

Reception

Cardinality and Composition

Number ELG

Children at the expected level of development will:

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.



Reception

Cardinality and Composition

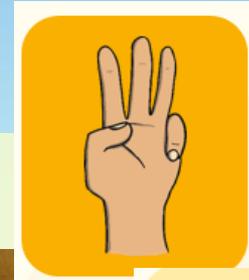
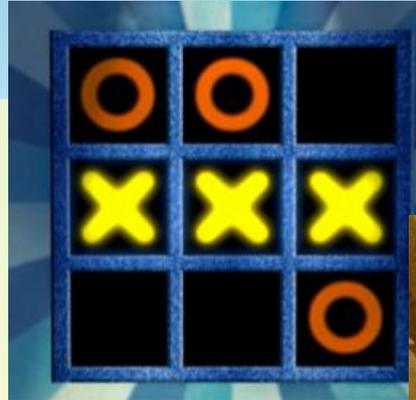
Numerical Patterns ELG

Children at the expected level of development will:

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.



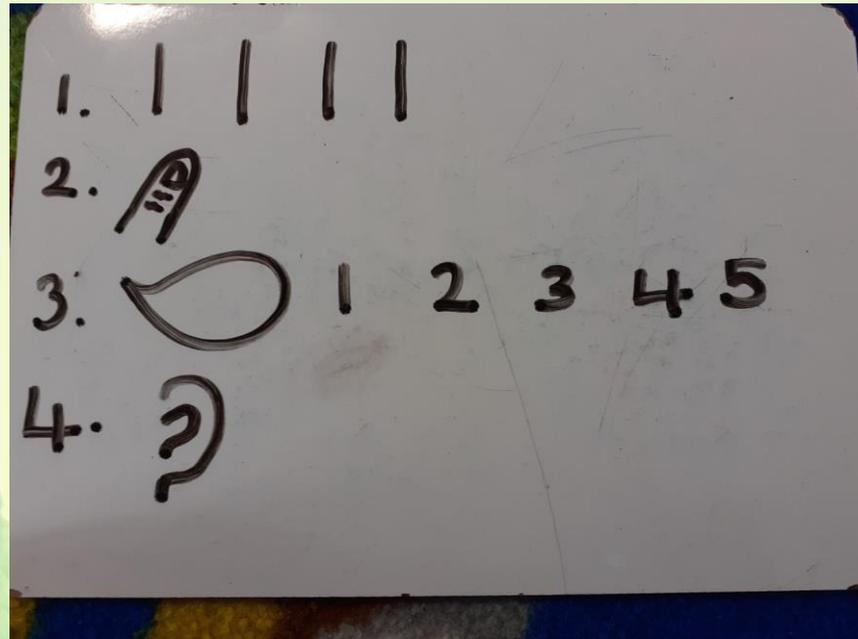
What is Cardinality?



The cardinal value of a number refers to the quantity of things it represents, e.g. the numerosity, 'how many ness', or 'threeness' of three.



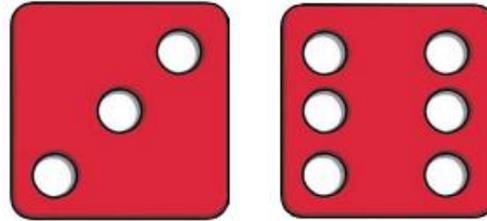
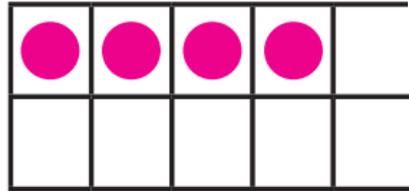
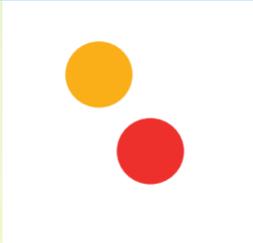
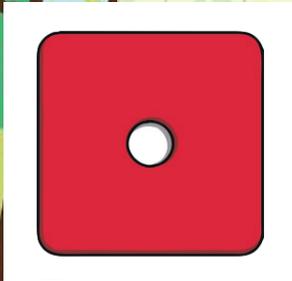
What makes good counting?



