Lesson 30 NUMBER

Fractions of a shape, a length and a set

CURRICULUM ALIGNMENT

NUM.FRC.3b calculate the fraction of quantities and express in multiple ways.

INTERACTIVES Fraction Strips · display

LESSON ARC

Open on the IWB with a chocolate bar treated as a length beside a tub of twelve counters as a set, asking what one half of each looks like. Move to the fraction-strips interactive to model half, quarter and third as a length cut into equal parts, then draw a rectangle and split it into four before shading one quarter. Pupils share real counters into equal groups at the board, then shade and ring in their copybooks. Student Activity Book page 30 follows at the desks.

TEACHING MOVES

1. **Getting Started.** Project the chocolate bar (a length to split along) and the tub of twelve counters side by side. Give five seconds of quiet think-time, then take two or three hands-up answers. Listen specifically for the word 'equal' — that is the idea the whole lesson rests on.
2. **Watch and Notice.** Walk each fraction strip aloud, pointing at the equal parts before the shaded part. On the stacked half-and-two-quarters strips, run your finger down the right edge of the shaded lengths so pupils see they end at the same place — that's equivalence made visible. Take two hands-up answers to 'half or quarter, which is smaller?' before revealing the quarter.
3. **Demonstrate a Shape.** Draw the rectangle and divide it into four equal parts BEFORE shading, narrating the equal parts first. Take one hands-up check: 'how many equal parts before we shade? And how many do we shade for one quarter?' Don't shade until they've named four.
4. **Try It Together.** Hand each table twelve counters. Call a fraction, one pupil shares the twelve into equal groups under the IWB camera while the watching tables predict the count in one group. Watch for pupils counting all the groups instead of one — revoice: 'one quarter is just one of the four equal piles.' This round is for talking it through, not marking.
5. **Shade and Ring in Your Copy.** Pupils draw a rectangle and shade one quarter, then draw eight dots and ring one half. Walk the room glancing for two things: the rectangle split into four equal parts before shading, and the ring holding four of the eight dots. Glancing, not marking.
6. **Class Challenge.** Keep this brisk — pupils take turns sharing each set into equal groups while the class predicts the count in one group; tick each round off the on-screen list as you go. Recurring callout: 'how many equal groups, then how many in one group?' Run the one-third-of-12 stretch only if time.
7. **What Did We Notice?.** Listen for pupils naming equal parts as the link between a fraction of a shape and a fraction of a set. Revoice a strong answer: 'whether it's a shape, a length or a set, one half means splitting into two equal parts and taking one.' Display-only discussion — don't have pupils write this.

COMMON MISCONCEPTIONS

⚠ Asked for one quarter of 12 counters, pupils give 8 — they count all four equal groups bar one, or count the whole share, instead of just one group.

Stop at the board and physically slide one of the four piles forward. 'The quarter is THIS pile only — one of the four equal groups.' Have the pupil count just that pile, then point to the other three and name them as the rest of the set.

⚠ Pupils split the rectangle or the counters into the right number of parts but the parts aren't equal — three big squares and one thin one, or groups of 4, 3, 3, 2.

Hold the unequal split up against the fraction-strips interactive where the parts visibly match. 'Are these the same size? A quarter only works when all four parts are equal.' Redivide together, lining the parts up.

⚠ Pupils treat a fraction of a set as a different, harder kind of maths than a fraction of a shape, because one is a pile and one is a drawing.

During What Did We Notice?, put the shaded rectangle and the shared counters on screen together. Name the equal-sharing move in both: 'two equal parts, take one — same idea, different whole.'

DIFFERENTIATION

EMERGING

- Stay on halves only for these pupils while the class moves to quarters and thirds — one half of a set is the cleanest equal-share to picture.
- For the copybook moment, give a rectangle already divided into four so pupils only choose which part to shade, not draw the equal split themselves.

DEVELOPING

- After the copybook moment, ask: if one quarter of 12 is 3, what are TWO quarters of 12? Same counters, count two of the four piles.
- Pose a missing-whole question at the board: 'one half of my set is 5 counters — how many were in the whole set?'

PROFICIENT

- Narrate a harder Class Challenge variant at the board: one third of 15, then ask whether the rule changes when the total doesn't divide neatly — what would one quarter of 10 give?
- Pull these pupils ahead into Student Activity Book page 30 and ask them to write, in one sentence, what is the SAME about finding a fraction of a shape and a fraction of a set.

↗ **Cross-curricular:** Tie to PE — split the class into equal groups for a relay and ask what fraction of the whole class is in one team.

ANSWER KEY

a) Count the shaded parts out of the whole strip.

b) The longer shaded bar is the bigger fraction.

c) e.g. one half lines up with two quarters.

Q1: 8

Q2: 3/11

Q3: 12 parts (4/5 = 12/15)

Q4: 57

EXTENSION SHEET · STRETCH ANSWERS

S1: 5/7

S2: 32