

Simplifying 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

A fraction is in its simplest form when the top and bottom share no common factor bigger than 1, so it cannot be made smaller while keeping the same value.

→ $4/8$ simplifies to $1/2$

→ $6/9$ simplifies to $2/3$

→ $12/16$ simplifies to $3/4$

MODEL THIS ON THE BOARD

SIMPLIFYING 12/16 ON THE STRIPS

- 1 Look at $12/16$. Find the biggest number that divides both 12 and 16: that is **4**.
- 2 Divide top and bottom by 4: $12 \div 4 = 3$ and $16 \div 4 = 4$.
- 3 So $12/16 \div 4/4 = 3/4$. Underline $3/4$ as the simplest form.

LESSON ARC

Pose $4/8$ cold and collect three quiet answers before settling anything. On the fraction-strips interactive, stack $4/8$ against $1/2$ so the matching lengths prove the value holds, then name the number that divides into both top and bottom. Pupils write the $\div$ step in their copy for four fractions, underlining the simplest form. Class Challenge runs four on the board — including $7/12$ as a 'already simplest' catch. Comparing fractions is the Student Activity Book hand-off.

TEACHING MOVES

1. **Getting Started.** Put $4/8$ up and give a silent five seconds before any hands. Take exactly three hands-up answers and write them all on the board without judging — some will say $1/2$, some will leave it as $4/8$. Tell them the strips will settle it next; don't confirm yet.
2. **Watch and Notice.** Point to the matching lengths on the two strips first so pupils SEE the value holds, then ask 'what number divides into both 4 and 8?' and wait for a pupil to name 4 before you show the $\div 4$. On $6/9$, expect a $\div 2$ attempt — draw out that 9 isn't even. On $12/16$, if a pupil stops at $6/8$ revoice 'still room to go smaller'.
3. **Try It Together.** Bring a pupil up to shade $4/8$, then $2/4$, then $1/2$ and let the class watch the three reach the same length — name $2/4$ as the halfway step. Then have different pupils build $4/6$ and $10/12$ for the class to simplify aloud. Ask 'which one is simplest and how do you know?' each time.
4. **Work the Divide Step in Your Copy.** Pupils write the divide-by step underneath each fraction ($4/8 \div 4/4 = 1/2$) and underline the simplest form. Walk the room watching specifically for a too-small factor — $12/16 \div 2 = 6/8$ — and prompt 'is there a bigger number that divides into both?' rather than giving the answer.

5. **Class Challenge.** Keep it brisk — pupils take turns at the board, check each answer, class confirms, move on. Flag that $6/8$ and $9/12$ both land on $3/4$. On $24/36$ push for the biggest common factor (12) in one go. On $7/12$ press 'how do you know it won't go smaller?' — 7 is prime and shares nothing with 12.
6. **What Did We Notice?.** Display-only talk. Listen for pupils describing the greatest common factor in their own words — 'the biggest number that goes into both' — and revoice a strong one: 'so spotting the biggest first finishes in one step instead of three'. Head off the belief that you can only divide by 2.

COMMON MISCONCEPTIONS

⚠ Pupils stop too early: $12/16 \div 2 = 6/8$ and call it done, because $6/8$ looks 'smaller' so it feels finished. Build $6/8$ on the strips next to $3/4$ and show they reach the same length — so there was more to take out. Ask 'what number divides into both 6 and 8?' to find the 2 that's still hiding, then go back and divide $12/16$ by 4 in one move.

⚠ Pupils default to dividing by 2 every time, so they get stuck on $6/9$ (where 9 is odd) and decide it 'can't be simplified'. On the strips, ask whether 9 splits evenly into two — it doesn't. Then ask what DOES go into 9: pupils name 3, and 3 also goes into 6. Make the point out loud that the right factor depends on the numbers, not always 2.

⚠ Pupils assume every fraction must simplify, so they force $7/12$ into a smaller form rather than recognising it's already simplest. List the numbers that divide into 7 (only 1 and 7) and into 12 (not 7). Build $7/12$ on the strips — nothing else lines up to its length. State the rule: if the only shared factor is 1, it's already simplest.

DIFFERENTIATION

EMERGING

- Stay with halving-only fractions on the strips — $4/8$, $2/4$, $6/8$ — so pupils always divide by 2 while the class tackles $6/9$ and $24/36$.
- Let these pupils shade both strips on the IWB and check the lengths match before writing any $\div$ step; the visual carries the equivalence.

DEVELOPING

- After the copybook four, give $18/24$ and ask for the single biggest divide-step rather than chipping down — can they name 6 first time?
- Ask them to write one fraction of their own that is already in simplest form and explain why it won't go smaller.

PROFICIENT

- Pose: find a fraction equal to $3/4$ where the top is bigger than 20, then prove it simplifies back to $3/4$. Pupils work it in their copy and explain the reverse move.
- Challenge them to explain to the teacher why $7/12$ is simplest using the word 'prime' — building the bridge to greatest common factor.

✓ **Cross-curricular:** Tie to baking in SPHE/home economics — halving a recipe turns $4/8$ of a cup into $1/2$, the same simplest-form move on real quantities.

ANSWER KEY

Scaffold: visual check on the page

Q1: $1/2$

Q2: $2/3$

Q3: $5/7$

Q4: $2/3$

a) Always : Divide top and bottom by 5.

b) Always : Divide top and bottom of $3/12$ by 3 to get $1/4$.

c) Never : Even numbers always share a factor of 2 so it can be simplified further.

d) Sometimes : $6/8$ is simpler than $12/16$ but not the simplest form, which is $3/4$.

EXTENSION SHEET · STRETCH ANSWERS

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

S2: $21 (3/4 = 21/28)$