

Ten frames: how many, and how many more to make 7

Up to 4 children with one adult · 15 minutes

Objective: Children work out how many counters are shown on a ten frame (0 to 7) and how many more are needed to fill it to 7, building a secure sense of the pairs that make 7.

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

Resources

- A large laminated ten frame mat
- 7 double-sided counters or small real objects (e.g. shells, buttons, conkers)
- A set of 8 ten frame picture cards showing 0, 1, 2, 3, 4, 5, 6 and 7
- A soft cloth or small cushion to hide counters under

Set-up

Sit the group around the ten frame mat on the carpet. Keep the 7 counters in a small pot within reach. Shuffle the 8 ten frame picture cards face down in a pile.

Key questions

- How many counters can you see on the frame?
- How do you know, without counting again?
- How many more do we need to make 7?
- How could we check we have 7 altogether?
- What do you notice about the empty spaces?

Vocabulary

ten frame, how many, more, altogether, makes, full, empty, spaces, same, pair

What to do

1. Gather the group and place the empty ten frame mat in the middle. Say: 'This is our ten frame. Today we are finding out how many we can see, and how many more we need to make 7.'
2. Turn over the first ten frame picture card (showing 4). Say: 'Let's build what the card shows.' Help children place counters onto the real ten frame mat to match.
3. Say: 'Let's count together how many counters are on our frame.' Count the filled spaces aloud, touching each one.
4. Say: 'We need 7 altogether. How many more counters do we need to add to make 7?' Let children work out the missing amount by adding counters one at a time while counting on.
5. Once the frame shows 7, say: 'Now our frame has 7. Let's check by counting all of them.' Count all 7 together.
6. Turn over the next picture card and repeat the process, working through several of the cards (0, 1, 2, 3, 5, 6, 7) so children see different starting amounts.
7. For the card showing 0, say: 'Look, this frame has nothing on it yet. How many counters do we need to make 7?' Guide children to add all 7 counters one by one.
8. For the card showing 7, say: 'This frame is already showing 7. How many more do we need?' Help children notice that 0 more are needed because it already makes 7.

Misconceptions

A child counts the empty spaces on the frame rather than the filled ones when asked 'how many'.

Cover the filled counters with your hand and say: 'Let's just count the counters we can see,' pointing to each filled space as you count, so the child separates filled from empty.

A child thinks the ten frame must be completely full before it can show 7, since the frame has 10 spaces.

Say: 'Our frame has 10 spaces, but today we are only filling it until we reach 7.' Place exactly 7 counters and point out the 3 spaces that stay empty, saying: 'We stop here because we have 7.'

A child always says the same number of 'more needed' regardless of the starting amount shown.

Model counting on from the filled counters to 7 using fingers alongside the frame, saying each number aloud: '4... 5, 6, 7, so we need 3 more,' so the child hears the counting-on process rather than guessing.

A child recounts from 1 every time instead of counting on from the amount already shown.

Point to the last filled counter and say: 'We already know we have 4, so let's keep counting from there: 5, 6, 7,' to show counting on is faster than starting again.

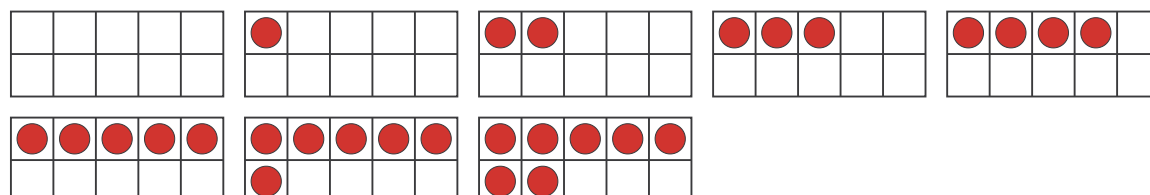
Adapting

- **Support:** Use only the cards showing 0, 1, 2 and 3 first, and let the child physically move each counter into a space while the adult counts alongside them.
- **Challenge:** Show a card and ask the child to say both facts straight away without building it first, for example 'that shows 5, so we need 2 more,' then check by building it.
- **SEND and EAL:** Pair every number word with a consistent gesture (e.g. tapping the frame) and the matching numeral shown next to the frame, keep sentences short and repeated each turn, and allow extra time for the child to place and count counters at their own pace.

