

## Ten frames: how many, and how many more to make 8

Small group of 4 to 5 children · 15 minutes

**Objective:** Children recognise how many counters are shown on a ten frame (0 to 8) and work out how many more are needed to make 8, using real objects.

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

### Resources

- A set of 9 ten-frame cards showing 0, 1, 2, 3, 4, 5, 6, 7 and 8
- A tub of real counters (for example conkers, buttons or pebbles), at least 8 per child
- One blank ten-frame mat per child, for children to build their own

### Set-up

Arrange cushions in a small circle on the carpet. Place the tub of counters and the blank ten-frame mats within easy reach of each child. Shuffle the 9 ten-frame cards and keep them in a face-down pile next to the adult.

### Key questions

- How many counters can you see on this ten frame?
- How do you know that, without counting them all again?
- How many more do we need to make 8?
- How did you work that out?
- What would happen if we took one counter away? What would happen if we added one more?

### Vocabulary

ten frame, how many, altogether, more, make, full, empty, count on

### What to do

1. Gather the children in the circle and show the ten frame card showing 5. Say, 'Let's look at this ten frame together. How many counters can you see?' Count the filled spaces together, touching each one.
2. Give each child a blank ten-frame mat and counters. Say, 'Can you build the same amount as the card on your own ten frame?' Watch children fill their top row first, left to right.
3. Say, 'We want to make 8 altogether. How many more counters do we need to add?' Encourage children to add counters one at a time, counting on out loud from 5: '5, 6, 7, 8.'
4. Turn over a new card each time (use 0, 1, 2, 3, 4, 6 and 7 in turn). For each one ask, 'How many is this?' then, 'How many more to make 8?' and let children build and check with their own counters.
5. When the card showing 8 is turned over, say, 'This ten frame already shows 8. How many more do we need now?' Guide children to see that 8 and 0 make 8.
6. Finish by spreading the 9 cards face up. Invite each child in turn to choose a card, say how many are shown, and show with their counters how many more are needed to make 8.

### Misconceptions

**A child counts every space on the ten frame, including the empty ones, instead of only the counters that are there.**

Point to each counter in turn as you count, saying 'we only count the counters that are on the frame' and cover the empty spaces with your hand so only filled ones are visible.

**When asked how many more are needed to make 8, a child starts counting again from 1 instead of counting on from the number shown.**

Model placing a finger on the last counter and saying its number first, then touching each new counter added while continuing the count, for example 'six, seven, eight.'

**A child thinks a completely full ten frame always means 8, because that is the target number used in this activity.**

Show the frame has two rows of 5 spaces in total, but explain that today the group is only filling it up to 8, so two spaces at the end will stay empty.

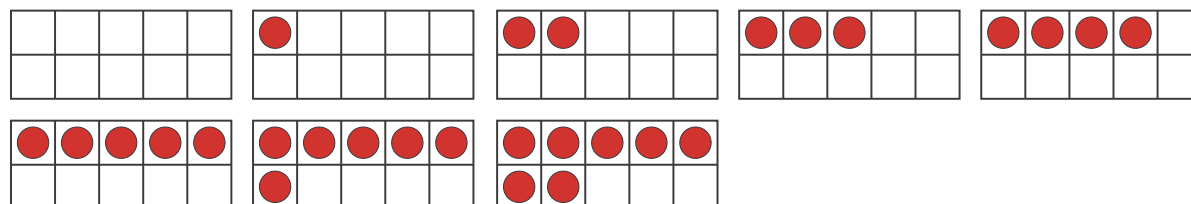
### Adapting

- **Support:** Work with smaller amounts first (0, 1, 2 and 3). Hand over one counter at a time and count together as it is placed, offering hand-over-hand support if needed.
- **Challenge:** Show two ten-frame cards at once and ask, 'Which one needs more counters to make 8? How do you know?' or ask the child to find two different ways to make 8 using their counters.
- **SEND and EAL:** Pair key vocabulary with a consistent gesture, for example beckoning for 'more' and a flat open hand for 'full.' Let children point to and handle counters rather than relying only on spoken answers, and repeat each number word clearly as a counter is placed.

### Look for

- Children recognise small amounts (1, 2, 3) without counting every counter one by one
- Children count on from the given number rather than starting again from 1
- Children place counters with one-to-one correspondence, one counter per space
- Children can say how many more are needed to make 8 using the vocabulary 'more' and 'make'

### Picture cards for this session



## Part-whole: composition of 6 and 7

Adult with 4 to 6 children · 15 to 20 minutes

**Objective:** Children explore and say different ways to split 6 and 7 objects into two parts, using the stem sentence '\_\_\_ and \_\_\_ make 6/7' to describe the whole and its parts.

