

Can only begin counting at one; inaccurately counts objects when rearranged; has no consistent recognition of small numbers of objects; lacks systematic approaches

Opportunity for: solving real-life problems

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Resources

- Cubes, apples, toy cars, pennies, etc.
- Number line, floor number track
- Number cards (Resource sheets 1 and 2)
- 100-square

Key vocabulary

how many?	one before/after
count	count on
start at	count back
next two numbers	

Teaching activity

Time 10–15 minutes

Note: This set of activities is appropriate for children in the early stages of learning to count, but also for Key Stage 2 children who show some inaccuracies in their counting, resulting in erratic answers. (This was found even in Year 6 children during trialling.)

Explain to the child that the activity today will help them to count more accurately so that they get more of their answers correct.

? What do you know already about counting?

? How far do you think you can count?

Note how far the child can count in ones, watching for inconsistencies, for example, younger children not knowing ‘teen’ numbers, and older children not knowing what comes after one hundred or two hundred and not being able to count to one thousand, and so on.

On a floor number track (or table-top number line for older children) ask the child to select a number and stand on it (put their finger on it for a table-top number line).

? What number comes next/just before?

? Jump/count on as far as you can go. Now count back.

Observe carefully whether the child can recite in order, whether they can say one number word for each step and whether they can count on from any number.

If the child is getting the numbers out of sequence, you will need to go over counting by rote every day until the child can recite the numbers in order. This can be done in a variety of ways:

- counting objects;
- stepping along a floor number track;
- pointing to numbers in order on a 100-square;
- putting number cards in order;
- simply reciting the numbers when waiting in the dinner queue.

? Why do you think it is important to say the numbers in the same order each time?

If the child is unable to count one number word for each step, lay out a few toys or cubes to count, putting them close together randomly, and ask the child to count them.



Observe carefully what the child does.

If the child keeps needing to count from one each time, you will need to work on that over the next few weeks, giving repeated experiences with counting objects (see also 2 YR +/-).

You will need to be led by the responses the child makes. The rest of this teaching activity focuses on a range of ways to explore the strengths and weaknesses of the child's counting.

Put out some cubes/toys randomly. (For older children you would need to put out about twenty-eight or thirty-five or more cubes because some children's counting fails once they get beyond thirty or forty, or beyond one hundred.)

? What could you do with these cubes that might make counting them easier? (*Put them in a line, move them as we count, and so on.*)

? When I ask you how many cubes there are, what do you need to do to answer my question? (*Count them! Don't assume the child knows this!*)

? Make an estimate of the number of cubes. Is it near ten, or twenty, or one hundred?

? Now count them. How many are there?

Note: Watch out for children who count, for example, eight objects, then say 'there are nine', unaware that the last number in the count is the number in the set.

If the child counts inaccurately or unsystematically, show them some strategies for successful counting, for example:

- move each one as it is counted;
- touch each one as it is counted (not as reliable as moving each one);
- put the objects in some kind of pattern, maybe in twos, or fives, or tens; for older children familiar with arrays, they might need to be shown that thirty-five cubes could be arranged in seven rows of five, or three rows of ten and five more.

Repeat the counting with a few more toys or coins (things that cannot be linked together) and using more of them than last time.

If the child's counting skills break down with a larger number you will need to give repeated help with this, perhaps asking carers to count with the child each weekend – maybe counting a big jar of coins or how many cornflakes there are when just a few are poured into a bowl. (Warn them that they are not going to want to count a *full* bowl! Remind them that counting is made easier by putting things in groups of ten.)

One of the most successful ways to help children to count is to make sure you include as many senses in the counting tasks as you can. For example, include the child's movements, skipping or taking big strides around the playground, yelling out one number word for each step. At home a parent or carer might help by getting children to count coins dropped into an empty baked bean can or counting up and down the stairs.

'Let's record what you did today.'

Jack can recite numbers to thirty.
He can count eight cars correctly (date).

Targets:

He is going to learn to recite to one hundred.
He wants to be able to count thirty cars.

Spotlight 1

Can only begin counting at one; inaccurately counts objects when rearranged; has no consistent recognition of small numbers of objects; lacks systematic approaches

Opportunity for: communicating mathematical ideas

How many now?

