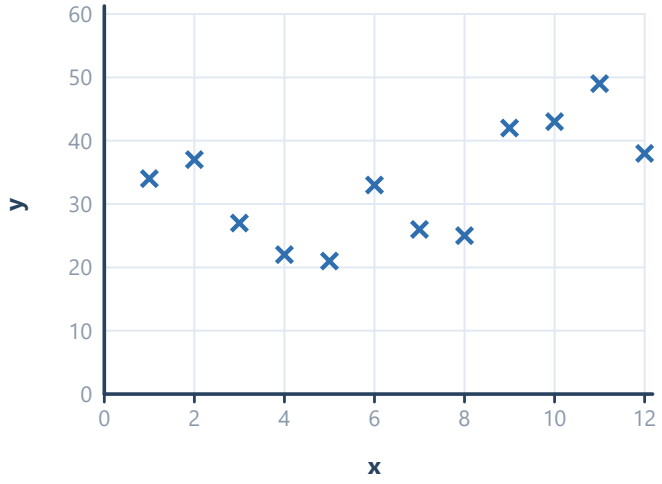
(b) Graph (b)

Answer: _____

(c) Graph (c)

Answer: _____

2 The scatter graph shows 12 pairs of values. Describe the correlation.



Answer:

3 The table shows the maths and science marks of eight students.

Maths mark	34	48	55	62	70	75	82	90
Science mark	40	52	50	66	68	80	79	92

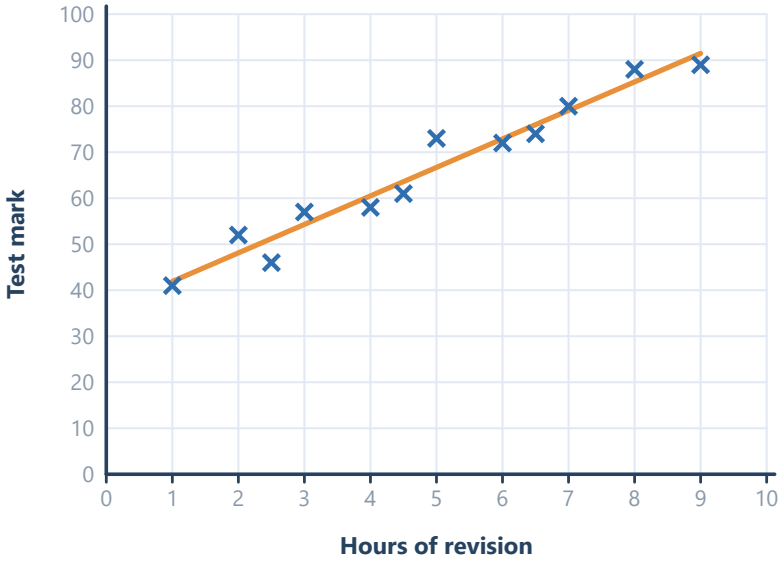
Plot the scatter graph (use axes from 30 to 100) and describe the correlation.

Answer:

4 Work out the mean point of the data in question 3 (the mean of the maths marks and the mean of the science marks).

Answer:

5 A line of best fit has been drawn on the scatter graph of revision hours and test marks. Use it to estimate (a) the mark for a student who revised for 3 hours, (b) the mark for 7 hours, (c) the number of hours needed to get a mark of 80.



(a) Mark for 3 hours

Answer:

(b) Mark for 7 hours

Answer:

(c) Hours for a mark of 80

Answer:

6 **The data in question 5 range from 1 to 9 hours. For each estimate, say whether it is interpolation or extrapolation, and whether it is likely to be reliable.**

(a) The mark for 4.5 hours

Answer:

(b) The mark for 15 hours

Answer:

(c) The mark for 0.5 hours

Answer:

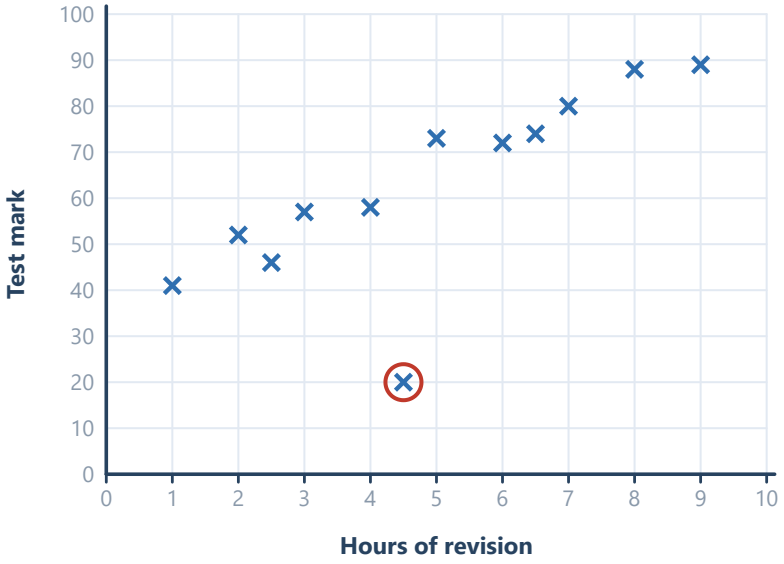
7 **A scatter graph shows the age and height of children aged 3 to 12 and the line of best fit goes up steeply. Charlie uses the line to say that a 40-year-old will be about 3 m tall. Explain what is wrong.**

Answer:

8 **There is a positive correlation between the number of firefighters at a fire and the amount of damage. Does this show that firefighters cause damage? Explain.**

Answer:

9 **The scatter graph shows revision hours and test marks. One point is circled. (a) Write down the coordinates of the circled point. (b) Suggest a reason why this student's mark is so different from the pattern. (c) Should it be used to draw the line of best fit?**



(a) Coordinates

Answer:

(b) A reason

Answer:

(c) Include it?

Answer:

10 **Dan draws a line of best fit by joining the first point on the left to the last point on the right. Explain why this may not be a good line of best fit.**

Answer:

11 A taxi company uses the line $y = 2x + 3$ to estimate the cost, £y, of a journey of x km. (a) Use the line to estimate the cost of a 6 km journey. (b) Write down what the number 3 and the number 2 mean in this situation.

(a) Cost of 6 km

Answer:

(b) Meaning of 3 and 2

Answer:

12 A line of best fit passes through the points (0, 35) and (10, 97). (a) Work out the gradient. (b) Write the equation of the line in the form $y = mx + c$. (c) Use it to estimate y when $x = 7.5$.

(a) Gradient

Answer:

(b) Equation

Answer:

(c) Estimate at x = 7.5

Answer:

13 The equation of a line of best fit is $y = 6x + 20$, where x is the number of hours of practice per week and y is the score in a game. Explain what the gradient 6 tells you, and say why the line may not be sensible for $x = 30$.

Answer:

14 Two scatter graphs show different data. In graph A the points lie very close to a straight line sloping down. In graph B the points are widely scattered but slope slightly downwards. Which graph shows stronger correlation? What type of correlation is each?

Answer:

15 The mean point of a set of data is (6, 40). A student draws a line of best fit with equation $y = 3x + 22$. Show that the line passes through the mean point, and use it to estimate y when $x = 8$.

Answer:

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