

# Reading and writing tenths; tenths on a number line

## CURRICULUM ALIGNMENT

**NUM.PVT.3** explore equivalent numerical expressions of numbers using the base ten system.

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

**INTERACTIVES** (Number Line · challenge, display, explore)

## WHAT THIS LESSON TEACHES

A tenth is one of ten equal parts of one whole, written 0.1 as a decimal or  $\frac{1}{10}$  as a fraction. On a number line you count the equal tenth steps to read or write the value.

- The line from 0 to 1 splits into ten equal steps, and the first step lands on 0.1.
- 3 sits three steps past the whole number 1.

## MODEL THIS ON THE BOARD

### READING 0.7 ON THE TENTHS LINE

- 1 Look at the number line from 0 to 1 split into ten equal steps.
- 2 Start at 0 and count along **seven** steps.
- 3 The mark you land on is written **0.7**.

## DISCUSSION STARTER

**REFLECT** When you place tenths on a number line, what helps you find the right step?

## LESSON ARC

Put the 0-to-1 number-line interactive up as pupils settle, already split into ten equal steps, and get them naming the first step as 0.1. Walk the demo counting tenth-steps aloud — 0.1, 0.5, 0.8 — before the new move at 1.3, where you count from the whole number on the left, not from 0. Pupils drag the marker for shared values, then draw and label their own 0-to-1 line in the copybook. Student Activity Book carries the solo practice.

## TEACHING MOVES

1. **Getting Started.** Have the 0-to-1 line already split into ten steps as pupils come in. Point to the first step and give five seconds of silent think-time before hands go up. If a pupil says 'a tenth', re-voice it: 'one tenth, and we write that 0.1.'
2. **Watch and Notice.** Count the tenth-steps aloud with the class for every marker — make counting-on the habit, not eyeballing. At 0.8, stress it is 'two short of 1, not eight short'. Then at 1.3 make the new move visible: point right at the whole number 1 and count only the three steps past it.
3. **Try It Together.** One pupil drags the marker per value (0.2, 0.7, 0.4, 1.5); the rest count aloud and predict the step number before release. Watch 0.7 for pupils counting back from 1 — redirect them to start at the whole number on the left. For 1.5, ask the class to name the starting whole number before the drag.
4. **Draw the Tenths in Your Copy.** As pupils draw their own 0-to-1 line, walk the room checking two things only: are the ten steps roughly even, and does 0.5 land near the middle? Nudge a ruler towards anyone whose steps are drifting unequal. Not a marking round.

5. **Class Challenge.** Brisk turns at the board — one pupil moves the marker and presses Check while the class predicts and counts aloud first. Don't re-explain each one; let Check do the confirming. Save your breath for 1.2, where you check the count restarted from 1.
6. **What Did We Notice?.** Ask where they've met the halfway spot before and wait for 'one half'. Re-voice a strong answer: 'five tenths and one half land in the very same place — same amount, written two ways.' Keep it display-only talk, no writing.

### COMMON MISCONCEPTIONS

⚠ Pupils read 0.8 as 'eight short of 1' and count backwards from the right-hand whole number, landing on the wrong step.

Stop and count 0.8 aloud together from 0 on the interactive — eight steps on. Then count the gap to 1 to show it is two short, not eight. Insist every count starts at the whole number on the left.

⚠ For 1.3, pupils count all thirteen steps from 0 instead of restarting the tenth-count at the whole number 1.

Zoom the 1-to-2 line and point right at the 1: 'the whole is already counted — now we only count tenths past it.' Count the three steps on screen so the restart is visible, then have a pupil re-count 1.3 the same way.

⚠ Pupils treat 0.5 as meaning 'five' — a whole number of steps rather than five of ten equal parts.

Point back to the ten equal steps that make one whole. Count all ten aloud, then show 0.5 sits at step five — halfway, the same spot as one half from the fraction work.

### DIFFERENTIATION

#### EMERGING

- Keep these pupils on the 0-to-1 line only while the class moves past 1; they count tenth-steps from 0 every time with no whole-number restart yet.
- Give the pre-divided tenths number-line template for the copybook task so they place and label digits rather than judging ten equal steps by eye.

#### DEVELOPING

- After the copybook line, ask them to add 1.1 and 1.7 to a 0-to-2 line and say aloud which whole number they counted from for each.
- Pose a missing-step: 'the marker is three steps left of 1 — what decimal is it?' (0.7), so they count back as well as on.

#### PROFICIENT

- During Class Challenge, narrate a harder variant for fast finishers: 'find a decimal that sits between 0.5 and 0.6 — where would it go, and can we even mark it on a tenths line?' Let them wrestle with why it falls between two steps before you confirm.

✚ **Cross-curricular:** Preview the measures link — pupils read a metre stick to the nearest tenth of a metre and say the length as a decimal (e.g. 1.3 m).

### ANSWER KEY

**Scaffold:** visual check on the page

**Q1:** 0.3

**Q2:** 0.6

**Q3:** 0.8

**Q4:** 0.1

**Q5:** 1.3

**Q6:** 1.6

**a)** Always : Each step is one tenth, so five steps land on 0.5.

**b)** Always : Five tenths equal one half so the mark is always in the middle.

**c)** Never : You can start at 2 and count on 3 tenths.

**d)** Never : Tenths can be marked between any two whole numbers, such as 2 and 3: 2.1, 2.2, 2.3.

### EXTENSION SHEET · STRETCH ANSWERS

**S1:**  $5.71 = 5 + 0.7 + 0.01$