Time 10–15 minutes

Resources

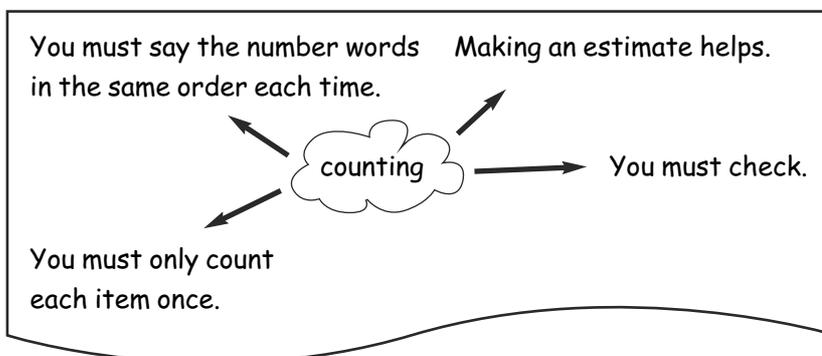
- Cubes, small toys, apples, buns

Key vocabulary

- how many?
- count
- same number
- longer line
- different pattern

Teaching activity

‘We are going to do some more counting today and we are going to write down what you already know about counting and what you need to learn.’



Gradually add to this concept map as you work on the Spotlights.

Put out some items in a circle, perhaps five to nine items, but twenty-five to one hundred if appropriate.

? How many objects are there?

Observe carefully as the child counts.

If the child doesn't stop where they started but goes on round the circle, you will need to talk through working out where we start so that we don't count any of the objects twice.

? Where did you start? How will we remember you started with that one?

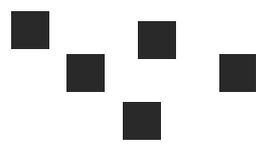
? Make an estimate of the number of objects. Why do you think that might help?

Put out about five objects in a row.



? How many objects?

Move the objects to a different arrangement.



? How many now?

Repeat this a few times. (Note that, to the child, the question ‘how many now?’ might seem to imply that there is a different number!)

If the child seems unsure that there are five each time and that all you have done is move them, you will need to repeat the activity a few times over a few weeks to develop the child's understanding.

? I moved them, but did I take any away or add any?

? There were five when we started, so do we still have just five? Count them.

? Now you move them – then count them. What happened?

You are looking to be able to write on the concept map, 'However you move or rearrange the objects, there will still be the same number of objects.'

Put out five objects in a line close together and ask the child to count them. (You might want to use about nine cubes for this with more experienced children.)



Move the same objects into a longer line.



? Are there still the same number of objects or are there more?

Repeat this.



If the child says there are more, be aware that the child might mean that there is a longer line – which there is! You need to clarify the language – the difference between there being a longer line, and there being the same number of objects.

? How many in the long line? Show me that many fingers.

? What will happen if I put them back in the shorter line? Are there still five? So are there still the same number – but just in a longer line?

? Now you move them to make a different pattern. Are there still five?

You might need to repeat this activity many times using different numbers, and equipment, for example with beads on a string, small world people, children standing in a line making the gap between them larger and larger – but still nine children.

? What shall we add to our concept map that is important to remember for next time?

Spotlight 2

Can only begin counting at one; inaccurately counts objects when rearranged; has no consistent recognition of small numbers of objects; lacks systematic approaches

Opportunity for: exploring mathematical ideas

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Hoops, balls and bricks

Time 10–15 minutes

Resources

- Hoops, balls
- Small and large bricks
- Number cards (Resource sheets 1 and 2)

Key vocabulary

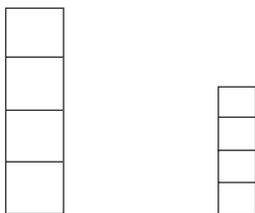
- | | |
|------------|---------|
| how many? | larger |
| count on | smaller |
| count back | taller |
| same | shorter |
| different | tally |

Teaching activity

‘We are going to look at our concept map today to remind us what you have learned so far about counting, then we are going to do some work with these hoops, balls and bricks.’

? **Can you remember from the last session what happened when we moved things from a short line to a long line?** (*Help the child to talk about the number of things staying the same even when they were in a longer line.*)

Build two towers (with different-sized bricks), both with the same number of bricks.



