Lesson 91: Pie charts — first encounter

CURRICULUM ALIGNMENT

DAT.DAT.4a pose questions, collect, compare, summarise and represent data selectively to answer those questions.

NUM.FRC.4a explore (model, compare and convert) the relationships between fractions, decimals and percentages.

INTERACTIVES Pizza Slicer · display | Pie Chart Builder · challenge, display, explore

WHAT THIS LESSON TEACHES

A **pie chart** is a circle split into slices. Each slice's size matches that category's share of the whole. The whole pie is **360°**.

→ Half the class → slice of **180°**.

→ A quarter → **90°**. An eighth → **45°**.

LESSON ARC

Open with two circles side by side on the IWB: a four-slice pizza (equal) and a favourite-fruit pie of 24 pupils (uneven). Pupils name the difference before you state the rule. Walk through four worked pies, pivoting on the equal-data pie to show that slice size tracks data, not the cut. Pupils sketch the fruit pie in copybook with counts and percentages, then the class works through the target-pie matching bank together.

TEACHING MOVES

1. **Getting Started.** Show both circles side by side and take three hands-up answers on the difference before steering. Don't reveal the rule — re-voice 'the pizza is cut equally because we're showing fractions; the pie shows different sizes because the data is different' and move on.
2. **Watch and Notice.** Walk the four pies aloud, pausing on each. On the fruit pie, point at the apple slice: 'twelve out of twenty-four is half.' Do not skip the equal-data pie — that's where the proportional-slice rule becomes visible. Contrast it directly with the hook pizza: same shape, but equal here means equal counts.
3. **Try It Together.** Rotate four pupils through the IWB. Ask each one to predict before they type, then check the readout. Useful prompts: 'how many in each category to make the biggest slice exactly half?', 'can we make four equal slices?', 'what happens if one category goes to zero?'
4. **Sketch the Pie in Your Copy.** Two minutes, no more. Walk the row checking that slice sizes look roughly right. If a pupil draws a quarter slice as a quarter of the apple slice instead of the whole circle, stop and re-voice: 'a quarter slice is a quarter of the whole circle.'
5. **Class Challenge.** Pupils take turns at the board, check each answer, class confirms. If a pupil's counts produce the right percentages with different numbers (8-4-2-2 instead of 4-2-1-1), the answer still checks — say why aloud: the pie shape is the answer, not the specific counts. On Challenge 5, hint toward picking a friendly total of 20 first.
6. **What Did We Notice?.** Display-only talk. Listen for the whole-vs-part contrast and the small-slice readability issue. Close with one re-voice: 'pie when you care about the share of the whole, bar when you care about each count.'

COMMON MISCONCEPTIONS

⚠ Pupils think every pie chart has unequal slices — that 'uneven slices' is what makes it a pie chart.

This is exactly why the equal-data pie in Watch and Notice exists. Build it live: four categories, four equal counts, four equal slices. 'The slices match the data. If the data is equal, the slices are equal too.'

⚠ Pupils read a quarter slice as 'a quarter of the apple slice' rather than a quarter of the whole circle — they take the biggest slice as the new 'whole'.

Stop at the copybook moment. On the IWB, trace the whole circle with your finger and say 'this is the whole — all 24 pupils.' Then trace the banana slice: 'this is 6 out of 24, a quarter of everyone, not a quarter of the apple slice.'

⚠ Pupils assume the biggest slice always means 'more than half' (a majority).

The favourite-sport pie is built for this. Point at the biggest slice and ask 'is that half?' Trace a diameter across the pie to show it's just over. Re-voice: 'biggest doesn't always mean half — half is its own thing.'

DIFFERENTIATION

EMERGING

- Stay with the fruit-pie counts (12, 6, 4, 2) in copybook — friendly halves and quarters of 24 — rather than asking for new totals.
- Pre-write the percentage labels next to each slice on the board so pupils only need to match counts to slices, not compute the percentage themselves.

DEVELOPING

- After the copybook sketch, swap one count: what if 3 pears became 3 more apples? Predict how the pie reshapes before checking on the interactive.
- Pose: can you find two different count sets that produce the same pie? (e.g. 4-2-1-1 and 8-4-2-2.) Why do they look identical?

PROFICIENT

- Direct fast finishers to the extension bank on their device while you circulate the room.
- Pose: design a data question where a pie chart is the wrong choice. Why is a bar chart better for it?

Cross-curricular: Tie to SESE — run a quick class survey on how pupils travel to school and build the pie live on the IWB.

ANSWER KEY

a) **4 sectors** (1/2 = 4/8).

b) **2 sectors** (1/4 = 2/8).

c) **1 sector**.

d) **45°** (360 ÷ 8).

Q1: 90°

Q2: 60°

Q3: 142°

Q4: 164°

EXTENSION SHEET · STRETCH ANSWERS

S1: 136°

S2: 216°

S3: 216°