

Ten frames: how many, and how many more to make 9

4 children · 15 minutes

Objective: Children read how many counters are on a ten frame and work out how many more are needed to make 9.

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

Resources

- 1 large ten frame (floor mat or tray with 10 spaces)
- 9 double-sided counters per child
- a set of printed ten frame cards showing 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 counters
- a small drawstring bag
- a soft toy to pass round

Key questions

- How many counters can you see on the frame?
- How many more do we need to make 9?
- How do you know without counting them all again?
- What do you notice about the empty spaces?
- Can you find two different numbers that make 9 together?

Vocabulary

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

Set-up

Lay the large floor ten frame out on the carpet so all 4 children can reach it. Put the counters in the drawstring bag. Place the set of ten frame cards face down in a pile next to the frame.

What to do

1. Gather the group on the carpet around the large ten frame and show them 9 counters in the bag.
2. Turn over the top ten frame card and ask a child to place that many counters onto the large frame, matching the pattern on the card.
3. Ask the group to count the counters together, touching each one.
4. Ask the key question: how many more counters do we need to fill the frame up to 9?
5. Invite a different child to take that many more counters from the bag and fill the empty spaces until the frame shows 9.
6. Say the matching number fact together, for example 'and make 9'.
7. Empty the frame and repeat with the next card, passing the soft toy so a new child goes first each round.
8. For the card showing 9, ask how many more are needed, so children notice that 9 and 0 make 9.

Misconceptions

A child recounts every counter from 1 each time instead of counting on from the number already on the frame.

Cover the filled counters with a hand and ask, 'if this many are hiding, how many more until the frame is full?' to encourage counting on.

A child thinks the empty spaces must be counted in the same order as they were filled, so loses track of how many are left.

Point to the empty row and ask the child to count only the gaps, touching each one, before adding counters.

A child believes a full ten frame always means 9, overgeneralising from this activity.

Show a ten frame filled with all 10 spaces and ask the child to count it, confirming that a completely full frame is 10, not 9.

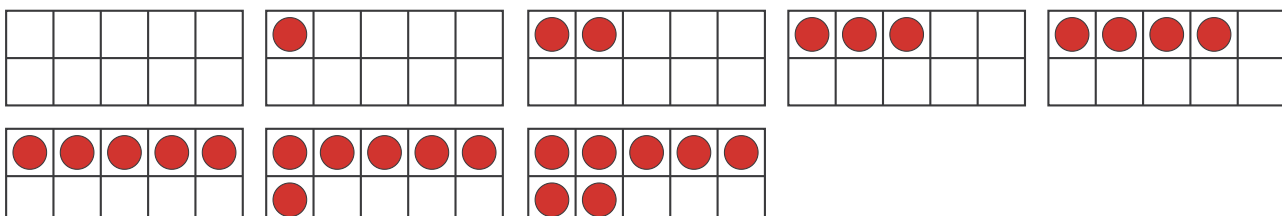
Adapting

- **Support:** Use frames showing only 0, 1, 2 and 3 first, and let the child place one counter at a time while the adult says each number aloud.
- **Challenge:** Hide the ten frame card after a quick look and ask the child to say how many more make 9 from memory before checking.
- **SEND and EAL:** Use consistent, simple language each round ('how many more to make 9?'), pair the spoken number with a hand signal, and let children point to the frame instead of answering verbally if that is easier.

Look for

- Children count counters accurately without recounting from 1 every time.
- Children can say how many more are needed without filling every space first.
- Children use the vocabulary 'more' and 'make' when describing the frame.
- Children notice the pattern that the counted amount and the amount more always make 9.

Picture cards for this session



Part-whole: composition of 7 and 8

Small group of up to 5 children · 15 to 20 minutes

Objective: Children partition a group of 7 or 8 real objects into two parts in different ways, and match their partitions to a part-whole model, building their understanding that 7 and 8 can each be made of two smaller parts.

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

Resources

- A set of 8 identical real objects per child (for example conkers, pom-poms or dinosaur counters)
- A part-whole mat per child: one large hoop (the whole) with two smaller hoops or paper plates inside it (the parts)
- A drawstring feely bag
- A small tray or basket to hold spare objects
- The 13 part-whole model picture cards: 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; 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

Key questions

- What is your whole number today?
- Can you show me two parts that make your whole?
- How many are in this part? How many are in that part?
- Is there another way to split your 7 (or 8) into two parts?
- If one part has 4, how many must be in the other part to still make 8?
- Which picture card matches the parts you have made?
- What do you notice about the parts when you swap them around?