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

### Resources

- A large part-whole (part-part-whole) mat for each child, showing one 'whole' circle at the top and two 'part' circles below
- 7 identical small objects per child (e.g. conkers, pom-poms or dinosaur counters)
- 2 hoops or 2 small plates per child to hold the parts before moving them onto the mat
- Numeral cards 0 to 7
- A storage tray or basket for spare objects
- The 11 part-whole picture cards (1 and 5 make 6; 2 and 4 make 6; 3 and 3 make 6; 4 and 2 make 6; 5 and 1 make 6; 1 and 6 make 7; 2 and 5 make 7; 3 and 4 make 7; 4 and 3 make 7; 5 and 2 make 7; 6 and 1 make 7)

### Key questions

- How many are in the whole? How many are in each part?
- Can you show me a different way to split 6 (or 7)?
- What happens to the whole if we move one object from this part to the other part?
- How could you check that both parts still make 6 (or 7) altogether?
- Which numeral cards match your two parts?

### Vocabulary

whole, part, altogether, split, make, same, different, more, fewer

### Set-up

Sit the group around a low table or on the carpet in a circle. Give each child a part-whole mat, two hoops and a tray of objects. Place the numeral cards face up where everyone can reach them. Keep the 11 part-whole picture cards nearby to show one at a time as the session moves from 6 to 7.

### What to do

- Gather the group and count out 6 objects together, placing them in the 'whole' circle on the mat. Say: 'We have 6 altogether. Let's find some ways to split 6 into two parts.'
- Show picture card 1 (1 and 5 make 6). Model moving 1 object into the left hoop and 5 objects into the right hoop, counting each part aloud with a finger touch.
- Say the stem sentence together: '1 and 5 make 6.' Ask children to check by counting both parts and then recounting the whole.
- Invite each child to split their own 6 objects a different way (e.g. 2 and 4, 3 and 3, 4 and 2, 5 and 1), matching their split to the picture cards as they go.
- After each split, ask the child to point to the matching numeral cards and place them under each part, then say the full sentence out loud.
- Swap one child's parts around (e.g. change 2 and 4 to 4 and 2) and ask what they notice about the whole.
- Once 6 has been explored, say: 'Now let's try with 7.' Add one more object to the whole circle and recount to check there are 7.
- Show picture cards 6 to 11 one at a time (1 and 6; 2 and 5; 3 and 4; 4 and 3; 5 and 2; 6 and 1 make 7), pausing after each so children can recreate the split with their own objects and hoops.
- Ask children to choose their own way to split 7 and say the stem sentence to a partner before checking with the adult.

### Misconceptions

**The child thinks swapping the two parts (e.g. 2 and 5 becoming 5 and 2) changes the whole, so recounts and expects a new total.**

Physically swap the hoops over while the child watches, then recount the whole together. Say: 'The parts swapped places, but we didn't add or take any away, so the whole is still 7.'

**The child recounts the whole from scratch instead of trusting the two parts they just counted, especially losing track partway through.**

Slow down and touch-count one part at a time, saying the part's total out loud before moving to the next part, then add the two part totals together to reach the whole.

**The child believes there is only one correct way to split the number and resists trying another split.**

Lay out two or three of the picture cards side by side and point out that each shows a different pair of parts, but every one still makes the same whole.

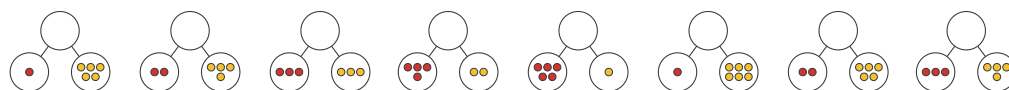
### Adapting

- Support:** Start with 6 only and use just one or two splits (e.g. 1 and 5, 3 and 3). Let the child move one object at a time between hoops while counting aloud with the adult, and use the numeral cards 0 to 6 only.
- Challenge:** Ask the child to find every way to split 7 in order, placing the picture cards in a line from smallest first part to largest, and to predict the next split before checking it with objects.
- SEND and EAL:** Use the consistent sentence stem '\_\_\_ and \_\_\_ make \_\_\_' with a pointing gesture for each part and the whole. Pair real objects with the matching numeral card every time, and model the sentence yourself before asking the child to repeat it.

