

Helping Your Child with Statistics

Statistics · Prep to Year 6 · Australian Curriculum Mathematics

Statistics is about collecting information, displaying it clearly, and making sense of it. Your child uses statistics to answer real questions — about their class, their community, or the world. The same four steps are used from Prep to Year 6: **ask a question, collect data, display it, and interpret what it means**. Each year the data gets richer and the graphs more powerful.

Year level	What your child learns	What this looks like
Prep	Sorting objects to answer a question Your child collects and sorts objects to answer a simple question. data — information you collect category — a group things are sorted into Example question: "Do more children have lace-up shoes or velcro shoes?" Children line up in two groups — that IS a data display! They use objects and images — no numbers yet.	Sort a group of household objects: "Which ones are round? Which are not?" Use toys: sort into two piles. "Which pile has more?" Line up the family by height — that's data!
Year 1	Tally marks and pictographs Your child records data using tally marks and shows it in a pictograph . tally mark — a mark to count things as you go (= 5) pictograph — a graph where each picture = 1 item frequency — how many times something occurs categorical variable — data that fits into named groups, e.g. favourite colour: red, blue, green	Survey the family: favourite fruit? Use tally marks to record answers. Draw a pictograph — one picture per person. "Which fruit got the most votes?"
Year 2	Surveys and column graphs Your child designs a survey, collects responses and displays results in a column graph . survey — a set of questions used to collect information from people column graph — a graph with bars (columns) showing how many in each category They compare different types of graphs of the same data and discuss which one is easier to read.	Ask family: favourite season? Draw a column graph — one column per season. Make a picture graph of the same data. "Which graph is easier to read? Why?"
Year 3	Statistical investigations Your child carries out a full statistical investigation — from question to conclusion. They choose a question, collect data, make a graph, and explain what the data shows. discrete numerical variable — data you count: number of pets, number of siblings, number of books read frequency table — a table showing how many in each category	Your child might investigate: "What is the most popular breakfast cereal in our family?" Help them collect, tally and graph the data. "What does the data tell us?"
Year 4	Many-to-one graphs Your child learns that one symbol can represent more than one piece of data — this is called many-to-one correspondence. Example: ★ = 5 people So ★★★ means 15 people, not 3. They must always read the key before interpreting the graph. key — the box that explains what each symbol means They analyse which type of display best shows the data.	Find a pictograph in a newspaper or book. "What does one symbol equal?" "How many people does ★★★ represent?" Always check the key first!
Year 5	Mode, line graphs and fair surveys Your child learns two important ideas: mode — the value that appears most often in a data set Data: 3, 5, 5, 7, 5, 2, 8 → mode = 5 They also read line graphs — graphs that show how something changes over time. The horizontal axis shows time . The vertical axis shows amount . They learn to write fair survey questions — questions that are clear, without bias.	Look at a weather graph or temperature chart. "When was it hottest? Coldest?" "What was the trend — was it going up or down?" Find the mode in a list of numbers together.

Year 6	Range, comparing data sets and spotting misleading graphs Your child learns two more key measures: mode — most common value (introduced in Year 5) range — the spread of data: highest minus lowest Data: 2, 5, 7, 9, 11 → range = 11 – 2 = 9 They compare two or more data sets side by side. They also learn to spot misleading graphs — graphs that look dramatic but use tricks like broken axes to exaggerate differences.	Find a graph in a newspaper or online. "Does the axis start at zero?" "Could this be misleading?" "What is the range of this data set?" "What is the mode?"
---------------	---	---

★ The 4 steps of a statistical investigation — used at every year level

1 Question	2 Collect	3 Display	4 Interpret
What do you want to find out? Ask a clear, specific question. Example: "What is the favourite fruit of people in our family?"	Gather the data. Use a survey, tally marks, observation or experiment. Example: Ask each person. Use tally marks to record answers.	Show the data in a graph or table so it is easy to read. Example: Draw a column graph — one column per fruit, height = number of votes.	Read the graph. What does it tell you? Draw a conclusion that answers your question. Example: "Mango was most popular — 4 votes. Banana had the least — 1 vote."

