

Comparing two 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 bottom numbers, rewrite them over the same bottom number so the slices are the same size. Then the fraction with the larger top number is bigger.

→ $\frac{3}{4}$ and $\frac{5}{6}$ become $\frac{9}{12}$ and $\frac{10}{12}$, so $\frac{5}{6}$ is bigger.

→ $\frac{4}{9}$ and $\frac{4}{11}$ share the same top number; ninths are larger slices than elevenths, so $\frac{4}{9}$ is bigger.

MODEL THIS ON THE BOARD

WHICH IS BIGGER: $\frac{3}{4}$ OR $\frac{5}{6}$?

- 1 Find a common bottom number for 4 and 6. Multiples of 4 are 4, 8, 12... Multiples of 6 are 6, 12... so use 12.
- 2 Rewrite: $\frac{3}{4} = \frac{9}{12}$ because $3 \times 3 = 9$ and $4 \times 3 = 12$.
- 3 Rewrite: $\frac{5}{6} = \frac{10}{12}$ because $5 \times 2 = 10$ and $6 \times 2 = 12$.
- 4 Compare the tops: 10 is more than 9, so $\frac{10}{12}$ is bigger. Therefore $\frac{5}{6}$ is bigger than $\frac{3}{4}$.

LESSON ARC

Open with the hook pair $\frac{3}{4}$ and $\frac{5}{6}$ on the fraction-strips interactive — both strips the same length, cut differently — and leave the question open. In Watch and Notice, walk four pairs, each adding a wrinkle: two common-denominator cases, then the benchmark shortcut, then the common-numerator inverter. Try It Together builds four pairs at the board; the copybook page has pupils pick the smartest strategy for three pairs. Class Challenge runs three predict-shade-confirm pairs.

TEACHING MOVES

1. **Getting Started.** Put $\frac{3}{4}$ and $\frac{5}{6}$ up and take exactly three hands-up answers — no open call-outs, no confirming. Listen for whether pupils reach for a rule or just a hunch; you return to this same pair in the next step, so keep it genuinely unsettled.
2. **Watch and Notice.** Walk the four pairs one at a time with a pause between each. On $\frac{2}{7}$ vs $\frac{5}{9}$, stop and ask 'do we even need a common denominator?' so the benchmark shortcut lands. Give $\frac{4}{9}$ vs $\frac{4}{11}$ the longest beat — ask pupils to predict, then say the rule aloud twice: bigger bottom means smaller slices, so with matching tops the smaller bottom wins.
3. **Try It Together.** Reset the strips for each named pair, set the two denominators, then hand the mouse to a pupil to shade. For every pair, ask one pupil to name the strategy before shading and a second to read the comparison line. Revoice a strong answer: 'so once the bottoms match, we just count the shaded slices.'
4. **Work the Comparison in Your Copy.** Pupils write the three pairs one under the other and put the correct sign between each. Walk the room glancing for whether they pick a fitting strategy — on $\frac{4}{9}$ vs $\frac{4}{11}$, praise the pupils who spot the common-numerator shortcut instead of grinding out twelfths.

5. **Class Challenge.** Brisk predict-shade-confirm on all three pairs — about eight minutes, so keep board work quick rather than re-explaining. Before anyone grinds out a common denominator, prompt: 'would a benchmark to a half decide it faster?' Confirm each answer as a class before moving on.
6. **What Did We Notice?.** Ask which strategy fits which kind of pair. Head off the belief that common denominator is always fastest — revoice: 'so when the two fractions land on different sides of a half, we don't need a common bottom at all.'

COMMON MISCONCEPTIONS

⚠ A pupil says $\frac{3}{4}$ is bigger than $\frac{5}{6}$ because 'quarters are bigger than sixths' — they compare the slice size and ignore how many slices there are.

On the strips, bring both to twelfths so $\frac{3}{4}$ shows $\frac{9}{12}$ and $\frac{5}{6}$ shows $\frac{10}{12}$. Same slice size now — count them. 'Yes, quarters are bigger slices, but we have fewer of them.'

⚠ With $\frac{4}{9}$ vs $\frac{4}{11}$ a pupil picks $\frac{4}{11}$ as bigger because 11 is the bigger number.

Shade $\frac{4}{9}$ and $\frac{4}{11}$ on the strips side by side. The ninths are visibly longer slices. Say the rule with the class twice: matching tops means the smaller bottom is the bigger fraction, because the slices are larger.

⚠ Pupils reach straight for a common denominator on every pair, including $\frac{2}{7}$ vs $\frac{5}{9}$ where a benchmark to a half would settle it instantly.

Stop before the calculation and ask each fraction 'is this more or less than a half?'. Show $\frac{2}{7}$ sits below the halfway shade and $\frac{5}{9}$ above it — decided, no re-writing needed.

DIFFERENTIATION

EMERGING

- Stay on the strips for every pair this pupil attempts — shade both and count, rather than pushing the re-writing to twelfths on paper.
- In the copybook, start with just the first pair ($\frac{2}{3}$ and $\frac{3}{4}$) at the teacher table and build the shared bottom number together before they try the rest.

DEVELOPING

- After the copybook page, hand them a pair like $\frac{5}{6}$ and $\frac{4}{5}$ and ask which strategy is smartest before they compute — is common denominator really the quick route here?
- Ask them to justify in one sentence why the benchmark works for $\frac{2}{7}$ vs $\frac{5}{9}$ but not for $\frac{5}{6}$ vs $\frac{7}{8}$.

PROFICIENT

- During Class Challenge, narrate a harder variant: which of $\frac{7}{12}$, $\frac{5}{8}$ and $\frac{3}{4}$ is biggest, and can you order all three using the fewest common denominators possible?
- Pose: invent a pair of fractions where a benchmark to a half decides it but a common numerator would not help at all — explain how you built it.

✂ **Cross-curricular:** Tie to home economics — compare two recipe amounts like $\frac{3}{4}$ cup and $\frac{5}{6}$ cup to decide which uses more before halving a batch.

ANSWER KEY

Scaffold: visual check on the page

Q1: $\frac{1}{2}$

Q2: Aoife ($\frac{1}{2}$)

Q3: $\frac{2}{5}$

a) Always : Equal-sized slices mean more slices always make a larger amount.

b) Always : Anything above the half mark must beat anything below it.

c) Never : Same tops but different bottoms mean different slice sizes, so the values differ.

d) Sometimes : $\frac{1}{4}$ is smaller than $\frac{1}{3}$, but $\frac{5}{6}$ is bigger than $\frac{3}{4}$.

EXTENSION SHEET · STRETCH ANSWERS

S1: $\frac{2}{5} < \frac{2}{3} < \frac{7}{8} < \frac{11}{12}$

S4: $\frac{1}{5} < \frac{3}{4} < \frac{7}{8} < \frac{11}{12}$

S2: $\frac{1}{8} < \frac{1}{4} < \frac{1}{2} < \frac{9}{10}$

S5: $\frac{1}{8} < \frac{2}{5} < \frac{7}{10} < \frac{9}{10}$

S3: $\frac{3}{8} < \frac{2}{5} < \frac{1}{2} < \frac{3}{5}$