

Chance: likely, unlikely, certain, impossible

CURRICULUM ALIGNMENT

DAT.CHN.4a

use probability to make informed decisions and predictions.

DAT.CHN.4b

represent and express probability in different forms.

INTERACTIVES

Dice Roller · display

Probability Spinner · display, explore

WHAT THIS LESSON TEACHES

Certain means an event will always happen no matter what. Impossible means it can never happen. Likely means it will probably happen and unlikely means it probably will not.

→ The sun will set this evening is certain.

→ Rolling a 7 on a standard six-sided die is impossible.

MODEL THIS ON THE BOARD

CHANCE WITH A GAME DIE

- 1 Read the event: rolling a number less than 7 on a six-sided die.
- 2 The faces show only 1, 2, 3, 4, 5 and 6.
- 3 Every possible face is less than 7.
- 4 So the event is **certain**.

LESSON ARC

Roll a real die once as pupils settle and take three hands-up guesses about a 6 — surface 'maybe', 'no chance' without settling the maths. Move to the IWB: die histogram, then a four-part spinner, then a lopsided one-giant-part spinner pupils judge unfair. Pupils sort six everyday events C/L/U/I in their copies. Try It Together explores a half-red spinner with predictions before each spin; Class Challenge is the whole-class scale-sort and fair-spinner design.

TEACHING MOVES

1. **Getting Started.** Roll a real die once as pupils settle and ask 'would you bet your break-time snack on a 6?' Take three hands-up answers only, not open call-outs. Resist settling it — you want the raw words 'maybe', 'probably not', 'no chance' on the air to sharpen later.
2. **Watch and Notice.** Point at each face's bar as it grows on the die histogram: 'see how no single bar pulls far ahead.' On the four-part spinner hold out for a pupil to say 'equally likely' before you do. On the last lopsided spinner, ask 'which part would you pick if a prize depended on it?' — let a pupil name it unfair, don't announce it.
3. **Sort the Events in Your Copy.** Pupils write each of the six events on its own line and mark C/L/U/I, underlining any they were unsure of. Walk the room glancing at letters — no marking. Watch specifically for the coin toss marked 'likely' and note it silently to revisit in the wrap.
4. **Try It Together.** Before each spin of the half-red spinner, make the class say aloud which colour they think wins most. Have a pupil spin several times and read the bars: 'does the tallest bar match the biggest slice?' Revoice a strong answer — 'the bigger the slice, the taller its bar grows over time.'
5. **Class Challenge.** Brisk practice, not re-teaching. Pupils take turns placing the four event cards on the certain-to-impossible line; the class confirms each before moving on. Only when the sort is agreed move

to the fair three-part spinner design. Treat the thirty-roll idea as optional stretch — reach it only if time is left.

6. **What Did We Notice?** Pose the two pupil claims about 'unlikely' and ask who's right — draw out that unlikely things still happen sometimes (an unlikely goal, a sunny December day). Revoice: 'unlikely tells us not to bet on it, not that it can never happen.' Steer anyone who called the coin toss 'likely' back to even chance.
7. **Showing a 4.** Bring the die up on the IWB, point at the four, and ask 'is a four harder to roll than a one?' Draw out that every face shares the same 1-in-6 chance — a fair die has no favourite. Use this to seed tomorrow's fraction work.

COMMON MISCONCEPTIONS

⚠ Pupils mark the coin toss as 'likely' — they hear 'likely' as the label for anything that could plausibly happen, rather than reserving it for a good-better-than-even chance.

In the wrap, put the coin back up and ask 'is heads more likely than tails?' Use the two-equal-segment spinner to show heads and tails are the same size — this is an even chance, not 'likely'. 'Likely' means the odds lean your way; a coin doesn't lean.

⚠ Pupils say 'unlikely' means the same as 'impossible' — that an unlikely event definitely won't happen. Ask for a real unlikely-but-real example (a shock goal, snow in Galway). Contrast with rolling a 7 on the die, which can never happen. Anchor both ends of the scale on the board so the gap between 'unlikely' and 'impossible' is visible.

⚠ After a short run of the die-roller, pupils expect the bars to be dead level and call the die unfair when they aren't.

Run the histogram live and let the wobble show over thirty rolls, then over far more. 'A fair die doesn't owe you an even split after thirty rolls — the bars only level out over a very long run.' Chance is not a guarantee.

DIFFERENTIATION

EMERGING

- For the copybook sort, give the two easy anchors first — sun rising (C) and growing wings (I) — so pupils only sort the middle four against those.
- Stay on the two-equal-segment spinner and the four-part spinner; hold the lopsided spinner for the whole-class beat rather than asking these pupils to judge it alone.

DEVELOPING

- After the scale-sort in Class Challenge, ask pupils to add two of their own events — one certain, one impossible — and defend the placement.
- On the fair spinner design, ask which single change would make it unfair, and why.

PROFICIENT

- Narrate the thirty-roll stretch: run the die-roller live and ask them to explain why a fair die still shows uneven bars after only thirty rolls — pull them toward 'chance is not a guarantee' before the rest of the class.
- Ask them to design a spinner that is fair for two players but unfair for three, and justify it at the board.

➤ **Cross-curricular:** Tie to Geography — pupils judge 'likely' or 'unlikely' for rain in Galway in November versus snow in July using Irish seasonal weather.

ANSWER KEY

Scaffold: visual check on the page

Q1: certain

Q2: impossible

Q3: even chance

Q4: certain

- a) **Always** : All faces show 1 to 6 so it must happen.
- b) **Never** : Heads and tails are equally likely so it is not certain.
- c) **Always** : No face shows 7 so it can never happen.
- d) **Never** : With zero sectors it is impossible, not merely unlikely.

EXTENSION SHEET · STRETCH ANSWERS

S1: even

S2: unlikely

S3: even

S4: unlikely

S5: unlikely