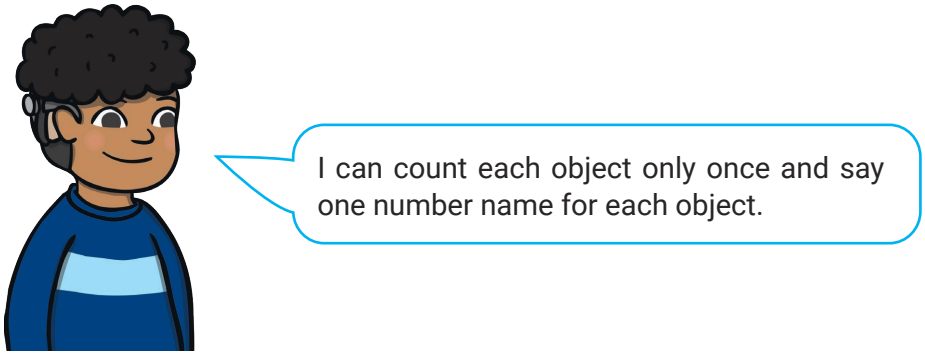
The Five Principles of Counting Guidance

Counting is a fundamental skill for children to learn and master from an early age. Although this skill may seem fairly straightforward, there are many counting concepts that young children need to master and many misconceptions that can develop along the way.

When a young child begins counting, they count by rote, meaning they will be able to say the number names in order simply because they have remembered the words and the order they go in. From this starting point, children then need to begin to master five counting principles.

These five principles were put forward in Gelman and Gallistel's 1978 research (Gelman. R & Gallistel. C (1978) The Children's Understanding of Number. Cambridge, M.A Harvard University Press) and can support teachers in planning and modelling successful counting experiences.

The One-One Principle



The **one-one principle** refers to the need to count each object in a group once and only once. Young children can be helped to do this by touching each object as they say the number name, this can help children to keep track of the objects that have been counted and ensure that they only count each object once.

Skills needed for the one-one principle:

- Recite number names in order. The number of objects a child can count will be limited to the list of numbers they can say.
- Coordinate both their counting and their motor movements, so that the object is counted and touched at the same time.
- Keep track of objects that have been counted and those that need to be counted.

Possible activities:

- Provide plenty of opportunities for counting physical objects that can be touched and moved.
- Model counting with the one-one principle in everyday activities, such as counting a number of toys or counting milk cartons for snack.
- Encourage children to line up objects in a row, or regular arrangement, and touch each one as they say the number name.

The Stable Order Principle



When I count, I say the numbers in order. This order always stays the same.

The **stable order principle** refers to number names being said in a certain order, knowing that the order of the numbers will not change and will always be said in the same order. As number names have no recognisable pattern until we reach the number fourteen, this can be a challenge for children. Young children will begin by rote counting numbers without meaning, often by memorising numbers from songs and rhymes. The order of these numbers will then begin to develop meaning as children begin to recognise why numbers names are said in this order.

Skills needed for the stable order principle:

- Know the names of numbers in order.
- Understand that these numbers are always said in the same order.

Possible activities:

- Model counting at any appropriate opportunity, such as lining the children up, counting the number of snacks or counting the number of bricks used in a tower.
- Read number stories and sing number songs and rhymes.
- Count around the circle.
- Count along a number line.

The Cardinal Principle



When I count the objects in a group, the last number I say tells me the total for the group.

The **cardinal principle** refers to children recognising that the final number said, when counting a group, is special because this number tells them how many objects are in the group. For children to understand the cardinal principle, they must first have a good understanding of both the one-one principle and the stable order principle. When children have understood the cardinal principle, they would be able to count a group of objects and then answer the question, 'How many?' by recalling the last number and not having to re-count the objects.

