Your notes

GCSE Maths: revision notes

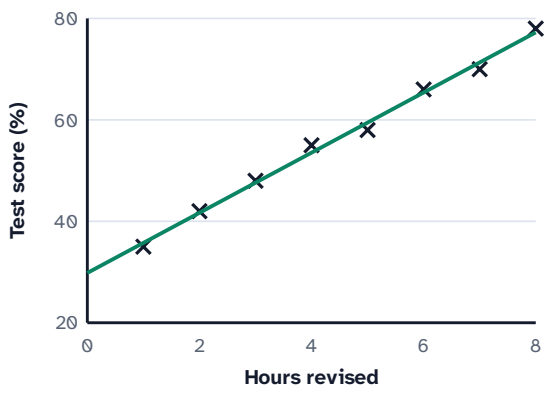
Scatter graphs and correlation

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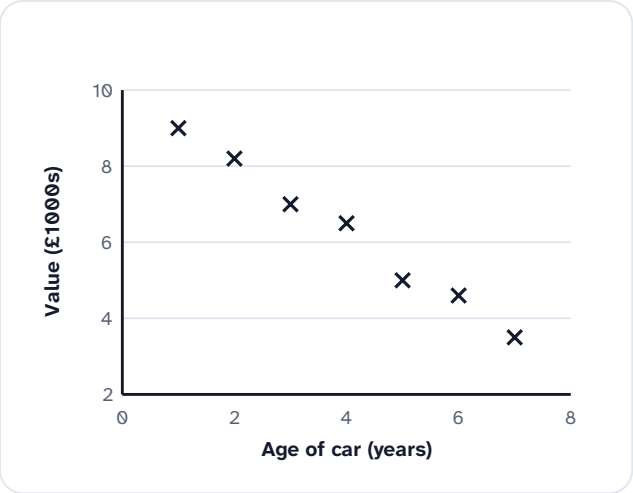
Scatter graphs

- A **scatter graph** plots pairs of values (**bivariate data**) to see if two variables are related.



Correlation

- **Positive correlation**: as one variable increases, so does the other. **Negative correlation**: as one increases, the other decreases. No correlation: there is no pattern.
- Strong correlation means the points lie close to a straight line. Weak correlation means they are more spread out.
- Correlation does not prove that one thing causes the other. Ice-cream sales and sunburn cases both rise in hot weather.



Lines of best fit

- Draw one straight line through the middle of the points, following the trend, with about the same number of points on each side.
- Use it to estimate values. Estimating within the range of the data (**interpolation**) is fairly reliable. Estimating outside it (**extrapolation**) is unreliable, because the pattern may not continue.

Outliers

- An **outlier** is a point that doesn't fit the pattern. Ignore it when drawing the **line of best fit**.

Key terms

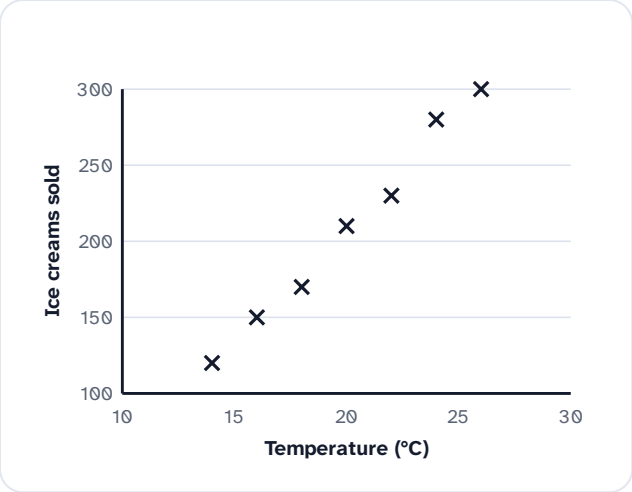
Scatter graph	A graph of pairs of values, used to look for a relationship.
Bivariate data	Data with two variables for each item, such as height and shoe size.
Positive correlation	As one variable increases, the other increases.
Negative correlation	As one variable increases, the other decreases.
Line of best fit	A straight line that follows the trend of the points.
Outlier	A point that doesn't fit the pattern.
Interpolation	Estimating a value within the range of the data.
Extrapolation	Estimating a value outside the range of the data.

Quick questions

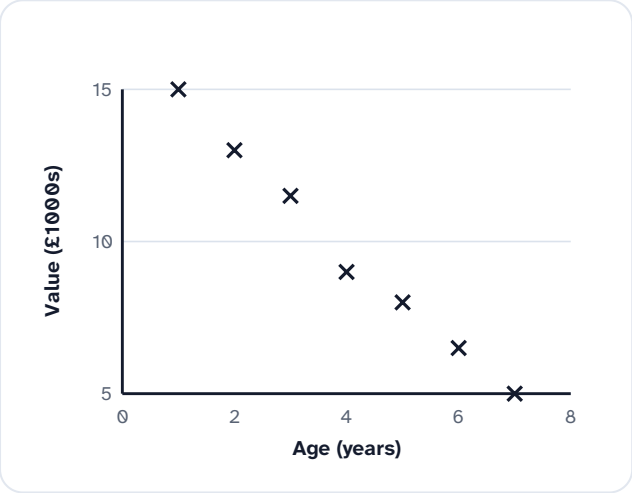
Cover the answers and test yourself: remembering is what makes it stick.

Your notes

1. As temperature rises, ice-cream sales rise. What type of correlation is this?



2. As a car gets older, its value goes down. What type of correlation is this?



3. What does 'no correlation' mean?
4. How should a line of best fit be drawn?
5. What is an outlier?
6. Why is extrapolation unreliable?
7. What is interpolation?
8. Ice-cream sales and sunburn cases show positive correlation. Does eating ice cream cause sunburn?

Answers

1. Positive
2. Negative
3. There is no relationship between the variables
4. Straight, through the middle of the points, following the trend
5. A value that doesn't fit the pattern
6. The pattern may not continue outside the data
7. Estimating a value within the range of the data
8. No, both are linked to hot weather

Your notes

What to do next

Practise 12 questions on this topic

Try 6 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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