Look for

- Child recognises small amounts on the ten frame without recounting every time
- Child counts filled counters accurately with one-to-one correspondence
- Child works out the missing amount needed to reach 7
- Child uses counting on from the known amount rather than starting from 1
- Child uses vocabulary such as 'more', 'altogether' or 'makes' during the activity

Picture cards for this session



Part-whole: composition of 5 and 6

Small group of 4 to 5 children · 20 minutes

Objective: Children will explore different ways to partition 5 and 6 into two parts, using real objects and part-whole models, and begin to see that the same whole can be made of different pairs of parts.

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

Resources

- A large floor part-whole model (a hoop for the 'whole' at the top, two hoops for the 'parts' below)
- A small part-whole model mat for each child (two part-circles joined to one whole-circle)
- 6 identical natural objects per child, such as conkers or pebbles
- A small drawstring bag or pot per child to hide objects inside
- A soft cloth for covering groups of objects
- 9 part-whole model picture cards: 1 and 4 make 5; 2 and 3 make 5; 3 and 2 make 5; 4 and 1 make 5; 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
- Numeral cards 0 to 7

Key questions

- How many conkers are in the whole altogether?
- What do you notice about the two parts?
- Can you find a different way to split the conkers and still make the same whole?
- If one part has 3, how many must be in the other part to make 6?
- What happens to the whole when you swap the two parts around?

Vocabulary

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

Set-up

Lay the large floor part-whole model in the centre of the carpet space. Give each child a small part-whole mat, a pot of 6 conkers and a cloth. Spread the 9 part-whole picture cards face down nearby, ready to reveal one at a time.

What to do

1. Gather the group on the carpet around the large part-whole model and say, 'Today we are finding all the ways to make 5 and 6 using two parts.'
2. Ask each child to tip out 5 conkers onto the 'whole' space on their mat and count them together as a group: 'Let's check, how many conkers in the whole?'
3. Model splitting the 5 conkers into two parts on the large floor model, for example 1 conker in one part and 4 conkers in the other, saying, '1 and 4 make 5.'
4. Turn over picture card 1 (1 and 4 make 5) and hold it next to the real conkers so children can match the model to the picture.
5. Invite each child to split their own 5 conkers into two parts on their mat in a different way, and ask them to say the matching sentence aloud: '___ and ___ make 5.'
6. Reveal picture cards 2, 3 and 4 one at a time (2 and 3; 3 and 2; 4 and 1) and ask children to rebuild each one with their own conkers, checking the whole stays 5 each time by recombining and recounting.
7. Add one more conker to each child's pot so they now have 6, and repeat the process, splitting into two parts and saying the sentence, matching to picture cards 5 to 9 (1 and 5; 2 and 4; 3 and 3; 4 and 2; 5 and 1).
8. Hide one part under the cloth each time and ask, 'I can see ___ here, how many are hiding?' before lifting the cloth to check.
9. Finish by laying out all the picture cards the group has matched and counting together how many different ways they found to make 5 and how many to make 6.

Misconceptions

After splitting the conkers into two parts, the child thinks the whole has changed and recounts from 1 each time instead of trusting that 5 or 6 stayed the same.

Push the two parts back together on the mat and recount the whole together, showing it is still 5 or 6, then split them again a different way and repeat the check.

The child believes 1 and 4 is a different fact from 4 and 1 rather than the same two parts swapped.

Lay both arrangements side by side on two mats and count each whole together, pointing out the same conkers have simply swapped sides.

The child recounts every single conker from 1 again instead of using the known part to work out the hidden part.

Cover one part with the cloth and model counting on from the visible part, for example 'I can see 4, so 5, 6' while touching the hidden pot.

The child does not think an empty part counts, saying 'that's not really a way to make 6' when one part is 0.

Show an empty pot next to a full pot of 6 and say the sentence together, '0 and 6 make 6', letting the child feel the empty pot is still a real part.

Adapting

- **Support:** Work with 5 only and keep the number of conkers small and identical in colour and size. Let the child move one conker at a time between parts while the adult says the sentence, anchoring each count with fingers held up alongside the mat.
- **Challenge:** Ask the child to find every possible way to make 6 before being shown a new picture card, then match their own arrangement to the matching numeral cards and say the full sentence independently.
- **SEND and EAL:** Repeat the same sentence frame, '___ and ___ make ___', every time, pairing it with pointing to each part and the whole. Let the child respond by moving objects or pointing to picture cards rather than only speaking, and use gesture (two hands coming together for the whole) alongside the words.

Look for

- Child recombines the two parts and recounts to check the whole stays the same
- Child uses the sentence 'and' and 'make' independently when describing their arrangement
- Child matches their own built arrangement correctly to the matching picture card
- Child starts to predict the missing part before checking under the cloth
- Child notices that swapping the parts still makes the same whole

Picture cards for this session



Composition of 7: every way to make 7

Small group of up to 5 children, adult-led · 15–20 minutes

Objective: Children compose and decompose 7, finding different ways to split 7 into two parts using real objects and part-whole models.

