

Trend graphs and reading line graphs

CURRICULUM ALIGNMENT

DAT.DAT.4a

pose questions, collect, compare, summarise and represent data selectively to answer those questions.

DAT.DAT.4b

critically analyse and evaluate findings; and communicate inferences, conclusions and implications from the findings.

INTERACTIVES Trend Line · challenge, display, explore

WHAT THIS LESSON TEACHES

A trend graph joins plotted points with straight lines to show how one quantity changes over time.

→ A day's temperature plotted hour by hour and joined into a rising-then-falling line.

→ A plant-height graph whose line climbs week after week shows a rising trend.

MODEL THIS ON THE BOARD

FINDING THE STEEPEST CHANGE ON A LINE GRAPH

- 1 Look at the line between each pair of points on the graph.
- 2 Find the section where the line rises or falls most steeply.
- 3 That steepest part shows the fastest change in the quantity.

LESSON ARC

Open with the pond-level line graph on the IWB and get pupils reading the story from the slope — steep means filling fast, flat means holding steady. Model on three graphs (temperature, rainfall, sunflower), pivoting on reading between the dots by following the joining line. Pupils plot a cooling-tea graph in their copy and describe the trend. The Class Challenge is a four-task read-off on one temperature graph.

TEACHING MOVES

1. **Getting Started.** Take three hands-up answers, not open call-outs, on the pond-level graph. Steer away from single numbers — ask 'where is the line steepest, and where does it go flat?' The steep early climb is filling fastest; the flat top is holding steady.
2. **Watch and Notice.** Run three tight three-minute blocks. On Graph 1, trace a finger 'up, up, up to the peak, then down' and get warming/cooling parts named. On Graph 2, point to the gap between Tuesday and Wednesday and stress the between-value sits on the joining line (about 10 mm), not on a dot. On Graph 3, ask what a steep climb means for a real sunflower before revealing it grew fastest that week.
3. **Try It Together.** Plot the yard counts one pupil per day at the board and have a pupil trace the up-then-down shape. Name the falling part precisely as Wednesday-to-Friday — don't let the whole window get called 'falling', since it rises Tuesday to Wednesday first. Then read halfway between Monday and Tuesday (about 15) and say aloud 'we're reading where the line would be, not counting real pupils'.
4. **Plot and Describe in Your Copy.** Walk the room glancing at axis scales and whether points are joined with a ruled line — this is practice, not marking. Look for the falling-but-flattening shape; nudge pupils whose sentence only says 'cooling' to add that it cools more slowly later.

5. **Class Challenge.** Keep it brisk — pupils take turns, check each answer, class confirms before moving on. Task 1 (read-off at R4 = 18) is the one every pupil types in; run the other three aloud on the same graph, pointing at the relevant part of the line each time so the board carries the scaffold.
6. **What Did We Notice?** Listen for pupils naming that the line lets us read between the points. Revoice a strong answer: 'so the line is saying what happened in the gaps, not just at each reading.' Head off the idea that any data can be joined — favourite-sport bars have nothing in between.

COMMON MISCONCEPTIONS

△ Asked for a value between two points, a pupil reads straight off the y-axis at one of the plotted dots — 'it's 18' — instead of following the sloping line to the moment in between.

At the board, put a finger on the exact between-point moment along the x-axis, run it up to the line, then across to the axis. Say 'the answer lives on the slope, not at either dot' and have the pupil trace the same path.

△ Asked for the biggest jump between readings, a pupil names the highest value ('15') rather than the size of the change ('a rise of 5').

Point to both readings on the board and ask 'how many did it climb by?' — draw the vertical gap between R2 and R3 so the jump of 5 is visible as a distance, not a value.

△ Pupils label the whole Tuesday-to-Friday window as simply 'falling', missing that the line rises Tuesday to Wednesday before it drops.

Have a pupil trace the line slowly with a finger and stop at the Wednesday peak. Name the parts precisely — rising to Wednesday, then falling Wednesday to Friday.

DIFFERENTIATION

EMERGING

- Stay on straight read-offs at the plotted dots on the IWB while the class moves to between-point reads; pupils mirror one or two exact reads in their copy.
- Pre-draw the axes and scale on the copybook grid so pupils only plot and join, not build the structure.

DEVELOPING

- On the cooling-tea graph, ask pupils to estimate the temperature at a moment between two readings and write how they got it.
- Give a missing-reading variant: if the trend keeps falling, roughly what would the sixth reading be, and why?

PROFICIENT

- During the Class Challenge, narrate a harder forward-prediction: the slope is easing off near the top — should the next jump be bigger or smaller than the last one? Have the pupil justify from the flattening line.
- Pose: sketch a line graph that rises, levels off, then falls, and write the story it could tell — then pull ahead into the Student Activity Book page.

✓ **Cross-curricular:** Tie to the science strand — pupils record a cooling cup of water every few minutes and plot the readings as a trend graph.

ANSWER KEY

Scaffold: visual check on the page

Q1: 44 C

Q2: 6th reading

Q3: 1st and 2nd

Q4: 54 C

a) Always : The straight lines show the trend from one point to the next.

b) Sometimes : It depends on the day: some afternoons warm up, others cool down.

c) Always : A steeper slope means a quicker rise or fall over time.

d) Never : The line works for any readings in the given range.

EXTENSION SHEET · STRETCH ANSWERS

S1: 17

S2: 2

S3: step of 5

S4: 21

S5: step of 5