Tables, bar charts, histograms and scatter graphs

Lesson 2.3.5 | AS research methodology

Core ideas

Tables organise data in rows and columns so values can be read accurately.

Bar charts compare separate categories, such as two conditions or participant groups.

Histograms show the distribution of continuous data using touching bars.

Scatter graphs show the relationship between two measured variables.

Graphs should have clear titles, labelled axes and suitable scales.

Choosing the wrong graph can make patterns harder to interpret or misrepresent the data.

Key terms

Table: A display of data arranged in rows and columns.

Bar chart: A graph with separate bars used to compare categories.

Histogram: A graph with touching bars used for continuous data intervals.

Scatter graph: A graph showing paired scores for two variables.

Axis: A labelled line on a graph showing what is measured.

Scale: The numbered intervals used on an axis.

Category: A separate group or condition in the data.

Continuous data: Numerical data that can take values along a scale.

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Further detail and evidence

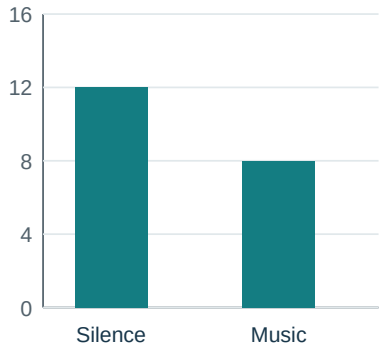
2027 graph skills include naming, recognising, drawing, changing and interpreting bar charts, histograms and scatter graphs, and presenting/interpreting tables. Reading a graph alone does not cover the drawing and representation requirements.

Bar charts compare categories with separated bars. Histograms show grouped continuous scores with adjoining bars; equal-width intervals are simplest to interpret. A scatter graph plots one point per paired observation. A table needs clear headings, units and totals where relevant.

Choosing a graph

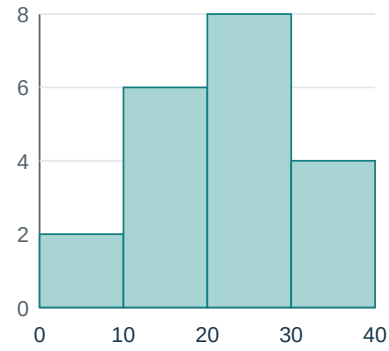
Illustrative data: these figures are not results from a named study.

Bar chart



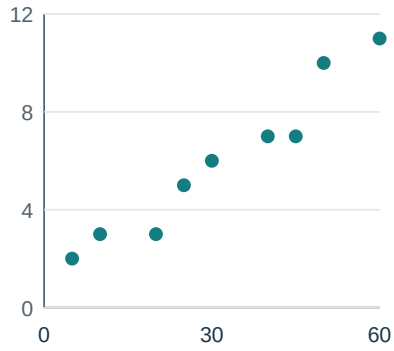
Mean recalled words

Histogram



Response time (s)
Vertical axis: frequency

Scatter graph



Study time (min)
Vertical axis: recall

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Applying the ideas

A bar chart could compare mean recall in silence/music conditions. A histogram could show the distribution of response times. A scatter graph could plot each person's sleep minutes against recall score. Choose the form from the research question and data, rather than treating every graph as interchangeable.

Worked example: Choose the best graph for showing the relationship between revision time and test score, and justify it. A scatter graph would be best because revision time and test score are two measured variables for each participant. Each point could show one student's revision time and score, making it possible to see whether there is a positive, negative or no correlation. A bar chart would be less suitable because the aim is to show a relationship, not compare separate categories.

Worked example: Assess why clear graph labels and scales matter in psychological research. Clear labels and scales matter because readers need to know what each axis shows and how the values are spaced. If a scale is misleading or an axis is not labelled, the pattern may be misread, such as exaggerating a small difference between conditions. Good presentation makes the data easier to interpret accurately.

Evaluation and connections

Graph skills include recognising, drawing, changing representations and interpreting. Label axes and units, use an appropriate consistent scale, and keep category gaps distinct from continuous intervals. A truncated or inconsistent scale can exaggerate a difference. A scatter trend supports association, not causation.