

Lesson 36 **NUMBER**

Adding and subtracting fractions with the same denominator

CURRICULUM ALIGNMENT

NUM.OPS.4

build upon, select and make use of a range of operation strategies.

INTERACTIVES

Pizza Slicer · challenge, display, explore

WHAT THIS LESSON TEACHES

Fractions with the same bottom number are like fractions. Add or subtract only the top numbers and keep the bottom number the same.

$$\rightarrow 2/8 + 3/8 = 5/8$$

$$\rightarrow 6/8 - 1/8 = 5/8$$

MODEL THIS ON THE BOARD

PIZZA SLICES ON A PLATE

- 1 Write the fractions one above the other: $2/8 + 3/8$
- 2 Add the top numbers: $2 + 3 = 5$
- 3 Keep the bottom number the same: the answer is $5/8$

LESSON ARC

Open with the pizza-slicer fraction circles showing a wrong attempt — $2/8 + 3/8 = 5/16$ — and take a few hands-up before correcting anything. In Watch and Notice, shade the eighths one at a time so pupils count the slices and see the size never changed. Pupils mirror three sums in their copy, circling any that fill one whole. The Student Activity Book page is the pencil-and-paper practice.

TEACHING MOVES

1. **Getting Started.** Put the $2/8 + 3/8 = 5/16$ attempt on the pizza-slicer interactive and take two or three hands-up, not open call-outs. Don't correct — the wobble is the point. Listen for the pupil who says the slices are still eighths, they didn't get smaller, and hold that quote for Watch and Notice.
2. **Watch and Notice.** Shade the eighths one at a time and count aloud with the class — one, two, three, four, five. Say 'the slices did not get smaller, so the bottom number cannot change' to kill the $5/16$ error. On $4/6 + 2/6$, pause before revealing and ask 'what happens when the last slice is filled?' — this is the one-whole pay-off.
3. **Try It Together.** Pupils take turns at the board; say each answer aloud before shading. Keep naming the denominator each time ('eighths, eighths') so the bottom number stays fixed in pupils' ears. On $4/8 + 4/8$ ask 'how many slices are full now?' to draw out $8/8 =$ one whole before the class reads it off.
4. **Work It in Your Copy.** Pupils write the two fractions one above the other and combine the tops. Circulate glancing for the bottom number staying fixed and the whole-pizza circle on $4/6 + 2/6$. Reassure anyone who reaches $6/6$ that it just means one whole — no other naming today.
5. **Class Challenge.** Pupils take turns at the board making each target fraction; check each answer as you go and keep it brisk. When the pizza fills completely on $6/6$, ask 'how many slices are full?' to steer the class to 'that is one whole pizza'.

6. What Did We Notice?. Ask what happens to the bottom number when we add same-size fractions. Revoice a strong answer: 'so we count the slices, we don't re-cut them.' For $6/6$, listen for 'every slice was full, so it is one whole pizza' and head off any pupil still adding the bottoms.

COMMON MISCONCEPTIONS

⚠ Pupils add the bottom numbers too: they write $2/8 + 3/8 = 5/16$, adding tops and bottoms together. Shade $2/8$ then $3/8$ on the pizza-slicer circles and count the slices — five eighths, not sixteenths. Say the slices never got smaller, so the bottom number can't change; we only counted more of the same-size slices.

⚠ When a sum lands on $6/6$ or $8/8$, pupils don't recognise it as one whole and treat it as an unfinished fraction.

Ask 'how many slices are full now?' with the pizza fully shaded on the IWB. Every slice filled means one whole pizza — $6/6 = 1$. Have them circle it in the copy without renaming it any other way today.

DIFFERENTIATION

EMERGING

- Stay in eighths for these pupils' copy work while the class moves through tenths and sixths — one denominator, so the count is the only variable.
- Pre-shade the first addend on the pizza-slicer circles so pupils only count the slices being added on.

DEVELOPING

- After the copy sums, give a missing-number version on the pizza: $5/8 + ?/8 = 7/8$. What count fills the gap?
- Ask pupils to find two different same-denominator sums that both make exactly one whole pizza.

PROFICIENT

- Pose: 'what would $4/6 + 3/6$ look like on the pizza?' — let them notice the count runs past a full pizza and predict, in words, what next lesson's $7/6$ means. Capture the prediction in the copy.
- Pull them ahead into the Student Activity Book page while the class finishes the Class Challenge.

✚ **Cross-curricular:** Tie to home economics — pupils share a pizza cut into equal slices and record what fraction each person eats and what is left.

ANSWER KEY

Scaffold: visual check on the page

Q1: $11/12$

Q2: $7/9$

Q3: $9/12$

Q4: $6/6 = 1$

a) Always : Like fractions keep the same denominator when you add the tops.

b) Never : You only add the top numbers; the bottom stays 8 so the sum is $5/8$.

c) Always : When the top matches the bottom every part is filled so it makes one whole.

d) Never : The bottom number stays the same; only the tops are subtracted.

EXTENSION SHEET · STRETCH ANSWERS

S1: $1/2$

S2: $1/7$

S3: $8/7$

S4: $8/5$

S5: 1