

Ten frames: how many, and how many more to make 10

Up to 4 children · 15 minutes

Objective: Children will say how many counters are on a ten frame and work out how many more are needed to make 10.

| **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 taped out with chalk/tape)
- A set of 11 ten frame picture cards showing 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10
- A pot of 10 matching counters per child (conkers, buttons, pebbles or small bears)
- A small basket to hold spare counters

Set-up

Lay the large ten frame on the floor or table where every child can reach it. Spread the 11 ten frame picture cards face down nearby in a pile. Give each child their own pot of 10 counters and sit the group in a circle around the large ten frame.

Key questions

- How many counters are on the ten frame?
- How many empty spaces are left?
- How many more do we need to make 10?
- How do you know without counting every space?
- What would the ten frame look like with one more counter? One fewer?

Vocabulary

ten frame, altogether, how many, more, make 10, full, empty, space, row

What to do

1. Gather the group around the large ten frame and say, 'This is our ten frame. It has 10 spaces for 10 counters.'
2. Turn over one picture card, for example the ten frame showing 6, and say, 'Let's look at this card together. How many counters can you see?'
3. Ask a child to build the same picture on the large ten frame using their own counters, filling it row by row from the left.
4. Say, 'The ten frame has 10 spaces altogether. How many spaces are empty?' and let children point to and count the empty spaces.
5. Say, 'So 6 and 4 more make 10' while pointing first to the filled counters, then to the empty spaces, then sweeping a hand across the whole frame.
6. Turn over another card, for example the ten frame showing 3, and repeat the build, count the gaps, and say the matching fact: '3 and 7 more make 10.'
7. Invite each child to take a turn choosing a card, building it on their own pot of counters, and saying how many more are needed to make 10.
8. Finish by turning over the ten frame showing 10 and the ten frame showing 0 and asking, 'What is the same and what is different about these two?'

Misconceptions

When asked how many more are needed to make 10, the child recounts all the filled counters again instead of counting the empty spaces.

Cover the filled counters with a hand and say, 'Let's just look at the empty spaces now,' then count only the gaps with the child.

The child says a ten frame with 8 or 9 counters is already 'full' because it looks nearly full.

Place the ten frame showing 10 next to it and ask, 'Does this one have any empty spaces? Does yours?' so the child can compare directly.

The child fills the ten frame in a random scattered order rather than left to right, row by row, and loses track of how many they have placed.

Model placing counters one at a time along the top row first, saying each number as you go, then start the bottom row.

The child believes the matching pairs only work one way round, for example knowing '3 and 7 make 10' but not recognising '7 and 3 make 10'.

Turn the ten frame picture card round or flip which colour is counted first, and ask, 'Does it still make 10 if we start counting from the other side?'

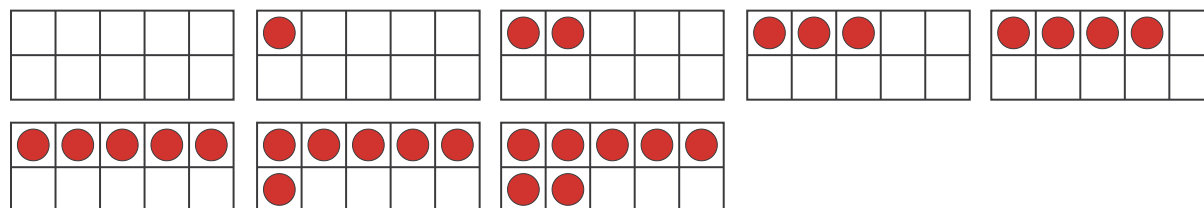
Adapting

- **Support:** Use only the ten frame cards showing 0 to 5 at first, give larger counters that are easier to grip and place, and count every space aloud together before stating the fact.
- **Challenge:** Turn the picture card over for 2 seconds then hide it, and ask the child to say how many more make 10 from memory before checking with the large ten frame.
- **SEND and EAL:** Pair each number word with a consistent action (e.g. clap for 'how many', open arms for 'altogether') and keep real objects and the large ten frame as the main reference, letting children point and build before being asked to speak.

