Lesson 40 NUMBER

Introducing ratio as comparison of quantities

CURRICULUM ALIGNMENT

NUM.FRC.4b investigate proportionality and ratios of quantities (sets).

INTERACTIVES Ratio Bars · challenge, display, explore

WHAT THIS LESSON TEACHES

A **ratio** compares two amounts of the same kind, written with a colon. **2 : 3** means 'two for every three'.

2 red : 3 blue

→ 3 red to 2 blue counters → ratio **3 : 2**.

→ Order matters: 3 : 2 is not the same as 2 : 3.

LESSON ARC

Open with the fruit-bowl prompt — four apples and six oranges — and draw out a pupil's 'for every' phrasing to hold onto. Bring up the ratio-bars interactive and walk 2:3, 4:6, 1:5, 3:3, saying the words before writing the colon. Pupils take turns building called comparisons at the board, then write four ratios in their copy with a 'for every' sentence under each. The maths-talk wrap settles whether 2:3 equals 3:2, then they move to the Student Activity Book page.

TEACHING MOVES

1. **Getting Started.** Give five seconds of quiet think-time before any hands. Take two or three hands-up answers only — listen for any pupil who says 'for every two apples there are three oranges' and keep that exact phrasing to revoice in Watch and Notice.
2. **Watch and Notice.** On the ratio-bars interactive, say each comparison in words before you write the colon — point to each bar: 'two reds, three blues — two to three.' Stress the colon means 'to'. On 3:3 ask 'what's different here?' and revoice to 'the same amount of each' — that seeds the order-matters wrap.
3. **Try It Together.** Call out comparisons in plain words ('two cats to four dogs') and have the pupil at the board build the bars, then write the colon form. Whole class reads it aloud as 'for every...'. Rotate four pupils, and watch for the slip of writing the second number first — point back at which bar is which.
4. **Write the Ratios in Your Copy.** Pupils write the four ratios one under the other with a 'for every ___ there are ___' line beneath each. Walk the room glancing at colon placement and first/second order — this is practice, not marking. Flag anyone who has swapped the two numbers.
5. **Class Challenge.** Keep the board work brisk: each pupil builds the called ratio and presses Check, class confirms, move on. For the open final challenge, ask the class to name two different pairs that fit 'second amount double the first' (2:4, 3:6, 4:8). Listen for anyone reading 7:2 as 'two to seven'.
6. **What Did We Notice?.** Let the disagreement run. Revoice the strongest answer that ties numbers to quantities: '2:3 is two reds for every three blues; 3:2 is three reds for every two blues — different pictures.' Head off the idea that you can flip a ratio freely the way you'd rearrange an addition.

COMMON MISCONCEPTIONS

⚠ Asked to write '7 boys to 2 girls', a pupil writes 2 : 7 — or reads 7 : 2 aloud as 'two to seven', putting the smaller number first out of habit.

Stop and point back at the two bars: the first bar is boys, the first number is boys. Have the pupil rebuild on the ratio-bars and read left-to-right, bar then number, before writing it down.

⚠ Pupils say 2 : 3 and 3 : 2 are 'the same' because they have the same digits — they treat a ratio like an addition you can rearrange.

Build both with counters side by side: 2 reds and 3 blues, then 3 reds and 2 blues. The pictures are visibly different. Ask which one has more red — that's how you settle it.

DIFFERENTIATION

EMERGING

- Stay with the smaller pairs (2:3, 1:5) and let the pupil build with loose counters before reading the colon form, so the count is concrete before the notation.
- Pre-write the 'for every ___ there are ___' sentence frame in the copy so pupils only fill the two numbers, not invent the structure.

DEVELOPING

- After the copy page, give a worded comparison with three quantities mentioned but ask them to write only the ratio for two named ones — forces attention to which two are being compared.
- Ask them to write 4:6 and 6:4 and explain in one sentence what each picture shows.

PROFICIENT

- Pose: 'I can read a ratio two ways but only write it one way — could I ever write a ratio where flipping it changes nothing?' Let them reason to the 3:3 case and explain why same-amount ratios are the exception.
- Send them ahead into the Student Activity Book page while the class finishes the Class Challenge.

Cross-curricular: Tie to Geography — pupils write the ratio of counties in Munster to counties in Connacht (6 : 5) and read it aloud.

ANSWER KEY

W1: $7 + 28$

W2: $24 + 32$

Q1: $20 + 50$

Q2: $9 + 45$

Q3: €18 + €27 + €45

Q4: €24 + €36 + €60

EXTENSION SHEET · STRETCH ANSWERS

S1: €20 + €30 + €50

S2: $12 + 60$

S3: $5 + 10 + 20$