

Lesson 26 **NUMBER**

Division as grouping and the division–multiplication link

CURRICULUM ALIGNMENT

NUM.OPS.3

understand and apply flexibly the four operations; and the relationships between operations.

INTERACTIVES

Number Line Jumps · challenge, explore

WHAT THIS LESSON TEACHES

Division as grouping finds how many equal bags or boxes fit into a total by making groups of the same size.

→ How many bags of 5 apples from 20 apples? $20 \div 5 = 4$.

→ Knowing $6 \times 5 = 30$ tells you $30 \div 5 = 6$.

MODEL THIS ON THE BOARD

WORKING $18 \div 6$ AS GROUPING

- 1 Start with eighteen apples to pack.
- 2 Make equal groups of six apples each.
- 3 Count the groups made to find the answer.

DISCUSSION STARTER

REFLECT

Do you find sharing or making groups easier when you divide? Why?

LESSON ARC

Open with 12 real counters on the board and hold two questions live at once — 'how many fours?' and 'what times fact?' Demonstrate grouping with counters for $12 \div 4$ and $20 \div 5$, writing both operations so the class sees the same three numbers twice. Move to the number-line-jumps interactive in explore mode: pupils add equal jumps and count them. Copybook practice is two full fact families; the Class Challenge is four number-line divisions.

TEACHING MOVES

1. **Getting Started.** Give five seconds of silent think-time, then take three hands-up answers only. Deliberately withhold the answer — you want the class carrying both 'how many fours in twelve?' and 'what times fact?' into the demonstration. Resist the pupil who blurts the answer.
2. **Watch and Notice.** Use real counters, not the interactive. Make groups of 4 from 12 and say 'how many fours in twelve? — three' before writing anything. Then hold out for the class to name the times fact BEFORE you write it — that naming is the whole point. Repeat with $20 \div 5$ and write all four sentences of the family off it.
3. **Try It Together.** Number-line-jumps in explore mode, 0 to 30. A pupil at the board adds jumps of the group size until the marker lands exactly on the total, then counts the jumps aloud — don't let them read the answer off, make them count. After each, ask 'what times fact checks this?' and revoice a strong answer. Watch for overshooting.

4. **Write the Fact Family in Your Copy.** Walk the room glancing for all four sentences and digits in the right slots — this is practice, not marking. The one thing to catch: pupils who write the two multiplications and forget the two divisions. Point to their page and ask 'where are the two divisions?'
5. **Class Challenge.** Number-line-jumps in challenge mode — keep it brisk, pupils take turns and the class confirms each answer before moving on. Don't re-teach each one. The two big targets (28 in 4s, 30 in 6s) overshoot easily: if a pupil overshoots, have them remove the last jump and take a smaller step of the same size rather than restart. After each, ask 'what multiplication checks your answer?'
6. **What Did We Notice?.** Display-only prompt. Listen for pupils using a known times fact to skip the counting — 'I knew 6×5 is 30, so 30 in 5s is 6'. Revoice: 'so knowing the times fact gives you the division for free.' Head off the idea that every division must be counted out from scratch.
7. **What's Next.** Point back to one copybook fact family, name a multiplication from it, and ask the class to say the matching division — a ten-second check that the times-and-share link has landed before you flag remainders as what's coming.

COMMON MISCONCEPTIONS

⚠️ Asked for $20 \div 5$, a pupil says 'that's a new sum, I have to count it out' and starts making groups from scratch even though they know $5 \times 4 = 20$.

At the maths-talk step, revoice a pupil who used a known fact: 'she knew 5×4 is 20, so $20 \div 5$ is 4 — no counting.' Point back at the counter demo where the same three numbers made both sentences. The times fact and the division are the same picture read two ways.

⚠️ In the copybook, pupils write $4 \times 5 = 20$ and $5 \times 4 = 20$ and stop — they think the fact family is just the two multiplications.

Stand at their page and ask 'where are the two divisions?' If it doesn't come, reach for 20 counters, make 4 groups of 5, and ask 'how many groups?' then 'how big is each group?' — those two questions are your two divisions, $20 \div 5$ and $20 \div 4$.

⚠️ On the number line, pupils overshoot — for 28 in 4s they jump past to 32 and either stop there or restart the whole thing.

Steer them to slow the jumps as the marker nears the total. If they land past it, have them remove the last jump and take a smaller step of that same size — don't restart. For a stall, prompt with a nearby fact: 'you know 4×5 is 20 — how many more 4s to 28?'

DIFFERENTIATION

EMERGING

- Keep these pupils on real counters alongside the number line — for 'how many fours in twelve?' let them physically make the groups and count, then match it to the jumps on screen.
- Give one fact family in the copybook rather than two, and pre-write the three numbers (4, 5, 20) at the top so they build the four sentences, not invent the numbers.

DEVELOPING

- After the copybook, hand them 24 and ask which group sizes divide it exactly — let them find $24 \div 4$, $24 \div 6$, $24 \div 8$ and write each fact family.
- Pose a missing-number division: $30 \div ? = 5$. Ask which times fact they reached for to answer it.

PROFICIENT

- At the Class Challenge, once they've counted their jumps, ask them to answer the next target's division from a known times fact FIRST and use the jumps only to check — flipping the lesson's logic.
- Pose: 'find a number under 30 that makes a fact family with three even divisions' and ask them to explain why it works.

✂️ **Cross-curricular:** Tie to PE — dividing the class into equal teams for a relay is a real grouping division: 24 pupils in teams of 4 gives 6 teams, so $24 \div 4 = 6$.

ANSWER KEY

a) $4 \times 5 = 20$, $5 \times 4 = 20$, $20 \div 4 = 5$, $20 \div 5 = 4$

b) $3 \times 6 = 18$, $6 \times 3 = 18$, $18 \div 3 = 6$, $18 \div 6 = 3$

Q1: 4 bags

Q2: 3 boxes

Q3: 7

Q4: 6 bags

a) Always : $12 \div 3 = 4$ links to the fact $3 \times 4 = 12$.

EXTENSION SHEET · STRETCH ANSWERS

S1: 10

S2: 6

b) Always : Both come from the fact $5 \times 7 = 35$.

c) Never : You can use a known multiplication fact as a short cut.

d) Never : $18 \div 3 = 6$ but $3 \times 6 = 18$: the same three numbers, different answers.

Investigation: How many groups fit? — open-ended; scan pupils' working for valid solution paths rather than a single answer.