

Fractions, decimals and percentages review

CURRICULUM ALIGNMENT

NUM.FRC.4a explore (model, compare and convert) the relationships between fractions, decimals and percentages.

NUM.PVT.4 investigate how decimals and percentages (and fractions) can be compared, ordered and expressed in related terms.

INTERACTIVES Phone Battery · display, explore

WHAT THIS LESSON TEACHES

A fraction, a decimal and a percentage can name the same amount. Three ways of writing, one value.

→ $3/5 = 0.6 = 60\%$

→ $3/5$, 0.55 and 58% become 0.60, 0.55 and 0.58 to order them.

MODEL THIS ON THE BOARD

CONVERT, COMPARE AND DISCOUNT

- 1 Write $7/10$ as 0.70 and 70%.
- 2 Write 0.72 as $72/100$ and 72%.
- 3 Write 68% as 0.68 and $68/100$.
- 4 68 is smallest, 0.72 is biggest.
- 5 20% off €35 is $0.20 \times 35 = €7$ off.

DISCUSSION STARTER

REFLECT Where in real life do you meet fractions, decimals or percentages most?

LESSON ARC

Open by putting $3/5$, 0.55 and 58% on the IWB and asking which single form makes them easiest to line up. Walk the static battery-slider snapshots showing $3/5$ reads as 0.60, 0.55, 0.58 — the order falls out once all are decimals. Try one full problem together: convert, compare, then take 25% off €48 two ways on the board. Copybook practice covers a discount and an ordering question; the Class Challenge is a five-clue mystery number.

TEACHING MOVES

1. **Getting Started.** Give five seconds of silent think-time, then take three hands-up answers only. Listen for 'make them all the same form' — if a pupil reaches for decimals, don't confirm it yourself; ask them to justify why decimals line up more easily than fractions.
2. **Watch and Notice.** These slider snapshots are static — point, don't drag. On the 0.55 snapshot, ask the class to predict before you point whether it sits above or below the three-fifths mark. Close by saying the order aloud: '0.55, 0.58, 0.60 — done.'
3. **Try It Together.** Stages 1–2 use the slider — a pupil states each conversion, the class confirms. Stage 3 moves to board working, not the slider: the battery can't take €12 off €48. Work $1/4$ of €48 = €12 and $0.25 \times 48 = €12$ side by side so the two answers visibly land on the same €12.

4. **Show Your Method in Your Copy.** Walk the room glancing for a visible method line above each boxed answer — this is practice, not marking. Prompt any pupil who jumped to an answer to write the step that got them there; for Question 1 look for both the fraction line and the percentage line landing on €7.
5. **Class Challenge.** Run the five clues briskly — pupils take turns at the board, agree which numbers still fit each clue, then move on. If the class stalls on clue 1, re-read it aloud and ask a volunteer to name one number that fits, then test it against clue 2. Close with a pupil stating the survivor $0.70 = 7/10 = 70\%$ in all three forms.
6. **What Did We Notice?.** Draw out that a fraction converts to a decimal by dividing top by bottom, and a decimal to a percentage by reading hundredths — so mastering one form unlocks all three. Ask each pupil which form they reach for first when comparing mixed values, and why.

COMMON MISCONCEPTIONS

⚠ Pupils say 68% is bigger than 0.72 'because 68 is a big number' — they compare the digits rather than the values.

Revoice on the spot: 'as a decimal, 68% is 0.68, which is less than 0.72.' Set the slider to each in turn so the class sees the 0.68 battery sitting below the 0.72 battery — the length of the number '68' has nothing to do with its size.

⚠ In the mystery, pupils accept $3/5$ or $6/10$ for the final clue that demands a simplest-form denominator of 10 — they read the decimal but skip simplifying to check.

Stop at clue 5 and have a pupil simplify each survivor: $6/10$ becomes $3/5$, so its simplest denominator is 5, not 10. Only $7/10$ already sits in simplest form with denominator 10. Make them show the simplification, not just read 0.70 off.

DIFFERENTIATION

EMERGING

- Give these pupils a copybook equivalence table with the three column headings (fraction, decimal, percentage) already written, so they only fill values rather than build the structure.
- Keep them on tidy tenths in the Class Challenge — let them test 0.70 and 0.60 against each clue while the class handles the trickier 68% and $4/5$ conversions.

DEVELOPING

- After Question 2, ask them to slot a fourth value between two of the ordered numbers — e.g. find a decimal that sits between 0.78 and 0.82 — and say which fraction it's near.
- On the discount question, ask which method they'd choose for 15% off and why the fraction route gets awkward there.

PROFICIENT

- Pose: invent a sixth clue that would still leave $7/10$ standing but knock out one number the real clues let through — then test it aloud against the board list.
- Ask them to explain to the class why decimals win for comparing but fractions win for taking an exact quarter off a bill — a form-choice justification, not just a conversion.

➤ **Cross-curricular:** Tie to the Geography/shopping context — pupils bring a real sale sign (e.g. '30% off') and work the saving on a €40 item both ways.

ANSWER KEY

Scaffold: visual check on the page

Q1: €25; 0.5; 50%

Q2: 30% bigger

Q3: 0.75; 75%

Q4: 68%, $7/10$, 0.72

a) Sometimes : True for $3/8 = 0.375$; false for $1/3 = 0.333...$, which repeats.

b) Always : All three name the same amount.

c) Never : $3/8 = 37.5\%$, which is less than 40%.

d) Always : One quarter and 25% are the same value every time.

EXTENSION SHEET · STRETCH ANSWERS

S1: $15 (3/4 = 15/20)$

S2: $1/5 < 3/4 < 7/8$

S3: $\frac{2}{5} < \frac{7}{8} < \frac{11}{12}$

S4: $55 \left(\frac{11}{12} = \frac{55}{60} \right)$