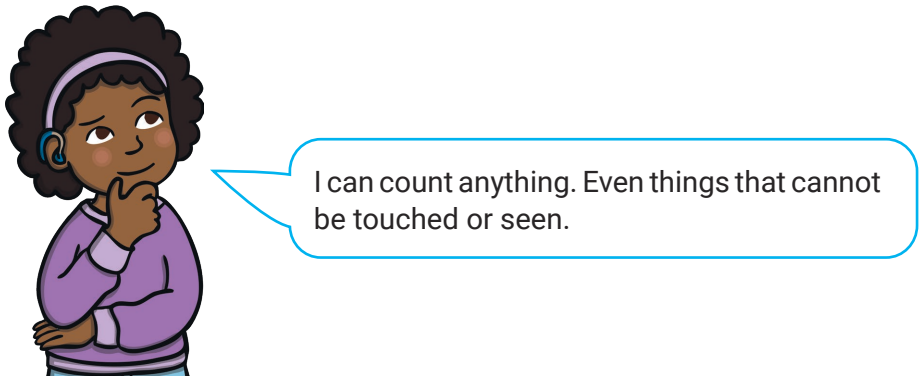
Skills needed for the cardinal principle:

- Have a good understanding of both the one-one principle and the stable order principle.
- Be able to recall the final number that they counted.
- Understand that this final number tells us 'how many'.

Possible activities:

- Provide plenty of opportunities for counting groups of objects, following this with the question, 'How many?'
- Model counting using the cardinal principle, when counting a group of objects. Count in full sentences and emphasise that the final number said, tells you the total, such as "One, two, three, four. There are four cars."

The Abstraction Principle



The **abstraction principle** refers to the understanding that anything can be counted, even things that cannot be touched, moved or seen. When children are first learning to count, it is easier for them to count physical objects that can be seen, touched and moved. As children begin to develop their counting skills, they can begin to understand that they can also count non-physical things, such as sounds, movements and even imaginary objects.

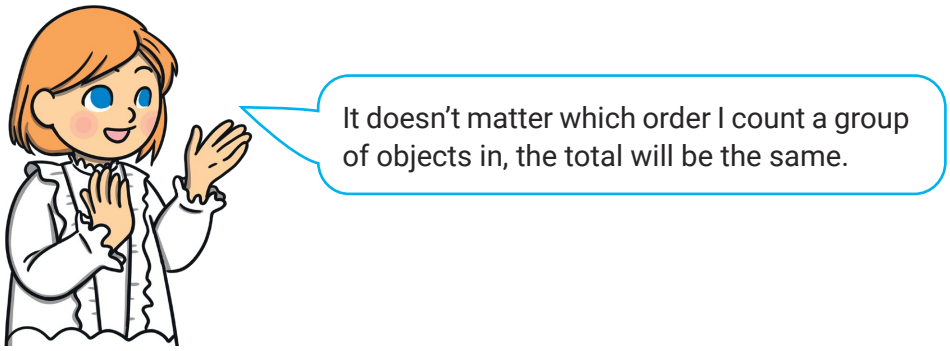
Skills needed for the abstraction principle:

- Have a good understanding of the previous three principles.
- Able to keep track of their counting without being able to see or touch each item being counted.
- Understands that objects in a set can be different sizes, colours and shapes.

Possible activities:

- Count groups of objects that contain different coloured, sized and shaped objects.
- Roll a ball to each other and count each time the ball is rolled.
- Drop coins into a jar and count each sound as they are dropped.
- Count objects that cannot be touched, such as pictures on the wall.

The Order-Irrelevance Principle



The **order-irrelevance principle** refers to the understanding that the order in which objects are counted is not important. Objects within a group can be counted from left to right, right to left or from somewhere else. As long as every object is counted, and only counted once, then the total will always be the same. This may seem like a simple principle but children who do not understand this principle may need to re-count a group if the objects are moved.

Skills needed for the order-irrelevance principle:

- Have a good understanding of the one-one, stable order and cardinal principles.
- Understand that the number they previously assigned each object is temporary and a different number can be assigned the next time the group is counted.

Possible activities:

- Encourage counting objects in different ways, left to right, right to left and from other starting points.
- Count a group of objects and then move the objects and count again.

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