Vocabulary

whole, part, makes, altogether, split, same, different way, swap

Set-up

Lay out one part-whole mat per child on the carpet or a low table. Place a basket of 8 objects next to each mat. Put the feely bag and the shuffled picture cards within the adult's reach.

What to do

- Gather the group on the carpet and show everyone 7 objects in the whole hoop of one mat. Say, 'This whole is 7. Watch what happens when I split it into two parts.'
- Slide a small handful of the objects into one of the small hoops and the rest into the other hoop, counting each part out loud as you go.
- Hold up the matching picture card (for example 2 and 5 make 7) and say, 'My two parts match this card: 2 and 5 make 7.'
- Give each child 7 objects and their own mat. Ask them to split their 7 into two parts in their own way, counting each part as they place it.
- Go round the group and ask each child to say their own part-whole sentence out loud, for example 'My parts are 3 and 4. 3 and 4 make 7.'
- Find and hold up the picture card that matches each child's split so they can see their real objects mirrored in the picture.
- Ask, 'Can you split your 7 into two parts in a different way?' and let children rearrange and recount.
- Swap the baskets for 8 objects. Repeat the splitting, saying and matching-the-card process for 8.
- Introduce the feely bag: put 8 objects in, let a child pull some out without looking, then count what's left in the bag and what's in their hand, saying the part-whole sentence for 8.
- Finish by laying out several of the picture cards and asking children to build the matching split with their own objects on their mat.

Misconceptions

A child recounts all the objects from 1 each time instead of recognising the two counted parts combine to make the whole.

Cover each part with a hand as the child counts it, say the amount, then reveal both and count on together from the first part to show the whole, for example 'Here are 3, and here are 4 more, so 3 and 4 make 7.'

A child thinks a part that is spread out over more space has more objects than a part that is grouped tightly together, even when the amounts are equal.

Move the objects between a spread-out arrangement and a tightly grouped arrangement in front of the child, counting each time, so they see the amount stays the same.

A child believes there is only one correct way to split 7 or 8 and resists trying another split.

Model swapping the objects between the two part hoops yourself first, then ask the child to copy you, praising each new split they find as 'another way to make the same whole.'

A child thinks swapping the two parts (for example 3 and 4 becoming 4 and 3) changes the whole.

Lay out both arrangements side by side and count each whole together, showing that 3 and 4 make 7, and 4 and 3 also make 7.

Adapting

- Support:** Use 7 only, and give the child a mat with the two part-hoops already a visibly different size so one part is obviously smaller, supporting one-to-one counting with fewer objects to track.
- Challenge:** Ask the child to find every different way to split 8 across two parts and lay all their findings out at once, then compare which picture cards match.
- SEND and EAL:** Pair the sentence 'X and Y make Z' with consistent hand gestures (two hands apart for parts, hands coming together for the whole) and real objects throughout, repeating the same sentence structure every time so the pattern becomes familiar regardless of spoken English level.

Look for

- Counts each part accurately using one-to-one correspondence
- Uses the language 'and' and 'make' when describing their split
- Finds more than one way to split the same whole
- Matches their own arrangement of real objects to the correct picture card
- Recounts to check the two parts still make the whole after moving objects

Picture cards for this session



Composition of 9: every way to make 9

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

Objective: Children explore and record every way to partition 9 into two parts, using real objects and a part-whole frame, building towards a secure understanding that 9 can always be split into two parts whose total stays 9.

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

Resources

- 9 identical small objects per child (for example conkers, shells or counters) in a pot
- A large floor part-whole frame: one big hoop for the whole and two smaller hoops underneath for the parts
- Numerical cards 0 to 9
- 8 part-whole picture cards showing: 1 and 8 make 9; 2 and 7 make 9; 3 and 6 make 9; 4 and 5 make 9; 5 and 4 make 9; 6 and 3 make 9; 7 and 2 make 9; 8 and 1 make 9
- One small empty bowl (to show a part of zero)
- A soft cloth or cloth bag to briefly hide the whole group of 9 objects

Set-up

Lay the big hoop and the two smaller hoops on the carpet so children can sit around them. Tip 9 objects into the big hoop. Place the numeral cards 0 to 9 and the 8 part-whole picture cards face down nearby, within reach but not yet visible.

