

Teacher notes: Composition of numbers to 9

This three-week unit deepens children's understanding of numbers 0 to 9 by exploring how each number is made up of two smaller parts. Children use ten frames, counters and part-whole models during continuous provision and small-group work to find how many more are needed to make 9, to partition 7 and 8 in different ways, and finally to find every way of making 9, including with zero. The unit links practical part-whole work to the idea of taking away, so children start to see addition and subtraction as connected. It builds towards *eyfs.ma.number.1* (a deep understanding of the composition of numbers to 10) and *eyfs.ma.patterns.3* (exploring patterns within numbers, including how quantities can be distributed).

eyfs.ma.number.1 Have a deep understanding of numbers to 10, including the composition of each number.

eyfs.ma.patterns.3 Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Prior knowledge

- Children can subitise small groups of objects (up to about 5) without counting each one individually.
- Children can count a group of up to 9 objects accurately, touching or moving each one once.
- Children can match numerals 0 to 9 to the correct quantity of objects or pictures.
- Children have used a part-whole model (for example two hoops or two plates) to combine two small groups and say how many altogether, with totals up to 5 or 6.
- Children have had practical experience of one more and one less within familiar number rhymes and games.

Key vocabulary

part, whole, altogether, make, how many more, number bond, ten frame, compose, pair, equal to, take away, left, zero, same as

Common misconceptions

Children think that 3 and 6 making 9 is a different fact from 6 and 3 making 9, so they recount from the start each time the order of the parts changes.

Use a physical part-whole model with two hoops: show the same two groups of counters, then swap which hoop is on the left and which is on the right, asking 'has the whole changed?' Let children see that the total stays 9 either way.

Children do not think 0 and 9 is a real way to make 9, because one part looks empty, so they skip it when hunting for ways to make 9.

Model an empty part on a ten frame or in a hoop and ask 'how many are in this part?' alongside the full part of 9. Confirm with the children that zero counters is still a part, and that 0 and 9 make 9 just as 1 and 8 do.

When using a ten frame to find how many more make 9, children count all the squares on the frame rather than only the empty ones, giving a wrong 'how many more' answer.

Ask the child to place a finger or a counter only in the empty squares while counting aloud, physically covering the filled squares first so only the empty ones are counted.

Children believe each number to 9 has only one way of being split into two parts, so once they find one pair they stop looking.

Prompt with 'can we find another way?' and provide loose parts (two colours of counters, two trays) so children can keep rearranging the same total of 9 and record each new pair they discover, for example with photographs or marks.

Children confuse 'take away' with simply removing objects until none are left, rather than seeing it as finding the missing part when the whole and one part are known.

Link directly to the part-whole model already used: show 9 counters, cover or remove one named part, and ask 'how many are left in the other part?' so take away is seen as finding the missing part of 9.

Assessing through observation

Assess mainly through observation during continuous provision and small-group activities rather than through recorded work. Watch whether a child can use a ten frame to say how many more are needed to make 9 without recounting from 1, and whether they can partition 7 and 8 into two parts using real objects. Listen for children using vocabulary such as 'part', 'whole' and 'altogether' during play, for example in the role-play area, small-world set-ups or construction. Note whether a child can find more than one way to make 9 when given loose parts, whether they include 0 and 9 as a valid pair, and whether they can respond to a simple take-away prompt by identifying the missing part. Capture evidence through photographs, practitioner notes and brief adult-scribed comments, referring back to each session's focus (ten frames, part-whole of 7 and 8, every way to make 9, number bonds including zero and take away) to build a picture of progress across the unit.

What comes next

The next unit moves on to the composition of 10, including finding all the ways to make 10 and relating this to key EYFS images such as the ten frame and double-sided counters. This leads into early work on doubling and halving within 10 and exploring odd and even numbers by seeing whether a quantity can be shared into two equal parts, continuing towards eyfs.ma.patterns.3. Secure composition of 9, including the role of zero, gives children the foundation they need to reason about 10 and beyond with confidence.