TEACHER RESOURCE BOOK · MATHS · 5TH CLASS

Lesson 32 NUMBER

Equivalent fractions

CURRICULUM ALIGNMENT

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

ALG.PRR.4a identify, explain and apply generalisations, including properties of operations, mathematical models and patterns.

INTERACTIVES Pizza Slicer · challenge, display, explore

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 → 12 means we **multiply by 4**.
2. Whatever you do to the bottom, do to the top: 2 × 4 = **8**.
3. Answer: 2/3 = **8/12**.

LESSON ARC

Open with three pre-shaded pizzas on the IWB — ½, 2/4, 4/8 — and take three hands-up answers without confirming which is most shaded; let the disagreement sit. Line them up so pupils see the shaded amount is identical, then draw out the ×same-number rule. Pupils build 2/10, 4/6 and 3/12 at the board, then write the equivalence chains in their copy and underline the simplest form. Student Activity Book carries the solo practice.

TEACHING MOVES

1. **Getting Started.** Show the three pre-shaded pizzas and take exactly three hands-up answers — not open call-outs — for which pizza has most shaded. Don't confirm or deny; let the disagreement hang. The whole lesson lands when pupils see the amounts are identical.
2. **Watch and Notice.** Line up ½ = 2/4 = 4/8 on the pizza interactive and ask 'what did we do to 1 to get 2, and to 2 to get 4?' Name the multiplier aloud at each step (×2, ×3). Make pupils say the rule back: multiply top and bottom by the same number to keep the same amount.
3. **Try It Together.** Start with 1/5 shaded and ask the class to find 2/10; a pupil slices the pizza into 10 and shades to match. Repeat with 2/3→4/6 and 1/4→3/12. Watch for the slip where a pupil multiplies only the bottom — flag it the moment it appears.
4. **Write the Equivalence Rows in Your Copy.** Pupils write the three chains one row under the other, then underline the simplest form. Walk the room checking they underline the leftmost fraction, not the last one — that's the digit-heavy version, not the simplest.
5. **Class Challenge.** Targets escalate from 2/4 up to 9/12. Whole class calls out the multiplier together first, then one pupil builds it and presses Check. Keep it brisk — if Check shows 'not yet', ask the class which part of the chain wobbled rather than re-explaining.

6. **What Did We Notice?.** Put the two claims up — 'just multiply the top' versus 'top AND bottom'. Listen for pupils reaching for a pizza to test it; that's the reasoning move you want. Revoice: multiplying only the top adds shaded slices without adding slices to cut into, so the amount gets bigger.

COMMON MISCONCEPTIONS

⚠ Pupils multiply only the bottom: they turn ½ into 1/4 thinking they've 'made more slices' and kept the same amount.

On the pizza interactive, build ½ next to 1/4 so the shaded amounts visibly differ. 'We cut more slices but didn't shade more — that's less, not the same.' Rebuild the correct 2/4 and have the pupil name the ×2 on both top and bottom.

⚠ When underlining the simplest form, pupils underline the last fraction in the chain (e.g. 4/8) because it has the most slices and looks 'biggest'.

Point at the leftmost fraction and ask 'which one uses the smallest numbers?' Reread the chain ½ = 2/4 = 4/8 — same amount every time, so smallest numbers wins. Have them re-underline.

DIFFERENTIATION

EMERGING

- Stay with the ½ = 2/4 = 4/8 chain only on the IWB while the class moves on; pupils mirror just that one row in copy with the pizza tool still showing.
- Pre-state the multiplier ('we're doubling') before the pupil builds, so they apply it to both numbers rather than inventing the step.

DEVELOPING

- After the copy chains, give 3/5 and ask for two equivalents — pupils choose their own multipliers and justify which is bigger numbers, not bigger amount.
- Pose a missing-number row: 2/3 = ?/9. What did we multiply by, and how do you know?

PROFICIENT

- Pull ahead into the next idea: hand them 6/8 and 'work it backwards to the simplest form — what did you divide top and bottom by?' Have them write the reasoning in copy as a chain run in reverse.

Cross-curricular: Tie to Home Economics or a class party — share one pizza fairly among 6 then among 12 children, and show the slice size as equivalent fractions.

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)