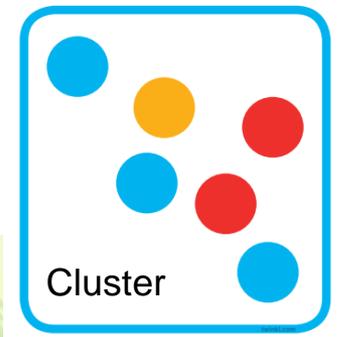
Once children understand the cardinality of numbers they can identify how many is a group. Counting is one way to know how many there are in the group. Listening to the last number tells you how many there are.



Learning to Subitise



Array

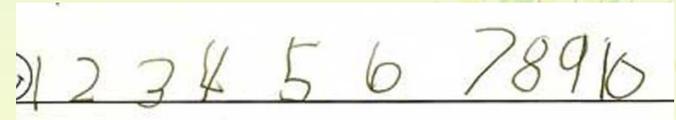


Cluster

Subitising is recognising how many things are in a group without having to count them one by one. Children need opportunities to see regular arrangements of small quantities, e.g. a dice face, structured manipulatives, etc., and be encouraged to say the quantity represented. Children also need opportunities to recognise small amounts (up to five) when they are not in the 'regular' arrangement, e.g. small handfuls of objects.



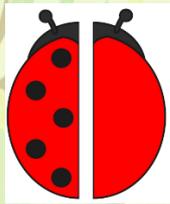
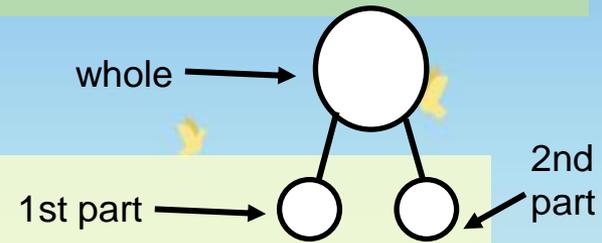
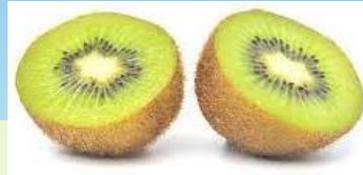
Numerical Meanings



Children need to have the opportunity to match a number symbol/numeral with a number of things. Look for opportunities to have a range of number symbols available, e.g. wooden numerals, calculators, handwritten - include different examples of a number.



Composition - Part, Part, Whole



5



4



3



2



1



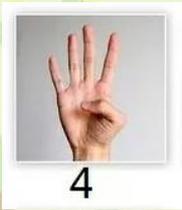
5



Children need opportunities to see small numbers within a larger collection. 'Number talks' allow children to discuss what they see. For instance, with giant ladybirds: 'There are 5 spots altogether. I can see 4 and 1, I can see 3 and 2, and I can see 1 and 1 and 1 and 1 and 1.'