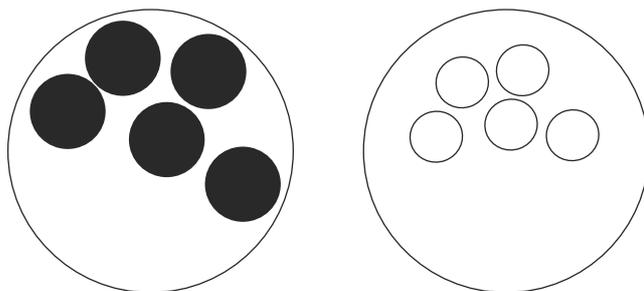
- ?** Which tower is taller?
- ?** How many bricks in the short tower? How many in the taller tower?
- ?** So are there more bricks in the taller tower?

If the child is unsure about this, you might find number cards helpful – both towers need a 4 card. Emphasise that there are the same number of bricks, but some of them are larger so those make a taller tower.

There are several important aspects related to counting and measuring that the child will need to understand, for example, taking long paces. Count how many of your paces from one side of the room to the other. Then ask the child to take ordinary sized steps across the room.

? **Why do you think it was only six of my paces but ten of yours?** (*You need to get to the idea that the smaller the pace, the more you need to measure the same distance.*)

Lay out some hoops and small and large balls like this:



? What do you notice about the number of balls in each hoop?

Repeat with other items if needed, for example 1p and 2p coins in purses, bulbs in flower pots and so on, until the child is clear that the number can be the same even when it might look as if there is more of something.

If the child needs more support you might find that making a tally for each object can focus the child onto the number and away from the visual impression of size.

? What did you learn new today?



? Who has got the smallest hands? How many little hand spans across the table? How many of my big hand spans across the table? What is happening?

? If we covered the carpet with lots of these small rectangles of paper, would we need more of them or fewer of them than if we covered the carpet with these large pieces of paper?

Spotlight 3

Can only begin counting at one; inaccurately counts objects when rearranged; has no consistent recognition of small numbers of objects; lacks systematic approaches

Opportunity for: reasoning about numbers



Harder counting

Time 10–15 minutes

Resources

- 2-D and 3-D shapes
- Items out of reach

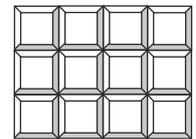
Key vocabulary

- how many?
- count on
- count back
- middle
- check

Teaching activity

‘You are getting good at counting, so today we are going to do some harder counting so that you will get even better at counting carefully.’

Ask the child to count some items that are out of reach, for example window panes or something you have put up for counting.

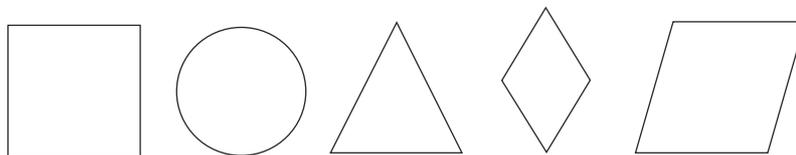


Note: We do want children to learn to count objects reliably with a ‘move and count’ strategy – that is usually our strategy when counting something like a large number of coins, but children need to be able to count reliably when they cannot touch the objects. But for some, this skill can take some time to develop. Often children lose count because they lack confidence and practice.

? How do you know if you are right? (*Encourage checking every time.*)

If the child cannot count out-of-reach items, just repeat the activity a few times a week in a spare moment, putting up display pictures such as a bunch of balloons, or laying 2-D shapes in a pattern on a desk – but not to be touched during counting.

Lay a line of different 2-D or 3-D shapes on the desk, explaining that this time they can ‘touch and count’. (With some children you might want to start with just three items, starting the count with the middle item. With others, you could set a challenge of about seventeen items ‘starting with the red triangle’.)



? Can you count these shapes, starting with the triangle?

? What could you do to be sure you are right?

If the child can do the activity with five items, you might want to try with seven or nine items.

If the child cannot yet do this task, continue giving wide experiences of other counting tasks and come back to this task in a month or two.

Add to your recording of what the child can do.

Dan can count to 1000 in ones. (date)
He can start counting from the middle. (date)
He can start at 110 and count back in tens. (date)

'You are getting so good at counting!'



Showing a large collection of coins (or sweets in a jar), ask the children to discuss for two minutes with a partner what they would do to be sure they counted the coins correctly. (*You are looking for some understanding of the problem-solving skills for such a complex task.*)

Let some children do the task (perhaps a less confident child and a confident one working together) and explain how they did it and how they know they got the number right.

