

Ordering a set of fractions

CURRICULUM ALIGNMENT

NUM.FRC.4a

explore (model, compare and convert) the relationships between fractions, decimals and percentages.

INTERACTIVES **Fraction Strips** · challenge, display, explore

WHAT THIS LESSON TEACHES

To compare two fractions with **different denominators**, rewrite them both with the **same** denominator, then compare numerators.

→ $1/3$ vs $2/5$: rewrite as $5/15$ and $6/15$. $6/15$ is bigger, so $2/5 > 1/3$.

→ $3/4$ vs $5/8$: rewrite $3/4$ as $6/8$. $6/8 > 5/8$, so $3/4$ is bigger.

LESSON ARC

Open with four fractions jumbled on the IWB and pull guesses for smallest and biggest. Walk three Watch and Notice sets on the fraction-strips interactive, with the class naming the common denominator each time. Pupils order $1/4$, $3/8$, $1/2$, $5/8$ together at the board, then rewrite $1/3$, $1/2$, $2/3$, $5/6$ as sixths in their copybook. Class Challenge ends on $\{1/3, 1/2, 5/8, 3/4\}$ — the 24ths set that seeds the maths-talk wrap.

TEACHING MOVES

- Getting Started.** Hands up only — no call-outs. Take three guesses (biggest, smallest, the 'trick') and write the trick-guesses on the side of the IWB without ruling them in or out. Resist the urge to teach yet; the strips will do the work in the next step.
- Watch and Notice.** Walk each example aloud and rewrite each fraction over the common denominator in the air before the strips confirm. After each set, have the class name the common denominator aloud. On example 3, lean on the seed line: 'when denominators share factors, the common denominator can be smaller than multiplying them all together.'
- Try It Together.** Send one pupil to the board to drag strips into ascending order while the class calls 'smaller' or 'bigger' on each move. Once ordered, pause and ask the common denominator — expect 8. Write $2/8$, $3/8$, $4/8$, $5/8$ under the strips so the numerators-sort-themselves move is visible.
- Write the set in your copy.** Walk the rows glancing at the rewrites — looking specifically for $1/2$ written as $2/6$. If you spot it, lean in quietly: 'if the denominator triples from 2 to 6, what does the numerator do?' Don't broadcast the error; fix it desk-side.
- Class Challenge.** Keep the board work brisk — pupils take turns, the class confirms, move on. Save your breath for set 4 ($\{1/3, 1/2, 5/8, 3/4\}$): pause there and ask the class to predict the common denominator before anyone drags. That pause is what feeds the maths-talk wrap. Direct fast finishers to the extension bank on their device while you circulate.
- What Did We Notice?.** Write the four denominators (2, 3, 4, 8) on the IWB with two columns underneath: 'Does 12 divide?' and 'Does 24 divide?' Run the divisions out loud as a class. Land the revoice: '24 works because every denominator divides into it; 12 breaks on the eighths.'

COMMON MISCONCEPTIONS

⚠ Pupils rewrite $\frac{1}{2}$ as $\frac{2}{6}$ (or $\frac{1}{3}$ as $\frac{1}{6}$) — they change the denominator but leave the numerator alone, as if the top number doesn't have to keep up.

Stop at the copybook step and rebuild $\frac{1}{2}$ on the fraction-strips interactive next to $\frac{3}{6}$. Same length. Then show $\frac{2}{6}$ underneath — clearly shorter. 'If the slice got smaller, you need more of them to make the same length.'

⚠ Pupils reach straight for 'multiply all the denominators together' and propose 96 for $\{\frac{1}{3}, \frac{1}{2}, \frac{5}{8}, \frac{3}{4}\}$ (or 48 for set 4 in challenge).

Don't mark it wrong — it works, just clunkily. Then ask: 'does 24 also work? Check each denominator.' Run the four divisions live. The bigger idea (factors-shared) is the maths-talk wrap, but plant it here.

⚠ Pupils order by numerator alone — they see $\frac{5}{8}$ and $\frac{5}{6}$ and call them equal, or rank $\frac{3}{4}$ below $\frac{5}{8}$ because 5 is bigger than 3.

Pull two strips up on the IWB side by side without rewriting. 'Are these the same length? The numerator only counts the slices — the denominator tells you how big each slice is.' Then rewrite both with a common denominator and the order falls out.

DIFFERENTIATION

EMERGING

- Stay with sets where one denominator is already the common denominator (like the Getting Started set — 6 is the common, and $\frac{5}{6}$ is already in sixths). The 'find it' step is removed; only the rewrite remains.
- Pre-write the common denominator on the IWB before pupils start the copybook rewrite — they fill in numerators only, not invent the structure.

DEVELOPING

- After the copybook rewrite, ask: where would $\frac{7}{12}$ fit into $\frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6}$? Pupils have to rewrite $\frac{7}{12}$ and the others over 12 to slot it in.
- Pose a missing-fraction puzzle: ' $\frac{1}{3}, ?, \frac{5}{8}, \frac{3}{4}$ — give me a fraction that fits in the gap and prove it with a common denominator.'

PROFICIENT

- Direct fast finishers to the extension bank on their device while you circulate the room.
- Pose in the copybook: 'what is the smallest common denominator for halves, thirds, quarters, fifths AND sixths together? Show me the divisions that prove it.' (Answer: 60 — and the working is the point.)

• **Cross-curricular:** Tie to music — write four note values (half, quarter, eighth, sixteenth) and ask pupils to order the lengths using a common denominator of 16.

ANSWER KEY

a)

Ascending: $\frac{1}{4} < \frac{1}{2} < \frac{2}{3} < \frac{5}{6}$ (decimals: $0.25 < 0.5 < 0.67 < 0.83$).

Q1: $\frac{2}{5} < \frac{7}{8} < \frac{11}{12}$

Q2: $\frac{2}{5} < \frac{7}{10} < \frac{9}{10}$

Q3: $\frac{1}{8} < \frac{2}{5} < \frac{7}{10} < \frac{9}{10}$

Q4: $\frac{1}{5} < \frac{3}{4} < \frac{7}{8} < \frac{11}{12}$

EXTENSION SHEET · STRETCH ANSWERS

S1: $\frac{1}{12} < \frac{1}{8} < \frac{7}{12} < \frac{3}{4}$

S3: $\frac{1}{12} < \frac{7}{12} < \frac{3}{4}$

S2: $\frac{1}{5} < \frac{3}{4} < \frac{7}{8}$