Key Learning Objectives (KLOs): 1 Have a deep understanding of numbers to 10, including the composition of each number.

Resources

- A tray with 7 identical loose parts per child (e.g. conkers, pebbles or shells)
- Part-whole mats: a large circle for the whole with two smaller circles (parts) below, one per child
- Six part-whole model picture cards showing 1 and 6, 2 and 5, 3 and 4, 4 and 3, 5 and 2, and 6 and 1
- A small pot or bag to tip the objects from
- Number cards 0 to 7

Set-up

Set out part-whole mats around a low table or on the carpet, one per child, each with a tray of 7 loose parts and a pot nearby. Keep the six part-whole picture cards face down in a pile within reach of the adult.

Key questions

- How many are in this part? How many are in that part?
- How do you know there are 7 altogether?
- Can you find a different way to split 7?
- What happens to the total when you move an object from one part to the other?
- What stays the same each time, and what changes?
- Is 3 and 4 the same as 4 and 3? How could we check?

Vocabulary

whole, part, altogether, make, same, different, swap, split

What to do

1. Gather the children in a small circle and show the pot of 7 objects. Count them together into the whole circle on one mat: 'Let's check - how many altogether?'
2. Model tipping the 7 objects into the two part circles so there is 1 in one part and 6 in the other. Turn over the first picture card (1 and 6 make 7) and hold it next to the mat so children can match the real objects to the picture.
3. Say: '1 and 6 make 7. Let's check by counting all the parts together.' Count both parts and the whole with the children.
4. Invite a child to move one object across so the split changes. Count the new parts together and turn over the matching picture card (2 and 5 make 7) to check it matches.
5. Give each child their own mat and objects. Ask them to find their own way to split 7, then say the number sentence out loud, e.g. '3 and 4 make 7'. Turn over the picture card (3 and 4 make 7) to confirm.
6. Ask children to swap the amount in each part (e.g. from 3 and 4 to 4 and 3) and notice what happens. Show the matching picture card (4 and 3 make 7) and ask if the total has changed.
7. Continue around the group so each child has a turn finding a new split, checking against the remaining picture cards (5 and 2 make 7, and 6 and 1 make 7) as they come up.
8. Finish by lining up all six picture cards in order and counting through them together, checking each one still makes 7.

Misconceptions

A child thinks the total changes when objects are moved between the two parts (e.g. believes 6 and 1 is a bigger total than 1 and 6).

Physically swap the two groups together, then recount every object as a whole group with the child, showing the total is still 7 each time.

A child counts only one part and states that as the total, forgetting to include the other part.

Model touch-counting each part in turn, pausing to say the part total out loud, then sweep across both parts to count the whole again.

A child repeats the same split each time and does not realise there are other ways to make 7.

Physically move one object from one part to the other in front of the child, prompting them to count and say the new number sentence.

Adapting

- **Support:** Work with one split at a time, keeping the same mat and objects for several turns. Use larger, easy-to-grasp objects and hand-over-hand support to move them between parts, focusing on matching real objects to just one or two picture cards.
- **Challenge:** Ask children to find all six ways to split 7 in order without adult prompting, then predict which split comes next before checking with the picture card. Encourage them to explain in a full sentence why swapping the parts still makes 7.
- **SEND and EAL:** Use the part-whole mat consistently so the layout becomes familiar, pair every spoken number with a gesture (hands apart for the two parts, hands together for the whole), and model the sentence stem '___ and ___ make 7' for children to repeat, allowing home-language versions where known.

Look for

- Child counts each part accurately before counting the whole.
- Child recognises the total stays 7 no matter how it is split.
- Child independently moves an object to create a new, correct split.
- Child uses the words 'part', 'whole' or 'altogether' during the activity.
- Child notices that swapping the parts (e.g. 2 and 5 to 5 and 2) still makes 7.

Picture cards for this session



Number bonds to 7, including zero and take away

Up to 4 children with one adult · 15 minutes

Objective: Children secure the number bonds to 7, including the bond with zero, and begin to see finding the two parts of 7 and taking away from 7 as connected, using real objects, a rekenrek and part-whole models.