These 4 steps are the same whether your child is sorting toys in Prep or analysing weather data in Year 6.

Helping at Home — Statistics

Worked examples and questions to ask · Prep to Year 6

How it works — worked examples

Year 1 — Tally marks and a pictograph

Question: "What is our family's favourite colour?"

Colour	Tally	Total
Blue		4
Red		2
Green	(3 marks)	3

Pictograph: Blue = ★★★★★ Red = ★★ Green = ★★★
Each ★ = 1 person. **Mode (most common) = Blue**

Year 4 — Reading a many-to-one graph

Favourite sports in Year 4 (Key: ★ = 5 students)

Sport	Graph (★ = 5)	Total
Football	★★★★★	20
Swimming	★★★★	15
Basketball	★★★	10

Always read the key first! ★★★ does NOT mean 3 — it means $3 \times 5 = 15$.

Year 6 — Mode, range and misleading graphs

Weekly pocket money for 7 children (\$):

\$2	\$5	\$5	\$8	\$5	\$10	\$3
Mode	\$5 (appears 3 times — most common)					
Range	\$10 – \$2 = \$8 (spread of the data)					
What it tells us	Most children get \$5. The data spreads over \$8.					

Misleading graph tip: Always check if the vertical axis starts at 0. If it starts higher, small differences can look much bigger than they really are.

Questions to ask your child

You do not need to know the answer. Ask and let your child do the explaining!

P Prep

- Can you sort these objects into two groups?
- Which group has more? How do you know?
- How could we show this so someone else can understand it?

1 Year 1

- Use tally marks to record everyone's favourite colour.
- Draw a pictograph — one picture per person.
- Which category has the most? How many more than the least?

2 Year 2

- Write 3 questions we could ask to collect data.
- Draw a column graph from our survey results.
- Which graph is easier to read — the pictograph or the column graph?

3 Year 3

- What question do you want to investigate?
- How will you collect the data — survey or observation?
- Make a frequency table. What does the data tell us?

4 Year 4

- What does one symbol equal in this graph?
- How many people does ★★★★★ represent if ★ = 10?
- Which graph type would best show this data? Why?

5 Year 5

- What is the mode in this list of numbers?
- Look at this line graph — when did the temperature rise fastest?
- Is this survey question fair? Could it be improved?

6 Year 6

- What is the range of this data set?
- Compare these two graphs — which group has more spread?
- Does this graph start at zero? Could it be misleading?

Things to try at home

Any age: Ask a question together: "What is our family's favourite meal?" Collect answers, draw a simple graph. Talk about what the data shows.	Year 1–2: Make tally marks while watching TV — tally each type of ad (food, car, toy). Which type appeared most?
Year 2–3: Survey your street or extended family. Make a column graph of the results. What surprises you?	Year 4: Find a pictograph in a magazine or newspaper. Read the key. How many does each symbol represent? What conclusions can you draw?
Year 5: Track the weather for two weeks. Record the daily temperature. Draw a line graph. When was it hottest? What was the trend?	Year 6: Find a graph in the news. Does the axis start at zero? Is the graph trying to make something look bigger than it is?

Key words to learn together

data: information you collect — it can be words, numbers or images	category: a group that data is sorted into, e.g. red, blue, green
tally mark: a mark used to count as you go	frequency: how many times something occurs in the data
pictograph: a graph where each picture or symbol represents one (or more) items	column graph: a graph with rectangular bars — the taller the bar, the more data
key: the box that explains what each symbol in a graph represents	one-to-one: each symbol in a graph equals exactly one piece of data
many-to-one: each symbol equals more than one piece of data — always check the key!	mode: the value that appears most often in a data set
range: the spread of data: highest value minus lowest value	misleading graph: a graph designed to make data look different from what it really shows