What to do

- Adult says: 'We have 9 conkers in our whole hoop. Let's count them together to check.' Adult counts all 9 objects with the children, touching each one.
- Adult says: 'I'm going to split our 9 into two parts.' Adult moves some objects into one small hoop and the rest into the other, for example 1 object into one hoop and 8 into the other.
- Adult says: 'Let's count each part.' Adult counts each small hoop aloud with the children, then says the stem sentence: '1 and 8 make 9.'
- Adult turns over the matching part-whole picture card (1 and 8 make 9) and places it next to the hoops, saying: 'Look, this picture shows the same thing.'
- Adult invites a child to move the objects to make a different split, for example 2 and 7, and supports the child to say: '2 and 7 make 9.' Adult finds and places the matching picture card.
- Adult continues around the group, giving each child a turn to make a new split (3 and 6, 4 and 5, 5 and 4, 6 and 3, 7 and 2, 8 and 1), checking each total by recounting and matching the picture card each time.
- Adult says: 'What if I don't move any conkers at all?' Adult shows the empty small bowl next to the full hoop and models: '0 and 9 make 9.' Adult repeats the other way round: '9 and 0 make 9.'
- Adult lines up the picture cards children have matched so far and says: 'Let's look at our pictures in order. Have we found every single way to make 9, or are there any missing?' Adult supports children to check against the numeral cards 0 to 9.
- Adult hides the 9 objects briefly under the cloth and says: 'I've got 9 conkers under here split into two parts. Can you guess what the two parts might be?' Children suggest a split, then adult reveals to check.

Misconceptions

A child believes swapping the two parts changes the total, for example thinking 2 and 7 is different from 7 and 2.

Physically swap the objects between the two small hoops while the child watches, recount both parts, and say together: 'the parts swapped places but the whole is still 9.'

A child thinks you cannot have a part of 0, saying something like 'you have to put something in both hoops.'

Show the empty bowl as one part and all 9 objects as the other part, count the empty bowl together as '0', and say: '0 and 9 make 9, the empty hoop is still a part.'

A child miscounts a part after moving objects quickly, giving a total that is not 9.

Pause and recount each part slowly with the child, touching each object, then recount the two parts together to check they make 9.

A child stops after finding two or three ways and says 'that's all of them.'

Lay out the numeral cards 0 to 9 in order and ask the child to check which first numbers have not been tried yet, encouraging them to try the next one in the pattern.

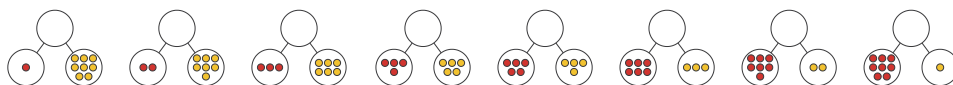
Adapting

- Support:** Work with fewer objects moved at a time and let the child move one object across at a time while the adult counts aloud, focusing only on a couple of ways to make 9 (such as 1 and 8, then 8 and 1) rather than all of them.
- Challenge:** Ask the child to find and order all the ways to make 9 independently using the numeral cards, predicting the next split before trying it, and checking their own matching picture card.
- SEND and EAL:** Pair every number word with the matching numeral card and the real objects, model the stem sentence slowly with gesture (hands apart for the two parts, hands together for the whole), and allow the child to point to or move objects instead of speaking the sentence aloud.

Look for

- Child recounts each part and the whole to check the total is correct.
- Child notices and comments that swapping the two parts does not change the whole.
- Child accepts 0 as a valid part when shown the empty bowl.
- Child uses a system (such as following the numeral cards in order) rather than moving objects randomly.
- Child uses the stem sentence '... and ... make 9' independently.
- Child matches their own split correctly to one of the part-whole picture cards.

Picture cards for this session





Number bonds to 9, including zero and take away

4 to 6 children · 15 minutes

Objective: Children find and say the pairs of numbers that make 9, including 0 and 9, and use take away to explain how the two parts are connected.