Composition- Part, Part, Whole



4

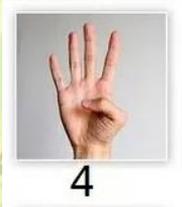


1

$$4 + 1 = 5$$



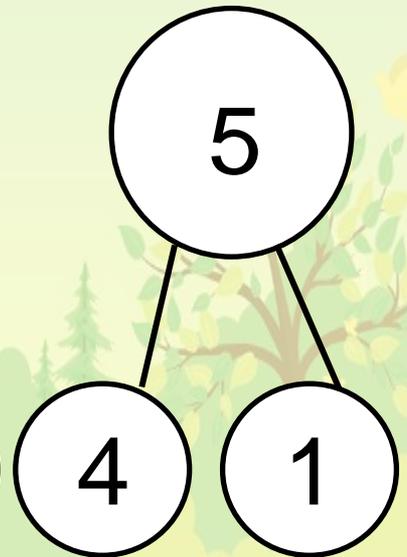
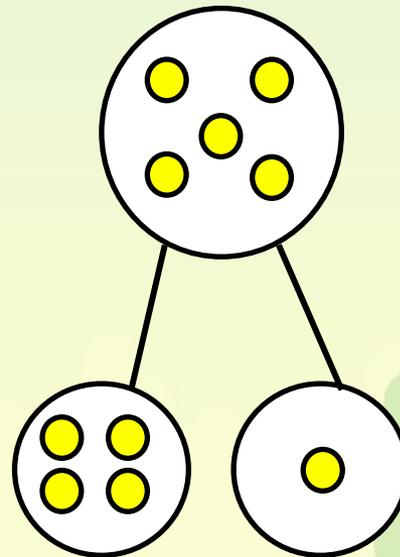
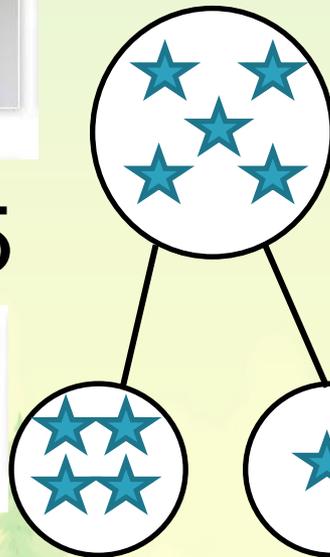
1



4

$$1 + 4 = 5$$

Commutative Law

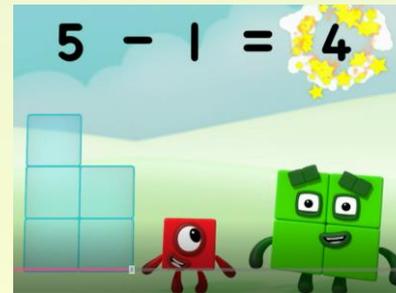
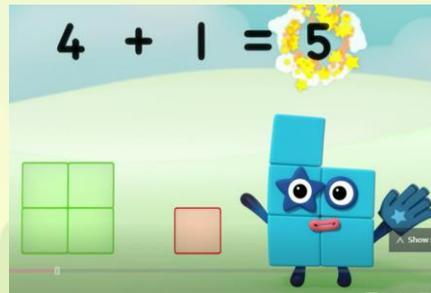
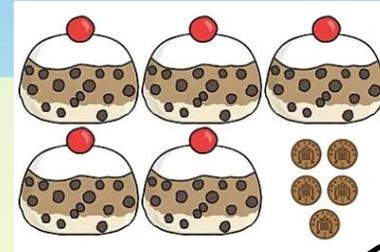
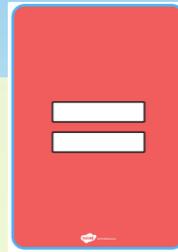
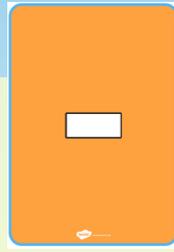
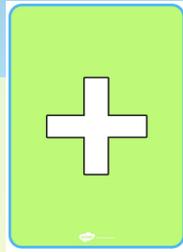


$$4 + 1 = 5$$

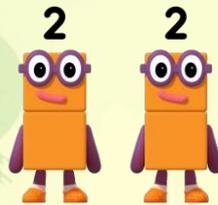
We can use our fingers and we use part, part, whole mats in school to show this.



