

Finding a unit fraction of a quantity

CURRICULUM ALIGNMENT

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

INTERACTIVES Equal Groups (Sharing) · challenge, display, explore

WHAT THIS LESSON TEACHES

A unit fraction has 1 on top, like one half, one third or one quarter. To find a unit fraction of a set, split the whole set into the number of equal groups the bottom number shows, and take one group.

→ One third of 12 means share 12 into 3 equal groups: each group is 4.

→ One half of 8 = 4.

MODEL THIS ON THE BOARD

ONE QUARTER OF 12

- 1 The bottom number is **4**, so share **12** into **4** equal groups.
- 2 $12 \div 4 = 3$, so each group has **3**.
- 3 Take one group: one quarter of 12 = **3**.

12			
3	3	3	3

DISCUSSION STARTER

REFLECT Do you find one equal part first, then build up — and when does that feel easiest?

LESSON ARC

Open with 12 slotars shared among three players — pupils link one player's share to one third before any notation. On the equal-groups interactive, share 8 counters into 2 groups, landing the line 'the bottom number tells us how many groups'. Pupils ring counters and write equations in their copy. Class Challenge steps up to one half of 14 through one fifth of 20, then a fraction strip ties sharing-a-set back to sharing-a-whole.

TEACHING MOVES

1. **Getting Started.** Give five seconds of silent think-time, then take three hands-up answers only. Listen for a pupil linking 'one player's share' to 'one third' — if nobody says it, hold it back for Watch and Notice rather than handing it over.
2. **Watch and Notice.** On the equal-groups interactive, share 8 into 2 groups and say the load-bearing line: 'the bottom number, 2, tells us how many groups to make.' Take one prediction before revealing one quarter of 12. At one third of 9, revoice the pupil who notices two different fractions of two different wholes both gave 3.
3. **Try It Together.** Bring prompts up one at a time. Call the fraction and whole; the pupil at the board sets the group count to the bottom number, the class predicts how many per group, then they deal. The pay-off is one fifth of 10 — five groups but only 2 each. Revoice: 'the bottom number is how many groups, not how many in each.'

4. **Share It in Your Copy.** Walk the room glancing at two things only: are the rings holding equal amounts, and is the equation written out in full ('one half of $8 = 4$ ', not just '4'). No marking.
5. **Class Challenge.** Keep it brisk — pupils take turns, check each answer, class confirms, move on. Don't re-explain each split. Your one thing to watch: pupils who set the group count to the top number instead of the bottom (most likely on one quarter of 16 and one fifth of 20).
6. **One third of a whole strip.** Put the strip up and point from the shaded third straight back to the counter-sharing the class just did. Ask: 'if this whole strip were 12 counters, how many in each of the 3 equal parts?' (4). Keep the language on sharing-and-taking-one-part — don't stray into equivalence.

COMMON MISCONCEPTIONS

⚠ Asked for one quarter of 12, a pupil makes 12 groups or sets the group count to the top number, dealing counters into far too many piles.

Stop and point at the fraction: 'top says take one, bottom says how many groups.' Rebuild on the equal-groups interactive setting the group count to the bottom number aloud — 'quarter, so four groups' — before any counter moves.

⚠ A pupil reads the answer as the number of groups: 'one fifth of 10 is 5' because they counted the five piles rather than what's in one.

Have them point to a single group and count only that: 'we take just one group — how many are in it?' The one-fifth-of-10 case is the clearest, since group-count (5) and answer (2) are plainly different.

DIFFERENTIATION

EMERGING

- Stay on halves and thirds with small even wholes (6, 8, 12) so every share comes out clean; let these pupils deal the counters at the board with you calling the group count.
- In the copy, pre-draw the counters as dots so pupils only ring the groups rather than draw and share at once.

DEVELOPING

- After the copy work, ask which of one half of 14 and one third of 12 gives more, and to explain why before working either out.
- Pose a missing-whole variant: one quarter of ? = 5. How many counters did we start with?

PROFICIENT

- During Class Challenge, narrate a harder variant for fast finishers — one third of 21, one sixth of 24 — where the group count is unfamiliar but the rule still holds.
- Ask them to explain to an imaginary younger pupil why the bottom number is the group count and not the answer, using the one-fifth-of-10 case as their proof.

✓ **Cross-curricular:** Tie to PE — split the class into equal teams for a relay and name what fraction of the class one team is (one quarter of 24 = 6).

ANSWER KEY

Scaffold: visual check on the page

Q1: 3

Q2: 6

Q3: 5

Q4: 4

Spot: To find one quarter, share 12 into 4 equal groups: $12 \div 4 = 3$. So one quarter of 12 is 3, not 8.

EXTENSION SHEET · STRETCH ANSWERS

S1: 36

S2: 120

S3: 22

S4: 25

S5: 77

Investigation: Fraction feast for the class — open-ended; scan pupils' working for valid solution paths rather than a single answer.