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

- A real rekenrek (bead frame) with rows of 10 beads, 5 red and 5 white per row
- 9 identical real objects per child (for example conkers, shells or pebbles) in a small pot
- A large part-whole mat (a circle split into two smaller circles)
- A drawstring bag or tea towel for hiding objects
- Number cards 0 to 9
- A small whiteboard or chalkboard for the adult to jot the bond children find

Key questions

- How many do we have altogether before we split them?
- If one part has 3, how could we find out the other part without counting from 1 again?
- What happens to the whole if we take some away from one part?
- Can you make 9 a different way to your friend?
- What do you notice about 4 and 5 compared with 5 and 4?
- If one part is 0, what does that tell us about the other part?

Set-up

Sit the group around a low table or on the carpet in a circle. Place the part-whole mat in the middle with 9 objects sitting in the top circle. Have the rekenrek within reach, pushed so all beads sit to one side. Spread the number cards 0 to 9 face up nearby.

Vocabulary

whole, part, altogether, make, bond, take away, left, zero, none, same, swap

What to do

1. Gather the group and show the pot of 9 objects. Count them together into the top part of the part-whole mat: '1, 2, 3... let's check, how many have we got altogether?'
2. Say: 'I'm going to split our 9 into two parts.' Slide some objects into one bottom circle and the rest into the other bottom circle, for example 3 and 6. Ask the children to count each part.
3. Say the sentence together: '3 and 6 make 9.' Find the matching number cards and place them under each part.
4. Pass the rekenrek to a child. Ask them to slide beads so that some are red on one side and white stay on the other, matching the same split (3 red, 6 white). Count each colour together.
5. Hide the 9 objects under the drawstring bag. Take some out in full view and ask, 'If I take away 2, how many are left under the bag?' Reveal to check, then say the bond: '2 and 7 make 9.'
6. Repeat with a new split each time, moving towards the zero fact: slide all 9 beads to one side so none are left on the other. Ask, 'What if I take nothing away? How many parts do we really have?' Introduce '0 and 9 make 9.'
7. Let each child take a turn choosing a split on the rekenrek or part-whole mat while the rest of the group checks by counting both parts and saying the bond sentence.
8. Finish by lining up the number cards in order and reading all the pairs the group found for 9, including 0 and 9.

Misconceptions

The child thinks 3 and 6 is a different fact to 6 and 3, rather than the same bond swapped around.

Physically swap the two parts on the mat and recount each side. Say, 'Look, we still have 3 and we still have 6, we've just swapped where they sit. Both make 9.'

The child does not believe 0 can be a real part, and leaves that circle empty without saying a number.

Point to the empty circle and ask, 'How many are in this part?' Count out loud to show there are none, then say together, '0 and 9 make 9', emphasising that 0 is still an answer.

After taking objects away, the child recounts the whole group again instead of checking the part that is left.

Cover the part that was taken away and ask, 'We know we took 4 away, so let's just check what's hiding under the bag now,' guiding them to count only the remaining part.

The child recounts from 1 every time instead of recognising the whole stays 9 while the parts change.

Hold up the pot and say, 'We already know we started with 9, that doesn't change, only how we split it does.' Keep the full group of 9 objects visible as a constant reference.

Adapting

- **Support:** Work with objects only to begin with, splitting 9 into just two groups the child can touch and move. Use a five-frame style row (5 and then extra) to help them see parts without the rekenrek's extra rows. Keep numbers to one bond at a time before moving on.
- **Challenge:** Ask the child to predict the missing part before counting, for example 'If one part is 6, how many is the other part, before we check?' Encourage them to record each bond they find using the number cards in order and spot that the pairs reverse once they pass the middle.
- **SEND and EAL:** Use the same real objects and rekenrek every session so the resource itself is familiar. Pair each spoken number with a number card and a clear gesture (two open hands for the two parts). Keep sentences short and consistent: '3 and 6 make 9.' Allow extra processing time and model the sentence before asking the child to repeat it.

Look for

- Child counts each part accurately without recounting the whole from the start
- Child can say the bond sentence using both parts and the whole, for example '2 and 7 make 9'
- Child recognises that swapping the two parts still makes the same bond
- Child accepts 0 as a valid part when a group is empty
- Child links taking away from the whole to finding the matching part that is left
- Child begins to predict the second part when given the first, without needing to count both from scratch

Picture cards for this session