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

- 7 identical real objects per child, e.g. conkers, shells or small teddies
- 2 hoops or 2 plates per child, to use as a part-whole mat
- A rekenrek (bead frame) with 7 red beads and 7 white beads showing
- A small drawstring bag or tin, to hide objects for the take-away game
- The part-whole picture cards for 7 (0 and 7, 1 and 6, 2 and 5, 3 and 4, 4 and 3, 5 and 2, 6 and 1, 7 and 0)
- The matching rekenrek picture cards for 7

Set-up

Sit the group around a low table or on the carpet. Give each child 7 real objects and two hoops. Keep the part-whole and rekenrek picture cards face down in a pile, ready to reveal one at a time. Keep the bag or tin within the adult's reach for the take-away part of the session.

Key questions

- How many are in this hoop? How many are in the other hoop? How many is that altogether?
- Is there another way we could split 7 into two groups?
- What happens if one of the groups has none in it?
- If I take some away and hide them, how could we work out how many are hidden?
- What do you notice when we swap the two groups over?
- Could we split 7 into two equal groups? Why, or why not?

Vocabulary

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

What to do

1. Say: 'We have 7 conkers each today. Let's find all the different ways we can split 7 into two groups.'
2. Ask children to put all 7 objects into one hoop and leave the other hoop empty. Say: 'How many are in this hoop? How many are in this one?' Reveal the part-whole picture showing 0 and 7 make 7, then the rekenrek picture with 0 red and 7 white beads, and ask children to check their hoops match.
3. Ask a child to move 1 object across to the empty hoop. Say: 'What's happened now?' Reveal the part-whole picture for 1 and 6, then the matching rekenrek picture, and ask children to check their own hoops against it.
4. Keep moving one object at a time, revealing the matching part-whole and rekenrek pictures in turn: 2 and 5, 3 and 4, 4 and 3, 5 and 2, 6 and 1, finishing at 7 and 0. Each time, ask: 'Is this a way we've already made, or a new one?'
5. Pause at 3 and 4 and 4 and 3. Ask: 'What do you notice about these two?' Encourage children to physically swap the hoops over to see that the parts have swapped but the whole is still 7.
6. Introduce take away. Show 7 objects in one hoop. Say: 'Watch carefully!' Take some away and hide them in the bag, e.g. take away 3. Ask: 'How many did I take away? How many are left in the hoop?'
7. Repeat the take-away game with different amounts, including taking away 0 (say: 'I took none away, what's left?') and taking away all 7 (say: 'I took them all away, what's left?').
8. Let each child take a turn making their own split of 7 with their objects and hoops, matching it to a part-whole picture, then challenge their neighbour to say how many they would need to take away to get back to one part.

Misconceptions

A child thinks 3 and 4 making 7 is a different fact from 4 and 3 making 7, so keeps counting both as separate discoveries.

Physically swap the two hoops over in front of the child and recount each one. Say: 'Same conkers, same hoops, just swapped round - is the whole still 7?'

A child ignores the empty hoop when one part is 0, saying there are no parts rather than 'none' and 'seven'.

Point to the empty hoop and say: 'This hoop has a number too - it has none, which is zero. Zero and 7 make 7.'

When some objects are hidden in the bag, the child recounts the visible group from 1 each time instead of using what they already know about 7.

Cover the remaining group and ask: 'You already told me there were 4 left - do you need to count again, or do you know?' Model counting on from the known part if needed.

A child tries to split 7 into two equal groups and becomes frustrated when one is always left over.

Say: 'Let's check together' and help them share one object at a time between the two hoops, so they see one hoop ends up with one more than the other every time.

Adapting

- **Support:** Work with smaller, more familiar totals first (e.g. recap bonds to 4 or 5 with the same hoops) before returning to 7. Let the child physically move one object at a time rather than predicting, and have the adult say each total out loud as it changes.
- **Challenge:** Ask the child to predict how many will be in the second hoop before moving any objects across, and to find a bond to 7 using the rekenrek alone, sliding beads without counting from 1. Ask them to explain how taking away 2 and taking away 5 are connected.
- **SEND and EAL:** Pair every number word with the matching real object group and gesture (e.g. open hands for 'none', a sweeping motion for 'altogether'). Keep the part-whole and rekenrek pictures visible throughout as a visual anchor, repeat key phrases consistently each time, and allow the child to respond by moving objects rather than only speaking.

Look for

- Child recognises 0 and 7 make 7 without needing to count the empty hoop
- Child predicts the second part of 7 before moving the objects
- Child notices that swapping the two groups does not change the whole
- Child uses the remaining visible amount to work out how many are hidden, rather than recounting from 1
- Child notices that 7 cannot be split into two equal groups

Picture cards for this session