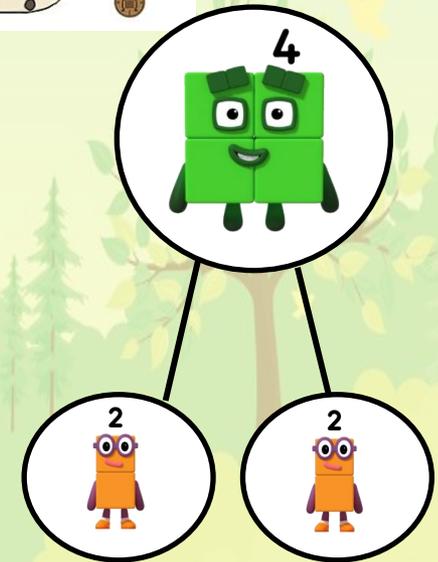
Inverse Operations



Double 2 is 4



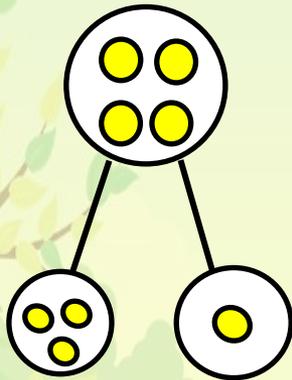
4 is 2 and 2



Children need opportunities to partition a number of things into two groups, and to recognise that those groups can be recombined to make the same total. Encourage children to say the whole number that the 'parts' make altogether.

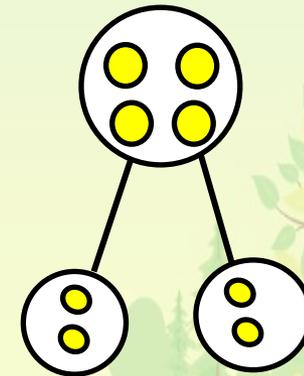


A whole number can be partitioned into different pairs!



$$3 + 1 = 4$$

$$1 + 3 = 4$$



$$2 + 2 = 4$$



Children need opportunities to explore a range of ways to partition a whole number. The emphasis here is on identifying all of the different ways to make a total. Children can do this in two ways – physically separating a group, or constructing a group from two kinds of things.



Number Bonds

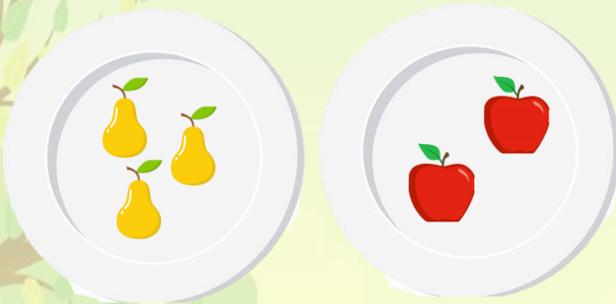


Once children are confident with their number bonds they can use these to help them solve different types of problems. An example of this is working out how many are missing in a known number of things. For example: There are 5 toys under the cloth. If 3 toys leave how many are now under the cloth? The child should respond that there are still three toys under the cloth.

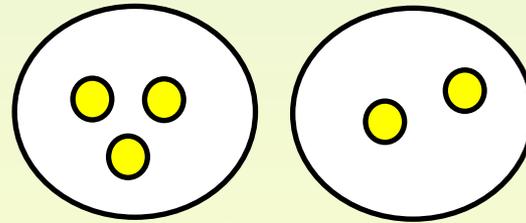


Number Facts

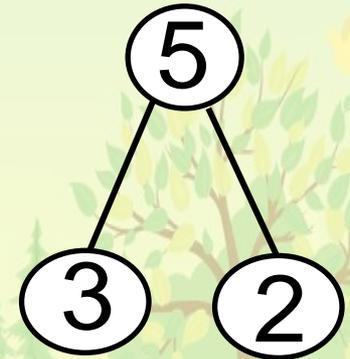
concrete



pictorial



abstract



$$3 + 2 = 5$$

Whilst teaching, we move from the concrete to the pictorial and then more abstract concepts until pupils know number facts off by heart. We focus on them explaining their thinking!

