

Lesson 2 **NUMBER****Place value of decimals to thousandths**

CURRICULUM ALIGNMENT

NUM.PVT.4

investigate how decimals and percentages (and fractions) can be compared, ordered and expressed in related terms.

INTERACTIVES

Place Value Chart (Sliding Digits) · display, explore

Place Value Blocks (Dienes) · challenge

WHAT THIS LESSON TEACHES

The three columns to the right of the decimal point are tenths (0.1), hundredths (0.01) and thousandths (0.001).

→ In 0.305 there are 3 tenths, 0 hundredths and 5 thousandths.

→ One hundredth (0.01) is ten times smaller than one tenth (0.1).

MODEL THIS ON THE BOARD

PLACE A DECIMAL IN COLUMNS

- 1 Write 0.027 in the place-value chart: units . tenths hundredths thousandths.
- 2 The 0 is in units, 0 in tenths, 2 in hundredths and 7 in thousandths.
- 3 Underline the thousandths digit: 7.

LESSON ARC

Open by writing 0.001 on the IWB and asking how many make one whole — five seconds of silent think-time first. Build 0.4, 0.27, 0.305 and 2.408 on the place-value chart, pausing hard on the zero holding the hundredths place. Pupils take turns building called decimals on the chart in decimal mode, then sketch four labelled columns (U, t, h, th) in their copy. The Class Challenge reads zero-trap decimals aloud before checking; the wrap is maths-talk only.

TEACHING MOVES

1. **Getting Started.** Write 0.001 on the IWB and hold five seconds of quiet think-time before any hands. Take three hands-up answers, not call-outs, and listen for pupils reasoning from the column name ('thousandths, so a thousand') rather than guessing. Re-voice the strong answer: 'a thousand thousandths make one whole, just like a thousand units make a thousand.'
2. **Watch and Notice.** Build each example on the chart one at a time, pointing at the column the new digit lands in. On 0.305 stop and ask 'what is that zero doing here?' before revealing it holds the place so the 5 stays in thousandths. Read 2.408 aloud as 'two and four hundred and eight thousandths' so pupils hear the whole-and-decimal join.
3. **Try It Together.** Call 0.6, then 0.38, then 0.207, then 1.504, and have an individual pupil build each on the chart in decimal mode while the class checks the live readout column by column. Watch 0.207 hard — pupils skip the empty hundredths and write 0.27; re-voice 'the zero is holding the hundredths place so the 7 stays in thousandths.' Talk it through, don't mark.
4. **Sketch the Columns in Your Copy.** Pupils sketch four columns labelled U, t, h, th and write 0.4, 0.27, 0.305 and 2.408 one under the other, underlining the thousandths digit each time. Walk the room glancing for the empty columns in 0.4 and 0.305 being left blank rather than squashed shut. No marking.

5. **Class Challenge.** Brisk turns at the board on 0.006, 0.05, 0.408, 1.207, 3.09 — each one steps up the zero trap. Before each pupil presses Check, ask the class 'what's tricky about the zeros here?', confirm aloud, then move on. Keep it as consolidation practice — don't re-teach each one from scratch.
6. **What Did We Notice?.** Display-only discussion. Listen for pupils linking the decimal columns back to the whole-number columns — same ten-times pattern running the other way — and re-voice 'the pattern never stops, it just keeps shrinking by ten each step.' Treat the 'hundred times smaller' question as a what-if to argue out, not a rule to teach.

COMMON MISCONCEPTIONS

⚠ Pupils read 0.207 and write it as 0.27 — they skip the empty hundredths column instead of letting the zero hold the place.

Build both on the chart side by side. Point at the hundredths column on 0.207: 'the zero is doing a job here, holding the hundredths place so the 7 stays in thousandths.' Have the pupil read each digit by its column out loud.

⚠ Pupils read 0.305 as 'three hundred and five' — they treat the digits after the point like a whole number.

On the chart, name each column as you point: three tenths, zero hundredths, five thousandths. Then read the whole thing as 'three hundred and five thousandths' so they hear that the place name lives at the end, not the start.

DIFFERENTIATION

EMERGING

- Stay in tenths and hundredths only on the chart while the class moves to thousandths; these pupils build the two-column decimals and read them back before any thousandths appear.
- Sketch the U, t, h, th column labels into their copy for them so they only place digits, not invent the structure.

DEVELOPING

- After the copybook page, swap a digit in 0.305 to make 0.350 and ask which got bigger and by how much, in column language.
- Give a missing-place puzzle: 'I have 4 thousandths and 2 tenths and nothing in between — write my number.'

PROFICIENT

- During the Class Challenge, hand the strongest pupils a teacher-narrated harder target — read 12.045 aloud and place it on the chart, naming the whole-number columns too.
- Pose: 'find a decimal that sits between 0.305 and 0.306 — explain in column language how you know it's between.'

✂ **Cross-curricular:** Tie to science measuring — pupils measure a pencil to the nearest millimetre and write the length as a decimal in centimetres, e.g. 14.7 cm.

ANSWER KEY

a) 4. 5 82: 5 tenths

b) 3.6 7 1: 7 hundredths

c) 0.09 4 : 4 thousandths

d) 2 .458: 2 units

Q1: 4 tenths

Q2: 2 tenths 7 hundredths

Q3: 3 tenths

Q4: 3 tenths 0 hundredths 5 thousandths

Q5: 0 tenths 0 hundredths 1 thousandth

Q6: 0 tenths 1 hundredth 0 thousandths

a) **Always** : A 7 in the thousandths column is worth 7 thousandths, 0.007.

b) **Always** : Zero in a column always means none of that place value.

c) **Sometimes** : 0.725 is bigger than 0.72, but 0.125 is smaller than 0.5.

d) **Never** : Zeros at the end after the decimal point do not change the value, so $0.4 = 0.400$.

EXTENSION SHEET · STRETCH ANSWERS

S1: between 3 and 4, closer to 3

S2: between 4 and 5, closer to 4

S3: between 3 and 4, closer to 3

S4: $5.71 = 5 + 0.7 + 0.01$

S5: $6.96 = 6 + 0.9 + 0.06$