Look for

- Can the child state how many are on the ten frame without recounting every counter one by one?
- Does the child count the empty spaces accurately to find how many more make 10?
- Can the child say the matching pair fact (e.g. '4 and 6 make 10') without the adult modelling it first?
- Does the child fill the ten frame systematically, row by row, rather than scattering counters?

Picture cards for this session



Part-whole: composition of 8 and 9

4 to 6 children · 15 to 20 minutes

Objective: Children explore different ways to split 8 and 9 into two parts, using real objects and part-whole models, to deepen their understanding that a number can be composed of two smaller parts and still make the same whole.

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

Resources

- A large part-whole mat for each child (one 'whole' circle joined to two 'part' circles)
- Small baskets, each containing 9 conkers (or other loose parts such as pebbles or buttons)
- Two small hoops or plates per child, for sorting parts
- A set of part-whole model picture cards showing 8 and 9 split into two parts
- A feely bag
- A number track 0 to 10, for checking totals

Set-up

Set out cushions in a circle on the carpet with a part-whole mat and two hoops in front of each place. Put a basket of 9 conkers next to each mat and keep the picture cards and feely bag nearby for the adult to bring out during the session.

Key questions

- How many conkers are in this hoop? How many in this hoop? How many altogether?
- Can you find a different way to split your 8 conkers?
- If I swap the conkers over, so this hoop now has 5 and this one has 3, is it still 8 altogether? How do you know?
- How could you work out how many are hidden in the bag without seeing them?
- Which picture card matches the way you have split your conkers?

Vocabulary

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

What to do

1. Gather the children in a circle and tip out one basket so everyone can see. Count the conkers together slowly, touching each one, to agree there are 8 altogether.
2. Say, 'Watch what I do with these 8 conkers.' Split them across your two hoops, for example 3 in one hoop and 5 in the other. Say, '3 and 5 make 8.'
3. Hold up the matching part-whole model picture card (3 and 5 make 8) next to your hoops and ask, 'Does this picture match what I've done?'
4. Give each child their own basket of 8 conkers. Ask them to split theirs across their two hoops in their own way, then say the sentence, '___ and ___ make 8.'
5. Go round the circle. Ask each child to show their split and find the matching picture card from the set.
6. Ask, 'Can anyone split their 8 a different way?' Let children swap conkers between hoops and try again, checking the total each time.
7. Swap the baskets for ones with 9 conkers. Repeat the splitting, saying the sentence and matching the picture cards for 9.
8. Finish with the feely bag: show 8 or 9 conkers, then secretly move some into the bag. Ask children to work out how many are hidden, using the part they can still see.

Misconceptions

After splitting the conkers, the child recounts every single conker from 1 again instead of trusting the two parts they already know.

Model counting on instead: say the larger part as a number, then count on the rest, for example 'five... 6, 7, 8.' Practise this together before asking the child to try it.

The child thinks that swapping which hoop holds more changes the total, so '3 and 5' feels different from '5 and 3.'

Physically swap the two hoops around in front of the child and recount together. Say, 'It's still the same two parts, just swapped over - 8 altogether both times.'

The child only ever splits the conkers into two similar-sized groups and avoids very uneven splits, such as 1 and 7.

Prompt directly: 'What if only 1 conker was in this hoop - how many would be in the other hoop?' Help the child move conkers one at a time to test it, then say the matching sentence together.

The child loses track partway through counting 8 or 9 conkers, especially past 5, and gives a wrong total.

Line the conkers up in a single row so each one is touched once while counting. Check the total against the number track if needed, then return to the hoops.

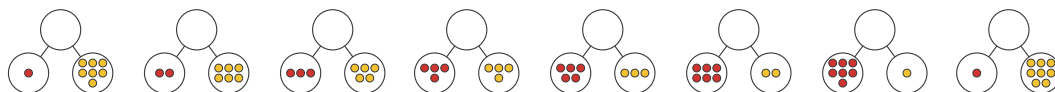
Adapting

- **Support:** Work with 8 only, using fewer conkers at a time and a five-frame style mat so one part is always shown clearly separated from the other. Move one conker at a time between hoops, narrating each move.
- **Challenge:** Ask the child to find every different way to split 8 before moving on to 9, choosing the matching picture card each time. Ask them to predict the hidden amount in the feely bag before checking.
- **SEND and EAL:** Lean on the real conkers, hoops and picture cards rather than spoken explanation alone. Use the same short sentence pattern every time ('___ and ___ make 8') paired with pointing and gesture, and welcome the composition sentence in the child's home language if known.