A harder task is to decide how a large bag of mixed coins might be counted accurately.

Spotlight 4

Can only begin counting at one; inaccurately counts objects when rearranged; has no consistent recognition of small numbers of objects; lacks systematic approaches

Opportunity for: *developing mental images*



Take a quick look

Time 10 minutes

Resources

- Cubes or counters
- Cloth or large piece of paper
- Dominoes, dice

Key vocabulary

- | | |
|-----------|----------|
| how many? | random |
| count | guess |
| pattern | estimate |

Teaching activity

‘We are going to do some clever counting today. I’m going to put some cubes on the table without you seeing, then I’m going to pull the cloth away just for a moment and you have to look quickly before I put the cloth back. Then you can shout out the number.’

Put out familiar dice patterns of cubes or counters, one at a time, being very encouraging when the child recognises how many just with a quick glance.



If the child struggles with this, use very small numbers, just two or three at first, until they develop some confidence.

If the child seems unfamiliar with dice/domino patterns, let them play games so that they develop familiarity with these patterns. Using ‘flash cards’ of these patterns with the whole class might ensure that all children will develop mental imagery that can support their recognition without needing to count for small numbers.

You can continue putting out cubes, asking the child to make an estimate once the numbers get a bit larger and when the cubes are put out randomly. Note for that child at what point it is harder to know how many cubes there are just with a quick glance. (For example, six in a dice pattern is easier than eight laid out randomly.)

This is a good context in which to reinforce understanding of estimating.

? Show me on these dominoes which number patterns you know now.

? What did you learn today?



Fill a jar with sweets, marbles or cherries and let children guess how many. Then, as a whole class, count them, taking the opportunity to reflect on any variety in strategies used.

Spotlight 5: a learning check

Can only begin counting at one; inaccurately counts objects when rearranged; has no consistent recognition of small numbers of objects; lacks systematic approaches

Opportunity for: explaining and discussing

Chink chink

Time 5–15 minutes

Resources

- Two jars or tins
- Small hard items such as 1p coins or draught pieces
- Large book or screen
- At least two children

Check: does the child use key vocabulary?

- | | |
|------------|-------|
| how many? | more |
| count on | fewer |
| count back | same |
| tally | check |

Teaching activity

'This game, **Chink chink**, will help you with your counting.'

Choose numbers to suit your children. Perhaps numbers up to about five or seven would be best for some children. Use above ten, if appropriate.

Set up the two jars behind a large book propped up so that you can see the jars but the children can't.

Children can cooperate to play the game, or you can play so that the child who calls out the correct number first is the winner. (Playing in the hall or playground so they can shout tends to make the game more fun.)

How to play

1. Drop some 1p coins one by one into each jar so that each jar contains the same number. (Less experienced children might need to see them and count them.)
2. With the jars out of sight, add a few items to the jars (showing your hands and showing or saying how many you are adding), for example one penny to one jar (making a satisfying 'chink' as it goes in) and three to the other jar.
3. You point to one of the jars and ask 'how many?' and the children must call out the total. (Some children might need to see the pennies to check the total they shout.)

Variations

- ↓ ● Just add coins to one jar at a time and ask how many. (It can help to encourage the child to tally one mark for each sound.)
- If you add coins to both jars you can use various questions to develop mathematical vocabulary.

? Are there more pennies in this jar or in this jar? How do you know?

- ↑ ● Extend the game by using larger numbers, and you might want to take some out of a jar as well as putting some in before asking how many.
- ↑ ● Dropping the coins irregularly makes it more difficult to count accurately.

Learning outcomes

By the end of this set of activities children should be able to:

- tackle related learning tasks with increased motivation and confidence;

- use and understand connected mathematical vocabulary;
- count confidently forwards and back in ones to thirty, one hundred, one thousand and beyond;
- count and tally using one number word for each 'step';
- count on from any number and not need to go back to one each time;
- know the last number in the count is the number of objects in the set;
- count irregular sounds;
- know the number remains the same however the objects are grouped;
- know not to count any objects twice;
- count objects without touching them;
- count objects starting in the middle;
- count a large number of objects reliably using a range of suitable problem-solving strategies to ensure they count correctly;
- estimate reasonably accurately and know how to check a count.