

Ordering events on a likelihood line

CURRICULUM ALIGNMENT

DAT.CHN.3 describe and test predictability and (un)certainty in events.

INTERACTIVES Drag Sort · display, explore

WHAT THIS LESSON TEACHES

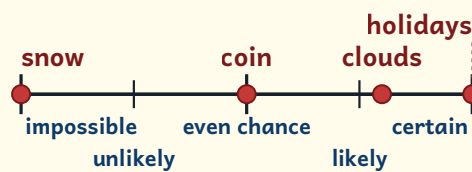
A likelihood line runs from impossible at one end to certain at the other, with even chance in the middle. You place an event where it fits: the more likely it is, the nearer the certain end it sits.

- The sun rising tomorrow goes at the certain end; growing wings goes at the impossible end.
- A flipped coin landing on heads goes on the even chance mark in the middle.

MODEL THIS ON THE BOARD

ORDERING EVENTS ON A LIKELIHOOD LINE

- 1 The line runs from **impossible** to **certain**, with **even chance** in the middle.
- 2 **Snow in July** almost never happens, so it goes at the impossible end.
- 3 A tossed **coin** landing heads happens about half the time, so it goes on **even chance**.
- 4 **Clouds this week** are **likely** but not sure, so they go between even chance and certain; **summer holidays** are **certain**.



DISCUSSION STARTER

REFLECT Which events were hardest to place on the line, and why were they close together?

LESSON ARC

Open with a single likelihood line on the IWB and one Galway-rain card — pupils point and justify, no right answer yet. Reveal four pre-placed events, fixing the coin on the middle as the judge for every close call. Pupils then place four cards together at the board, asking 'more or less likely than the coin?' each time, draw their own line in the copybook, and finish with the Class Challenge comparing two-likely events for who sits closer to certain.

TEACHING MOVES

1. **Getting Started.** Show the line with the Galway-rain card and take two or three hands-up placements — never call-outs. Chase the reason, not the spot: press a pupil who says 'near certain' with 'why there and not the middle?'
2. **Watch and Notice.** Reveal the four cards one at a time, letting the class predict where each lands before you agree. Land the coin on the middle deliberately and name it as the judge: 'from now on, everything gets compared to this.'
3. **Try It Together.** Rotate four pupils to the board in the listed order. Before agreeing each placement, ask the class 'more likely or less likely than the coin?' and revoice one strong reason aloud — e.g. 'near

unlikely because only one of six faces is a six.' If a placement is contested, settle it by argument, not a show of hands.

4. **Draw the Line in Your Copy.** Pupils draw a line across the page with all three labels, then mark the four points. Walk the room checking the coin lands on the middle and the bouncing ball at the impossible end — glance and nudge, don't mark.
5. **Class Challenge.** Keep the board work brisk — pupils place and the class confirms before moving on. The one to slow down on is the red-and-green sweets: if pupils say 'we can't know without counting', revoice that as excellent reasoning and place it near the middle as 'we need more information.'
6. **What Did We Notice?.** Ask why the ends are easy but the middle makes you think. Head off 'likely is one fixed spot' — revoice that likely covers a whole stretch, so two likely events can still be ordered.

COMMON MISCONCEPTIONS

⚠ Pupils treat 'likely' as one single spot on the line and get stuck when asked to order two likely events — 'they're both likely, so they go in the same place.'

Point at the whole stretch between the middle and the certain end. 'Likely isn't one dot — it's this whole bit. Which of the two is more sure to happen?' Have them slide one card closer to certain and say why.

⚠ Pupils place the red-and-green sweets card confidently at even chance, assuming equal numbers of each colour without being told.

Stop and ask 'how many red? how many green? do we actually know?' Draw out that without the counts we can't place it precisely — park it near the middle labelled 'need more information'.

⚠ Pupils confuse 'impossible' with just 'very unlikely' — placing 'the ball bounces higher than it started' near the unlikely end rather than right at the impossible end.

Ask 'could it ever happen, even once?' A dropped ball never bounces higher on its own, so it pins to the very end — unlike rolling a six, which is unlikely but can happen.

DIFFERENTIATION

EMERGING

- Give these pupils only the two-end cards to place first (sun rising, growing wings) before touching anything near the middle — build confidence on the no-argument events.
- In the copybook, pre-write the three labels on their line so they only place the four points, not build the structure.

DEVELOPING

- After the copybook points, ask them to add a fifth event of their own choosing and defend its spot in one sentence.
- Hand them a second sweets jar (say, 3 red and 7 green) and ask how the placement moves and why.

PROFICIENT

- At the board during the Class Challenge, pose a teacher-narrated harder variant: 'give me two events that are both likely but where you're certain which sits closer — and prove the order can't flip.'
- Ask them to invent an event that would sit exactly between the coin and the certain end, and explain what would have to change to move it.

✓ **Cross-curricular:** Tie to Geography — use real Irish weather talk (cloud, rain in the west) to justify where 'it will be cloudy today' sits versus 'sunny all week'.

ANSWER KEY

Scaffold: visual check on the page

Q1: certain

a) **Always** : Lesson example states this event is certain so it is sure to happen no matter what.

b) **Always** : Lesson teaches that certain means sure to happen no matter what.

c) **Never** : A blue cube is present so picking red is not sure to happen.

d) **Sometimes** : It is certain only if the bag holds no other colour.

EXTENSION SHEET · STRETCH ANSWERS

S1: unlikely

S2: unlikely

S3: even

S4: even

S5: unlikely

Investigation: A week of likelihood — open-ended; scan pupils' working for valid solution paths rather than a single answer.