

Probability scale and the language of chance

CURRICULUM ALIGNMENT

DAT.CHN.4b

represent and express probability in different forms.

DAT.CHN.4a

use probability to make informed decisions and predictions.

INTERACTIVES Number Line · challenge, display, explore

WHAT THIS LESSON TEACHES

Every chance sits on a line from 0 (impossible) to 1 (certain). The middle 0.5 is an even chance.

→ Sun rising tomorrow is certain so 1.

→ Rolling a 7 on a die is impossible so 0.

MODEL THIS ON THE BOARD

PLACING CHANCES ON THE SCALE

- 1 Draw the line from 0 to 1 with 0.5 in the middle.
- 2 Read the event and decide if it is impossible, unlikely, even, likely or certain.
- 3 Mark the point and label it with the chance word.

LESSON ARC

Open with three events — sunrise, rolling a 7, rain this week — and ask which is sure, which never. Bring up the 0-to-1 probability number line and land events on it, pivoting on '0 means never, 1 means must, 0.5 is halfway between'. Pupils sketch their own scale in copybook and label events with chance words. Class Challenge places trickier events (card, spinner, drawing pin) on the same line.

TEACHING MOVES

1. **Getting Started.** Give five seconds of quiet think-time, then take three hands-up answers only — no open call-outs. Listen for 'sure', 'never', 'maybe' with no scale to hang them on; that gap is what the number line fixes next.
2. **Watch and Notice.** Point at each end of the line first: '0 means never, 1 means must.' Block the 'halfway to certain' reading — 0.5 is halfway between never and must. On the third line hold out for why the coin and the even-number roll land together: three of six faces are even, so it's as likely as not. Revoice a pupil's answer rather than supplying it.
3. **Try It Together.** Rename the single marker for each event and let pupils take turns at the board while the class agrees or corrects aloud. Push every placement back to a reason: 'why nearer certain than even?' The girl/boy birth is the trap — hold out for even chance and head off 'but I know more boys'.
4. **Sketch the Scale in Your Copy.** Walk the room checking two things: that markers land in a sensible spot AND that the chance word matches the position. A marker near the left labelled 'likely' is the mismatch to catch. No marking — this is whole-class copybook practice.
5. **Class Challenge.** Brisk board turns — reason the fraction first (heart is one suit in four, spinner is one colour in three), then accept the nearest tenth-tick. The drawing pin has no fair split, so accept a sensible estimate with a reason. On the stretch, insist the chance word matches the placement, not the other way round. Don't re-teach — confirm and move on.

6. **What Did We Notice?** Let the two pupil voices (1.5 is 'more than certain' vs 'that can never be right') sit before you weigh in. Revoice the strong answer: 'so the line has two ends on purpose; every chance has to sit somewhere on it.' Head off the idea that 'very likely' pushes past 1.

COMMON MISCONCEPTIONS

⚠ A pupil reads 0.5 as 'halfway to certain' — as if the scale runs from something-to-certain rather than never-to-must.

Stop on the number line and relabel the two ends out loud: 0 is 'never', 1 is 'must'. Then 0.5 is halfway between never and must — the event is just as likely to happen as not. Point to the two ends, not the middle.

⚠ Pupils claim the next baby born is more likely a boy — 'I know loads more boys' — and nudge the marker off even chance.

Hold out for even chance. A birth is one of two roughly equal outcomes, like a coin flip — put the coin marker and the birth marker on the same 0.5 spot so the class sees the match. Personal experience isn't the chance.

⚠ A pupil insists a chance could be 1.5 because something is 'more than certain'.

Use the What Did We Notice? prompt: certain (1) is the most that can ever happen, so there's no room beyond it, and impossible (0) is the least. Show there's no line past 1 to place the marker on — the scale physically ends.

DIFFERENTIATION

EMERGING

- Give these pupils only the two-end events at first — certain and impossible — so they anchor 0 and 1 before judging the middle.
- In the copybook sketch, pre-mark the 0, 0.5 and 1 ticks for them so they place events without also building the line.

DEVELOPING

- After the copybook page, ask them to add a second event that lands on the exact same spot as one already placed, and justify the match.
- Give the missing-half puzzle: 'an event sits at 0.5 — name two different events, one a coin, one not, that both belong there.'

PROFICIENT

- During the Class Challenge stretch, ask them to name an event between 0.5 and 0.7 AND one between 0.7 and 0.9, then defend which is closer to certain and why — narrate this variant from the front.

✚ **Cross-curricular:** Tie to Geography — use the 'rain somewhere in Ireland this week' event and ask where on the scale it sits for winter versus a dry July.

ANSWER KEY

Scaffold: visual check on the page

Q1: unlikely (near 0)

Q2: likely (near 1)

Q3: impossible/unlikely (near 0)

Q4: even chance (0.5)

Q5: unlikely (0.25)

a) Always : Certain events are always at 1.

b) Always : 0.5 is always the middle even chance.

c) Never : It is impossible so always at 0.

d) Sometimes : True for two events that are both very likely; false for cloud over Galway in winter (likely) and snow in Dublin in July (very unlikely).

EXTENSION SHEET · STRETCH ANSWERS

S1: even

S2: unlikely

S3: unlikely

S4: even

S5: unlikely