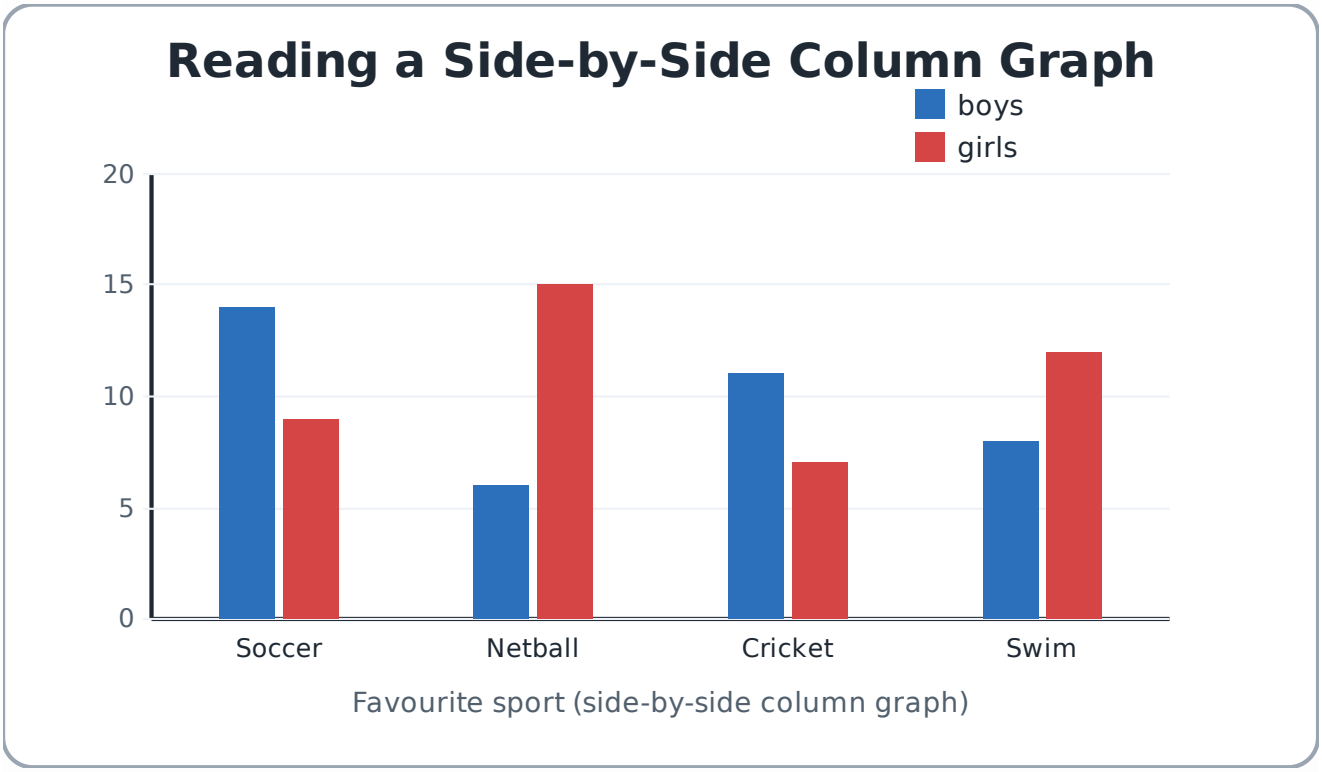
Statistics — Data Investigation Worksheet & Planner

Part A — Interpreting displays (mode, range, shape)

Data displays let us compare groups. A **side-by-side column graph** shows two sets of bars together. We describe data using **mode** (most common value), **range** (largest − smallest) and **shape** (where values cluster, spread or gap). We also notice how a display's features — axis scale, colour, labels — can influence a reader.



Use this graph for the questions below.

> **Worked example.** For values *4, 7, 7, 9, 12*: the **mode** is 7 (appears most), the **range** is *12 − 4 = 8*.

Read the side-by-side column graph (above)

Q1. Which sport is most popular with boys? With girls? _____

Q2. Find the **mode** for the boys' data and for the girls' data. _____

Q3. Find the **range** of the boys' values (largest − smallest). _____

Q4. Describe the **shape** of the data: where does it cluster? Are there any big gaps?

Q5. How many more girls than boys chose netball? _____

Features that influence an audience

Q6. A graph uses a vertical axis that starts at 10 instead of 0. How might that change the impression a reader gets?

Q7. Name two features of a display (other than the numbers) that can make one group look more impressive than it really is.

Part B — Run your own data investigation

A full statistical investigation runs from a **question** all the way to a **communicated finding**. This is the capstone task of the unit (*WA6MPSS3*) — it pulls together collecting, representing and interpreting real data.

> Pick a question you genuinely want answered. A real purpose makes the "interpret and communicate" stage far easier to write well.

Run a complete data investigation through the **four stages**.

1. Analyse — pose a question. Write a statistical question you can answer with class data (e.g. "How does screen-time differ across the week?" or "What are the most common ways students travel to school?"). Decide what data you need.

2. Collect — ensure accuracy & consistency. Describe how you will collect the data fairly. How will you make sure everyone measures or counts the same way?

3. Represent — choose a display. Choose and draw the most suitable display (a line graph for change over time, a side-by-side column graph for comparing groups). Label axes and add a title and legend.

4. Interpret & communicate. State the **mode**, **range** and **shape** of your data. Describe **reasons for variation**. Could your display mislead a reader — how have you made it fair? Write 2–3 sentences communicating your main finding.