Look for

- Says the composition sentence ('___ and ___ make 8' or '___ and ___ make 9') without being prompted.
- Recognises that swapping the two parts around still makes the same whole.
- Counts on from the larger part rather than recounting every conker from 1.
- Finds more than one way to split the same number across the two hoops.

Picture cards for this session



Composition of 10: every way to make 10

Up to 4 children with one adult · 15 to 20 minutes

Objective: Children explore and show every way to make 10, using a part-whole model with real objects, so they deepen their understanding of the composition of 10.

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

Resources

- 10 identical real objects per turn (for example conkers, buttons, shells or small teddies)
- 1 large hoop or tray to hold the whole (10 objects)
- 2 smaller hoops or paper plates to hold the two parts
- 9 part-whole model picture cards showing: 1 and 9 make 10; 2 and 8 make 10; 3 and 7 make 10; 4 and 6 make 10; 5 and 5 make 10; 6 and 4 make 10; 7 and 3 make 10; 8 and 2 make 10; 9 and 1 make 10
- A soft cloth or drawstring bag for hiding objects

Set-up

Place the large hoop in the middle of the table or carpet space with 10 objects inside it. Put the two smaller hoops just below it, ready to take the two parts. Stack the 9 part-whole model picture cards face down nearby, in order from 1 and 9 up to 9 and 1.

What to do

- Gather the children around the hoops. Say, 'Let's count these together to check we have 10.' Count the objects as a group, touching each one.
- Turn over the first part-whole model picture card (1 and 9 make 10). Say, 'This picture shows one way to split our 10. Who can move the objects into the two part hoops to match?'
- Invite a child to move 1 object into one small hoop and 9 into the other. Say, 'Let's check. How many in this part? How many in that part? How many altogether?' Count each part, then count all 10 together.
- Say the number sentence aloud together: '1 and 9 make 10.' Encourage children to repeat it, pointing to each hoop as they say each number.
- Turn over the next picture card (2 and 8 make 10). Before moving any objects, ask, 'What do you think will happen to this part? What about that part?' Then invite a different child to move the objects to match.
- Repeat this process for each remaining picture card in turn (3 and 7, 4 and 6, 5 and 5, 6 and 4, 7 and 3, 8 and 2, 9 and 1), each time counting the parts and the whole, and saying the number sentence together.
- After a few turns, try hiding one part under the cloth. Say, 'I can see 6 here. There are 10 altogether. How many do you think are hiding?' Let children check by lifting the cloth and counting.
- Finish by asking each child to choose their favourite way to split the 10 and show it to the rest of the group, saying the number sentence themselves.

Misconceptions

A child thinks the total changes when an object is moved from one part hoop to the other, and recounts the whole as a different number.

Recount the whole together straight away, touching each of the 10 objects. Say, 'We moved them, but we didn't add any or take any away, so we still have 10 altogether.'

A child believes 3 and 7 is a different total from 7 and 3, because the parts are in different hoops.

Physically swap the contents of the two part hoops and count the whole again, showing that the total stays 10 whichever hoop holds which part.

A child miscounts a larger part, for example skipping or double-counting objects when counting 8 or 9 items.

Help the child line the objects up in a row and touch each one once while counting aloud slowly, then recount together to confirm the correct amount.

A child thinks an empty part hoop means that part 'doesn't count', so does not believe 0 and 10 is a real way to make 10.

Show the empty hoop and say, 'This part has 0 in it, and that part has 10 in it. 0 and 10 still make 10 altogether,' then count the full hoop together to check.

