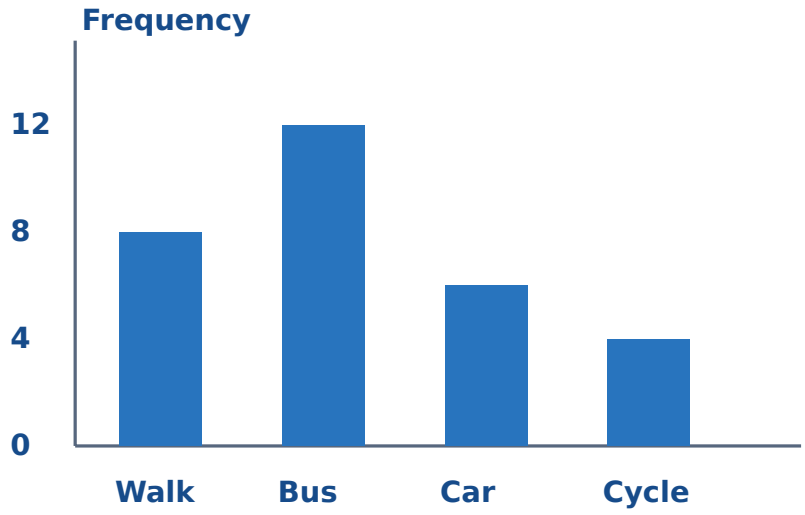
Frequency tables and bar charts

Frequency means how many times a value or category occurs.

Travel method	Walk	Bus	Car	Cycle
Frequency	8	12	6	4



Equal-width bars have gaps between categories. Bus has the highest frequency.

Check the scale

Read the axis first: one tick interval may represent more than one student. Start a frequency bar chart at zero.

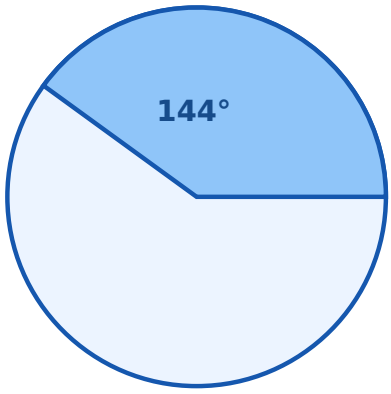
Pie charts

The whole pie represents the total frequency and has an angle of 360°.

12 of 30 students travel by bus. Find the angle for the bus sector.

$\frac{12}{30}=\frac{2}{5}$	Use the bus frequency over the total frequency.
$\frac{2}{5}\times 360^\circ = 144^\circ$	Convert that fraction of a full turn into degrees.

144°



The bus sector represents 40% of all students.

Check

All of the sector angles should add up to 360°, allowing for rounding.

Which display fits the data?

Choose a graph that helps answer the question.

Display	Use it to show
Bar chart	Counts for categories
Pie chart	Shares of the whole
Histogram	Grouped numerical data
Scatter plot	Relationship between two numerical variables

Histogram or bar chart?

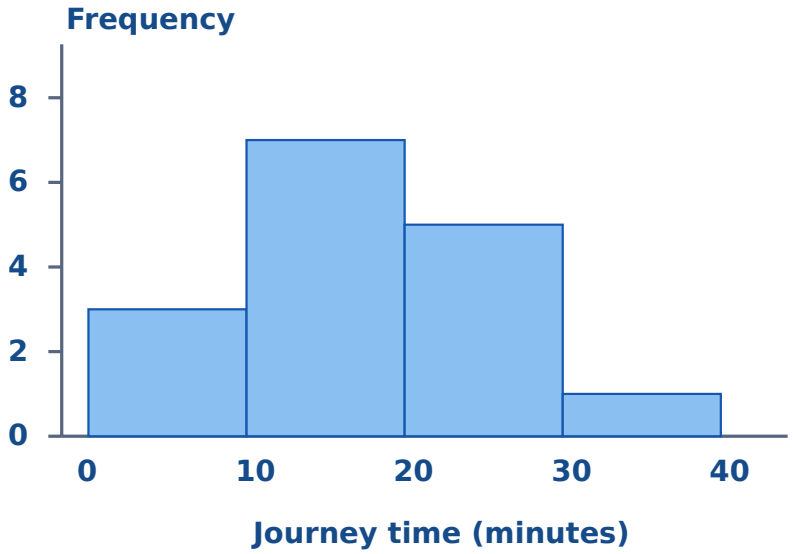
Histogram bars touch for adjoining intervals. With equal interval widths, compare bar heights. With unequal widths, use frequency density so the bar area represents frequency.

Worked interpretation

If a scatter plot of revision time and scores tends to rise from left to right, it shows positive association. It does not by itself prove that extra study caused the difference.

Reading a histogram

For equal-width intervals, the height of a bar gives its frequency when the vertical axis is labelled frequency.



Each bar covers a ten-minute interval. The second bar represents 10 minutes up to, but not including, 20 minutes.

How many students took less than 20 minutes?

$3+7=10$	Add the frequencies of the first two intervals.

10 students

Charts

Try the questions before opening the separate answer key. Show one step per line.

24.1 · Fluency

In a pie chart, 18 out of 60 pupils choose music. Find the sector angle.

24.2 · Variation

Histograms show counts 3, 5 and 8 for intervals [0, 10), [10, 20) and [20, 30). How many observations are below 20?

24.3 · Choose a method

Choose a chart for favourite sports and one for grouped journey times with equal intervals.

Check your work: are the sign, units and level of accuracy appropriate?