

Equivalent fractions

CURRICULUM ALIGNMENT

NUM.FRC.4a

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

INTERACTIVES [Pizza Slicer · display, explore](#) [Maths Bingo · challenge](#)

WHAT THIS LESSON TEACHES

Two fractions are **equivalent** when they describe the same amount. **Multiply** (or **divide**) the top and bottom by the **same** number to find an equivalent.

→ $1/2 = 2/4 = 4/8 = 5/10$ (multiply top and bottom by 2, then by 4, then by 5).

→ $6/9 = 2/3$ (divide top and bottom by 3).

MODEL THIS ON THE BOARD

FIND THE FRACTION EQUIVALENT TO $2/3$ WITH DENOMINATOR 12

- 1 Look at the denominators: $3 \rightarrow 12$ means we **multiply by 4**.
- 2 Whatever you do to the bottom, do to the top: $2 \times 4 = 8$.
- 3 Answer: $2/3 = 8/12$.

LESSON ARC

Open with the two-pizza hook: same amount or different? Hold the disagreement, then walk the halves and thirds chains on the pizza-slicer interactive using predict-then-reveal so the class calls each shaded count before you click. Pupils take turns at the board on the same interactive to build more halves and thirds equivalences. Four chains land in copybook, then a three-round bingo on paper cards. Student Activity Book practice follows.

TEACHING MOVES

1. **Getting Started.** Take three hands-up answers on the two pizzas before clicking anything. Hold the disagreement for a full ten seconds — that tension is the whole lesson. Don't resolve it yet; the chains in the next step do that work.
2. **Watch and Notice.** Run each transition as predict-then-reveal: before clicking $1/2$ to $2/4$, ask 'we doubled the slices to four — how many should we shade?' Take three voices, then reveal. Same beat for $2/4 \rightarrow 4/8$ and across the thirds chain. After each chain, make the class state the rule before you do.
3. **Try It Together.** Name the rotation rule out loud at rotation one: the class calls the shaded count BEFORE the board pupil drags. Enforce it every rotation — the 23 watching pupils have a job. If a pupil tries to change only the slice count, pause and ask the class to look at the pizza: the shaded amount has dropped, so the fraction has dropped.
4. **Build Equivalence Chains in Your Copy.** Walk the room glancing at the underline on the leftmost fraction of each row. If a pupil has underlined the wrong fraction, point at the row and ask 'which has the smallest numbers?' — don't tell. Resist pre-teaching the divide-top-and-bottom procedure; that's tomorrow.
5. **Class Challenge.** Hand out the printed bingo cards before the round starts. Call briskly from the IWB; between rounds, ask the winner to read one equivalence they marked aloud so the 'why does this match?'

reasoning surfaces. If Round 1 over-runs, cut it short — Round 3 (fraction-decimal-percentage) is the must-keep.

6. **What Did We Notice?** Wait a full five seconds before taking hands. Listen for the visual reason — 'more slices, smaller slices, same shaded amount'. If a pupil floats 'just multiply the top', hand it back to the class without correcting: ask them to picture $1/4$ versus $2/4$ on the slicer.

COMMON MISCONCEPTIONS

⚠ Pupils say 'to make an equivalent fraction, multiply the top by 2' — they apply the rule to only the numerator.

Rebuild $1/4$ on the pizza-slicer, then change the shaded count to 2 without changing the slice count. The class sees $2/4$ — twice as much pizza. Re-voice: 'we shaded more, so the fraction grew. To keep it equivalent we have to chop more slices too.'

⚠ Pupils look at $1/2$ and $4/8$ and insist they are different fractions because the numbers are different. Go back to the Getting Started pizzas on the IWB and overlay them. Same shaded area, different slice count. Name it: 'the numbers describe the slicing, not the amount of pizza.'

⚠ In bingo Round 3, pupils mark $1/2$ when the caller says 'one quarter' because they see a 1 on top and assume any fraction with a 1 on top counts.

Pause the round, ask the class to check the called value against the pizza-slicer mental picture. 'One quarter is one slice out of four — is one half the same amount?' Correct in public so the rule lands for everyone.

DIFFERENTIATION

EMERGING

- On the copybook task, give them just the first two chains ($1/2$ and $1/3$). The $3/4$ and $1/5$ chains are stretch.
- During bingo, pair them with a stronger neighbour for Round 2 and Round 3 — they can play together on one card with the partner pointing out matches.

DEVELOPING

- After the copybook chains, ask: can you extend $1/2 = 2/4 = 4/8$ by one more step? What goes next, and how did you work it out?
- Pose during Class Challenge: in Round 3, which prompt has the MOST equivalent cells on the card? Why might $1/2$ have more matches than $1/3$?

PROFICIENT

- On the copybook page, give them $2/3$ as a starter and ask them to build a chain of four equivalents on their own. Then ask: is there an equivalent fraction with 100 on the bottom? How do you know?

- **Cross-curricular:** Tie to art — pupils fold an A4 page in half, then in half again, then again, and label each fold as an equivalent fraction of the whole page.

ANSWER KEY

a) $1/2 = 2/4 = 4/8$.

b) $2/3$ of 6 = 4 cells; $2/3 = 4/6$.

Q1: 15 ($3/4 = 15/20$)

Q2: 72 ($9/10 = 72/80$)

Spot: You must MULTIPLY top and bottom by the same number, not add. $1/2 = 2/4 = 3/6 = 4/8 = 5/10$.

EXTENSION SHEET · STRETCH ANSWERS

S1: $18/24 = 3/4$

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

S3: 55 ($11/12 = 55/60$)