

Working with data: tables, charts and what they tell us

Lesson at a glance

Open with a jumbled list of class readings beside a blank two-column table and ask which category looks highest from the jumble alone. After a quick worked example of table and chart, groups organise the shared class dataset into a draft table on squared paper. Agreed values go into the data-recorder interactive to build one class bar chart. Pupils record the table and what the bars show in the Investigation Journal, then test whether group claims actually follow from the chart.

Learning objectives

- Select and organise a gathered dataset into a clear table
- Present the data as a chart and describe what it shows
- Explain why data must be organised and presented clearly before it can answer a question in science or digital life

Before the bell: prep

Have today's dataset ready before the bell: micro:bit light or temperature logs from earlier in the unit, or a two-minute outdoor-play survey (bands 0–15, 16–30, 31–45, 46+) already tallied and left visible. Pre-write two of three worked-example category values. Squared paper, rulers and pencils per group; data-recorder ready on the IWB.

Materials

Item	Qty	Per	Source	Low-cost substitute
class dataset (micro:bit readings or survey tallies from earlier in this unit)	1	class	classroom	a quick board tally from a class survey run before the lesson starts
squared or graph paper	1	pupil	classroom	plain paper with a hand-drawn grid
ruler	1	pupil	classroom	fold paper edges as a straight edge
pencil	1	pupil	classroom	any writing tool
Investigation Journal page	1	pupil	provided printable	plain paper labelled Table and What the chart shows

**Safety watch-point**

Normal classroom device care only if tablets are used to view saved micro:bit data. No other hazards in this lesson.

**Teaching moves**

- **Getting Started:** Put the same small set of numbers up twice: a jumbled list and a blank two-column table with headers only. Hold back any finished chart. Ask which category looks highest from the jumble alone, take three or four answers, and name today's shared dataset aloud before moving on.
- **Why organise data?:** Model one worked example that matches today's dataset. Narrate one average fully, then reveal the other pre-written category values and sketch the three bars. Introduce table and chart as the words do the work; say dataset and pattern in passing. Lock the shared category labels on the board before groups start.
- **Select and organise our dataset:** Write the model header pair on the board (for example Place | Average light reading, or Play band | Number of pupils). Groups draft one table on squared paper under those shared categories, using average for repeated measurements. Circulate for overlapping categories, missing cells and units that drift from the model header. Prediction only after the draft table is filled.
- **Build the class chart:** Set the unit label in the data-recorder interactive first, before any numbers are dictated. Nominate one clear source for the class table (agreed values or one accepted draft), then type categories and values as pupils call them out. After Show chart, ask which bar is tallest, what it stands for, and what the chart does not tell us. Pause on clashes and check the raw dataset rather than averaging on the fly.
- **Record the table and what it shows:** Keep the finished class table and bar chart visible with the unit still showing. Send pupils straight into the Investigation Journal page to copy the organised table, write what the bars show, then one inference sentence and why organising mattered. Use the stems aloud: The chart shows...; The tallest bar means...; I think this means... because...; Without a table, it would have been hard to...
- **Test the claim:** Do not rerun what the bars show: that is already on paper. Each group offers one claim in a single sentence; the class thumbs-votes whether it follows from the bars or goes further, then one pupil from each side says why. Finish each group by naming one thing this chart cannot tell us.

**What it should show**

A successful class ends with one shared table under locked categories, a labelled bar chart, and journal writing that separates observation (tallest/shortest bar) from inference. Expect the tallest bar to match the highest organised value for today's question. Odd bars usually come from a wrong average, a tally counted twice, or categories that overlap. Check the raw list before redrawing.



Misconceptions & interventions

- **If the chart looks neat and colourful, the answer must be true.** Point back at the draft table: if categories mixed or an average was wrong, the bars mislead. Ask them to trace one bar to its cell and check the raw dataset.
- **Pupils treat a why-claim as if the bars proved it: for example 'that band is highest because playtime is more fun then'.** Hold the claim against the chart and ask what the bars actually show (how many / how bright) versus what they cannot show (reasons, absences, other days). Let the class thumbs-vote rather than correcting yourself.
- **Groups invent their own category set or number-column meaning, so class bars cannot be compared.** Stop and re-point at the locked board labels and the model header pair. Every group organises toward that same chartable table.

Differentiation

Emerging	Developing	Proficient
• Give the shared category labels and model header already written on scrap paper so the group only fills values and checks every tally has one home.	• After the draft table, ask which gap will look biggest as bars, or one claim a chart still will not prove.	• Ask whether a second grouping of the same data would change the story (talk only, not a rival class chart) and press harder on what the chart cannot tell us.

Cross-curricular hook

Tie to the Maths Data strand: pupils build and read the class bar chart, comparing tallest and shortest bars.