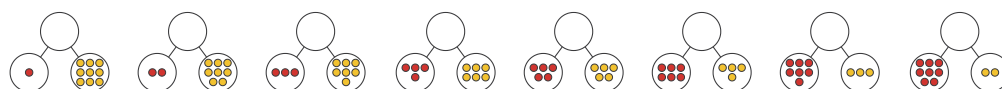
Adapting

- Support:** Work with just 2 or 3 of the picture cards (for example 1 and 9, 5 and 5). Use a tens frame alongside the hoops so children can see the objects in a clear arrangement, and guide their hands as they move objects between parts.
- Challenge:** Ask the child to predict and say the next number sentence before turning over the picture card. Challenge them to find a way to make 10 that hasn't been shown yet, and to record their ways by placing matching numeral cards next to each part hoop.
- SEND and EAL:** Pair each number word with a consistent gesture (two open hands apart for 'parts', hands brought together for 'whole'). Use the picture cards as a visual anchor every time, model the full sentence '___ and ___ make 10' slowly, and give extra time for the child to point to or move objects before speaking.

Look for

- Moves the correct number of objects into each part hoop to match the picture card
- Understands that the whole stays 10 no matter how it is split (conservation of number)
- Counts each part and the whole accurately, touching each object once
- Uses the sentence '___ and ___ make 10' independently
- Predicts how a part will change before the objects are moved

Picture cards for this session



Number bonds to 10, including zero and take away

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

Objective: Children explore the different ways 10 can be split into two parts, including a part of zero, and connect this to taking away from 10.

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 rekenrek (bead frame) with 10 beads
- A part-whole model mat (one whole circle joined to two part circles)
- 10 counters and a small pot
- A soft cloth to cover beads or counters
- Number cards 0 to 10

Set-up

Sit the group in a circle on the carpet with the rekenrek and part-whole mat within reach. Place the pot of 10 counters and the cloth in the middle.

Key questions

- How many beads do you think are hiding on the other side?
- If one part is 0, what does that tell us about the other part?
- How could you check without counting every bead again?
- What happens to the two parts as one gets bigger?
- How is taking away the same as splitting 10 into two parts?

Vocabulary

part, whole, altogether, make 10, take away, left, zero, pair

What to do

1. Hold up the rekenrek showing 10 red and 0 white beads. Say: 'All 10 beads are red. How many white beads are showing?'
2. Slide 1 bead across so the rekenrek shows 9 red and 1 white bead. Say: '9 and 1 make 10. Watch what happens if I keep going.'
3. Keep sliding beads across one at a time, pausing at 5 red and 5 white beads. Say: '5 and 5 make 10 - the two parts match!'
4. Carry on until the rekenrek shows 0 red and 10 white beads. Say: 'Now there are no red beads left. 0 and 10 still make 10.'
5. Place the part-whole model mat down. Put 10 counters in the whole circle, then move some into one part circle and the rest into the other. Say: 'Here are the two parts of 10. Can you say the whole sentence with me?'
6. Tip 10 counters into the pot. Say: 'I have 10 counters altogether.' Take some counters out and hide them under the cloth. Say: 'I've taken some away. How many do you think are left in the pot?'
7. Lift the cloth to reveal the hidden counters and check together by matching them back to the part-whole model.
8. Invite each child to choose a number card from 0 to 10 and build that split on the rekenrek or part-whole mat for the rest of the group to check.

Misconceptions

The child says 0 and 10 does not really count as a bond because one part is empty.

Show the empty part circle on the part-whole model and say 'this part can still be 0 - 0 and 10 make 10, just like any other pair.' Point to the empty side so they see it is a real part, not a missing one.

The child recounts every bead or counter from 1 each time instead of using the number they already know.

Cover the counted part and ask 'you told me that side was 6 - can we trust that and just count the new part?' Model counting on from the known amount rather than starting over.

After counters are taken away and hidden, the child recounts the remaining counters from scratch rather than connecting it to the start number.

Say 'we started with 10 - how many did we see go under the cloth?' and model counting back from 10 rather than only counting what is left.

Adapting

- **Support:** Work with fewer, more visual pairs first (10 and 0, 5 and 5), keeping beads or counters in a clear line so both parts can be seen and touched at once.
- **Challenge:** Ask children to predict the hidden part before sliding or lifting the cloth, and to find a pair where both parts are the same (5 and 5).
- **SEND and EAL:** Pair gesture with language, pointing to each part as you say the number, and keep the same part-whole model and sentence pattern throughout so the structure becomes familiar.

Look for

- Says the missing part without recounting from 1
- Accepts 0 as a real part, not an exception
- Links the take away action to the two parts on the part-whole model
- Uses the vocabulary 'part', 'whole' or 'altogether' unprompted

Picture cards for this session