### Look for

- Counts each part accurately using one-to-one correspondence before stating the whole
- Uses the stem sentence independently to describe a part-whole split
- Recognises that swapping or reordering the two parts does not change the whole
- Matches numeral cards correctly to the size of each part
- Finds more than one way to split 6 or 7 without adult prompting

### Picture cards for this session



## Composition of 8: every way to make 8

Small group of 4 to 6 children · 15 to 20 minutes

**Objective:** Children explore the different ways to partition a group of 8 real objects into two parts, using a part-whole model to show that 8 can be made in several ways.

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

### Resources

- 8 identical real objects per child (for example conkers, shells or dinosaurs) in a tray
- A part-whole model mat for each child (a large circle for the whole, split into two part circles, made from a hoop or two paper plates)
- Part-whole model picture cards showing: 1 and 7 make 8; 2 and 6 make 8; 3 and 5 make 8; 4 and 4 make 8; 5 and 3 make 8; 6 and 2 make 8; 7 and 1 make 8
- A small screen or box lid to hide some of the objects

### Set-up

Sit the group around a low table or on the carpet. Give each child a tray of 8 objects and a part-whole mat. Place the part-whole model picture cards face down in a pile within reach of the adult.

### Key questions

- What do you notice about the two parts? What happens to the whole?
- If one part is 6, how could you work out the other part without counting from 1?
- Can you make 8 a different way? What would you move?
- What is the same and what is different between 2 and 6 making 8, and 6 and 2 making 8?
- How do you know there are 8 altogether when some are hidden?

### Vocabulary

whole, part, make, altogether, hide, same, different, eight, swap

### What to do

- Adult says: 'Let's count our 8 objects together into the whole part of the mat.' Count all 8 objects aloud with the children, placing them in the top (whole) section.
- Adult says: 'Watch what happens when I split our 8 into two parts.' Model moving some objects into one part circle and the rest into the other part circle, saying the fact aloud, for example '3 and 5 make 8'.
- Adult turns over the matching picture card (for example the card showing 3 and 5 make 8) and places it next to the mat, saying: 'This picture shows our 3 and 5.'
- Ask each child to split their own 8 objects into two parts in their mats, in any way they choose, and say their fact aloud to the group.
- Adult hides some objects under the screen, leaving the rest visible, and asks: 'I can see 4. How many are hiding?' Children work out the hidden part, then check by counting.
- Turn over a new picture card each time and ask children to make that same split with their own objects, matching the picture to their mat.
- Challenge the group to find a way to make 8 that nobody in the group has shown yet, moving one object at a time from one part to the other to see what changes.

### Misconceptions

**After splitting the objects, the child recounts both parts from 1 each time instead of trusting that the parts still make 8 altogether.**

Cover the whole with your hand and say: 'We know we started with 8 and we haven't added or taken any away, so the parts still make 8.' Encourage the child to check by recombining the parts and counting once.

**The child believes 7 and 1 making 8 is a completely different fact from 1 and 7 making 8, rather than the same two parts swapped.**

Physically swap the two groups between the part circles and ask: 'Have I added any more or taken any away?' Help the child see the same objects are there, just in different parts.

**The child thinks once they have found one way to make 8, that is the only correct way, and resists trying another split.**

Move one object from one part to the other and ask: 'Is this still 8 altogether? What are our parts now?' Show that many different splits can all make the same whole.

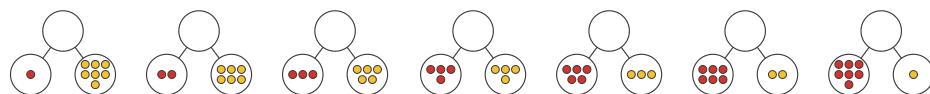
### Adapting

- Support:** Work with fewer objects first (for example splitting 5) using the same mat and language before moving to 8, and let the child physically slide objects between parts rather than lifting and placing them.
- Challenge:** Ask the child to find and show every way to make 8 using the mat, checking off each picture card as they match it, and ask them to predict the next way before checking with objects.
- SEND and EAL:** Use the real objects and part-whole mat alongside the picture cards so the maths is visible without relying on spoken language, model the sentence 'and' 'make' 8' consistently each time, and pair key vocabulary with gesture (hands moving apart for 'part', hands together for 'whole').

