Lesson 31 NUMBER

Fractions on a number line

CURRICULUM ALIGNMENT

NUM.FRC.3a compare and express in equivalent terms; and order fractions.

INTERACTIVES Number Line · challenge, display, explore

LESSON ARC

Open with the running-track image — start line 0, finish 1 — and ask where halfway lands. Move to the number-line interactive and run the rule live: bottom number sets the equal jumps, top number counts them, building one half, one quarter, one third, three quarters. Pupils take turns placing fractions at the board, then draw a 0-to-1 line in their copy split into four jumps. Student Activity Book practice follows.

TEACHING MOVES

1. **Getting Started.** Give five seconds of quiet think-time, then take three hands-up answers — not open call-outs. Listen for 'middle' or 'halfway' and revoice it as 'one half'. Hold back the answer; the splitting comes next.
2. **Watch and Notice.** Work one fraction at a time on the number-line interactive, saying the rule aloud each time: 'the bottom number is how many equal jumps, the top number is how many we count'. On one third, stress the line splits into 3, not 4, so the gap is wider — point to the tick the marker snaps to. On three quarters say 'count the jumps, not the marks' and count three of four aloud.
3. **Try It Together.** Call one fraction at a time (one half, one quarter, one third, two thirds). Before each pupil places the marker, ask 'how many equal jumps?' and get the class to confirm the count first. Revoice a strong answer: 'so the bottom number set the jumps, and we counted up.'
4. **Draw the Line in Your Copy.** Pupils rule a 0-to-1 line, split it into four equal jumps, and label one half at the middle tick. Walk the room glancing for even-sized jumps and that one half lands on the second tick — not the first.
5. **Class Challenge.** Keep the board work brisk — pupils take turns placing one half, one quarter, one third, two thirds and check each as they go. Watch specifically for one third placed at one quarter's spot; if it happens, just say 'split into 3, not 4' and let them re-place.
6. **What Did We Notice?.** Hold the pizza-and-line comparison on display and ask how the point and the slice show the same amount. Revoice: 'so one half is one half, whether we slice a pizza or split a line.' Head off 'a longer line means a bigger fraction' the moment it surfaces.

COMMON MISCONCEPTIONS

⚠ Pupils place one third where one quarter goes — they split the gap into four jumps out of habit and count one.

Stop and rebuild on the number-line interactive: read the bottom number aloud, 'three means three equal jumps', and split it into 3. Point out the gap is now wider than the quarters gap so the third sits further along.

⚠ Pupils count the tick marks instead of the jumps, so three quarters lands on the wrong tick (they count 0 as one).

Say 'count the jumps, not the marks' and physically count the jumps aloud with a finger hop from 0 — one, two, three — landing the marker on three quarters.

⚠ Pupils think a longer drawn line makes the fraction bigger.

In the maths-talk, put a short and a long 0-to-1 line both split in half side by side. Both halves sit at the same fraction — it's the equal jumps that decide, not the line's length.

DIFFERENTIATION

EMERGING

- Stay with halves and quarters only on the interactive while the class moves to thirds; pupils place those two on the board with the jump count confirmed by the class first.
- In the copybook line, pre-mark the four ticks so pupils only label one half rather than rule the jumps from scratch.

DEVELOPING

- After the copybook line, ask pupils to also label one quarter and three quarters and say which is closer to the finish line.
- Pose a missing-point variant: 'I've split the gap into 4 and counted 2 — what fraction is my marker showing, and where else have we seen that amount?'

PROFICIENT

- Narrate a harder board variant: place two thirds and three quarters on the same line — which is further along, and how can you be sure without measuring? Pull fast finishers straight into the Student Activity Book page.

↗ **Cross-curricular:** Tie to PE — mark a 0-to-1 line down the hall in equal jumps and have pupils stand at one half, one quarter and three quarters of the way.

ANSWER KEY

a) Line the cross up with the correct tick.

b) Each jump is the same size — keep them even.

c) Round to the ten you are closer to; halfway rounds up.

Q1: $1/5 < 3/4 < 7/8$

Q2: $5/7$

Q3: $1/5 < 3/4 < 7/8 < 11/12$

Q4: 12 parts ($4/5 = 12/15$)

EXTENSION SHEET · STRETCH ANSWERS

S1: $3/11$

S2: $2/5 < 7/10 < 9/10$