### Look for

- Child moves objects between the two parts without needing to recount the whole each time
- Child uses the words 'part', 'whole' or 'make' when describing their split
- Child matches a picture card to their own arrangement of objects correctly
- Child predicts a hidden part using the visible part and 8 as the whole
- Child notices that swapping the two parts still makes 8

### Picture cards for this session



## Number bonds to 8, including zero and take away

Up to 4 children with one adult · 15 minutes

**Objective:** Children find and record the pairs of numbers that make 8, including 0 and 8, and use a known bond to 8 to work out a take-away fact.

| **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.

### Resources

- 8 identical real objects per child (e.g. conkers, shells or dinosaur counters)
- A part-whole mat (paper plate or hoop split into one whole and two part sections) per child
- A rekenrek (8-bead row) for the adult to show bonds
- A small cloth or beaker to hide objects under
- A number line or track 0 to 8 (optional, for checking)

### Set-up

Set out a part-whole mat, a pot of 8 objects and a cloth for each child around a low table or the carpet. Have the rekenrek ready within reach of the adult.

### Key questions

- What do you notice about the two parts each time?
- If one part has 3, how many must be in the other part to make 8 altogether?
- Can a part have nothing in it? What would that look like?
- How is 'take away' the same as splitting into two parts?
- Which bonds have you found so far? Which ones haven't we made yet?

### Vocabulary

whole, part, altogether, make, bond, hide, take away, left, same, zero

### What to do

1. Adult puts 8 objects on the 'whole' part of their mat and says, 'I've got 8 conkers altogether. Watch what happens when I split them.'
2. Adult slides all 8 into one part and leaves the other part empty, saying, '8 and 0 make 8. Can you see a part with nothing in it?'
3. Adult invites each child to put their own 8 objects on their mat and copy the split, saying the bond out loud together.
4. Adult slides one object across to the empty part and says, 'Now I've moved 1 away. 7 and 1 make 8. What do you notice has changed?'
5. Children copy this split on their own mats, moving one object at a time and saying each new bond as they go, working all the way through to 4 and 4.
6. Adult shows the matching bond on the rekenrek, sliding beads across so the children can see the same split in a different way.
7. Adult hides some of the 8 objects under the cloth, leaving the rest showing, and asks, 'I can see 3. How many are hiding?' so children use the bond to 8 rather than counting.
8. Adult then takes some objects away completely (not hidden) from a group of 8 and asks children to say how many are left, linking this to the bond they just said, e.g. '8 take away 2 leaves 6, because 2 and 6 make 8.'
9. Children take turns being the one who hides or takes away objects for the rest of the group to work out.

### Misconceptions

**The child skips 0 and 8, thinking a part with nothing in it doesn't count as a real split.**

Show the empty part clearly and say, '0 and 8 make 8 too — an empty part is still a part.' Point to the empty space on the mat.

**The child recounts all the objects from 1 every time instead of using the bond they already know.**

Cover the whole group briefly and ask, 'You said 2 and 6 make 8 a moment ago — does that help you now?' to encourage recall over recounting.

**The child thinks 4 and 4 isn't a 'proper' bond because both parts look the same.**

Say, 'Two equal parts are still a bond to 8 — 4 and 4 make 8, just like 3 and 5 do,' and point out this is a double.

**After taking objects away, the child believes they have disappeared rather than linking the amount left to the bond.**

Show the removed objects nearby and say, 'They haven't vanished, they've moved away. 8 take away 3 leaves 5, because 3 and 5 make 8.'

### Adapting

- **Support:** Work with fewer bonds at a time (start with 8 and 0, 7 and 1, 6 and 2) and let the child physically move objects themselves before saying the bond.
- **Challenge:** Ask the child to find a bond without being shown it first, then check by counting, and ask them to spot which bonds are 'the same pair swapped over' (e.g. 2 and 6, 6 and 2).
- **SEND and EAL:** Use consistent, repeated sentence stems ('\_\_\_ and \_\_\_ make 8') alongside the physical split every time, pair key vocabulary with gesture (hands moving apart for 'split', sliding together for 'altogether'), and allow pointing or moving objects as a full response instead of speaking.

### Look for

- Child moves one object at a time and notices the pattern (one part growing, the other shrinking)
- Child says the bond independently before being asked
- Child uses a known bond to work out a hidden amount instead of recounting
- Child links a take-away result back to the matching bond

### Picture cards for this session

