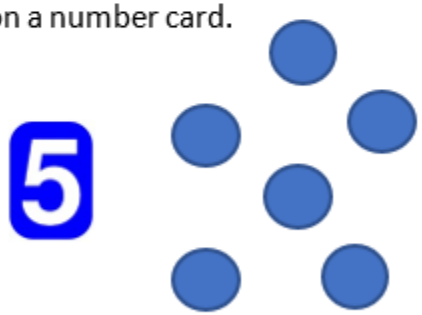
1 to 1 correspondence:

One to one **correspondence** is the ability to match an object to the corresponding number and recognise that numbers are symbols to represent a quantity.

(Ctrl)

Concrete: Children count various physical objects by partitioning a group and finally recombining. 	Pictorial: Children count the dots on the face of a pictorial dice. 	Abstract: Children draw dots to match the number of holes that can be seen on a named Numicon shape. 
Children write a number in each part of a muffin tin and then put the appropriate number of buttons in each section. 	Children match number cards to pictures of the equal numbers of buttons. 	Children cut out buttons equal to the number shown on a number card. 

Cardinal numbers are used to count a set of objects and tell us about quantity. We use cardinal numbers when we're counting how many buttons are in a jar or how many children are on the playground: one, two, three, four, five, etc. Cardinal numbers are whole numbers and refer to a set of objects, therefore do not include decimals or negative numbers. They are used to answer questions such as 'How many pencils are there?' and relate to concrete or rea- life items and objects.

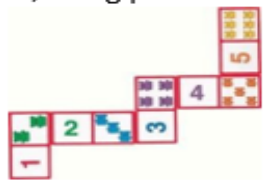
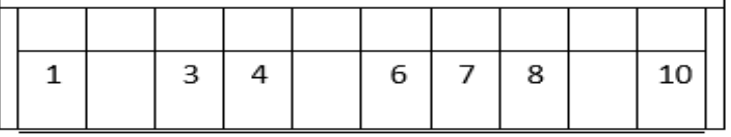
Concrete:	Pictorial:	Abstract:
Children use a range of structured and unstructured apparatus, plus natural resources, to create different number values. 	Children recognise different number values that  are presented in pictorial forms.	Children are asked a range of questions that allow them to show an application of understanding related to cardinality, e.g. Can you find a collection of…[objects]…to represent six? Can you show me six fingers?

Concrete – Pictorial – Abstract (CPA) approach – exemplification materials for key skills in the Early Years

Ordinality:

Ordinal numbers tell us an item's position in a list, for example: or example first, second, third, fourth, etc.
We use ordinal numbers to order and position items and numbers, perhaps to say which position someone came in a race or to recite numbers or place numbers on a number line / time line.

Dates are another example of ordinal numbers as they tell us when something happened. Ordinal numbers are used to label items (for example the pages in a book).

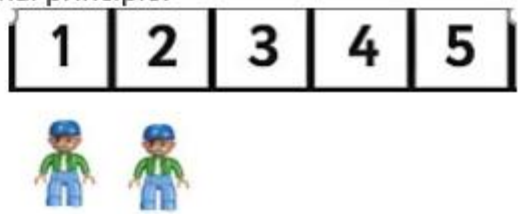
Concrete:	Pictorial:	Abstract:
Children place a range of physical dominoes in a set order. 	Children match representations in a set order, for example, using pictorial bear / number dominoes. 	Children fill in spaces on a partially filled number track and create representations to show different totals (extension) – helping pupils to make the transition from understanding ordinality to cardinality. 

Ordinal numbers:

Concrete:	Pictorial:	Abstract:
Children physically line up ducks in a row and verbally label them, e.g. 'first /second / third.' 	Children order slides with pictures of ducks, for example, on the Interactive Whiteboard. 	Children apply their understanding of ordinal numbers, e.g. by using written 1st, 2nd and 3rd labels and other related verbal language when ordering objects. 

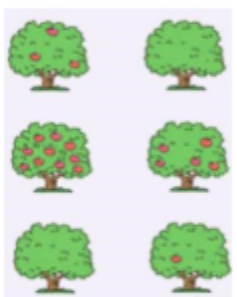
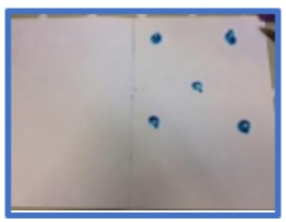
Conservation of number:

It is the recognition by a young child that quantity does not change with physical rearrangement.

Concrete:	Pictorial:	Abstract:
Children explore whether the number of cubes stay the same or change when they are moved within a shape.  Pupils also count dolls and then put them in different rooms before re-counting to check the total. Hopefully they decide that if nobody has left and nobody has arrived, then it must be the same total even if some of the dolls have moved rooms. 	Pupils work with visual reminders of their concrete experiences – to check how their understanding around conservation of number has changed.  	Children are provided with opportunities to further explore and prove their thinking. They may be asked to put a total of dolls in the toy house and then move them around. In order to prove it is still the same total, they can take the dolls and put them onto a number track, whilst also applying their understanding about the cardinal principle. 

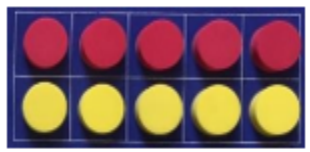
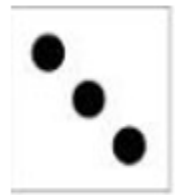
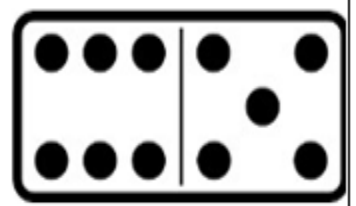
Concept of zero:

The concept of zero is usually harder than counting and other early number concepts. Thus, we usually introduce it only after a child has understood the value of numbers to some extent. The difference between 0 and other numbers is that all of the other numbers have a tangible visual form, whereas 0 does not.

Concrete:	Pictorial:	Abstract:
Children use a shuffle box with up to ten objects in. After the box has been shaken, pupils write out the corresponding number sentence, e.g. 2 = 1 + 1, depending on where the objects have landed. Query what happens if there is nothing on one side. Introduce to children the concept of zero, e.g. 2 = 2 + 0. 	Children use pictorial representations to see that you can have an amount that's called 'zero.' Pupils are required to count the number of apples of a tree, and circle the trees which have no apples. 	Children can be encouraged to represent written number sentences by creating visual shuffle boxes using finger paint, e.g. 5 = 0 +5  Pupils should be able to grasp the concept of zero to use within number sentences, e.g. 4 = 4 + 0 … and verbalise … "I know that four is the same as four add zero."

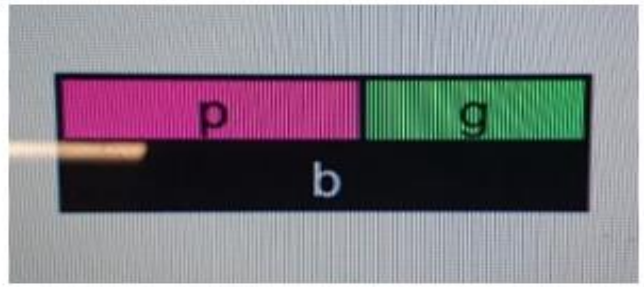
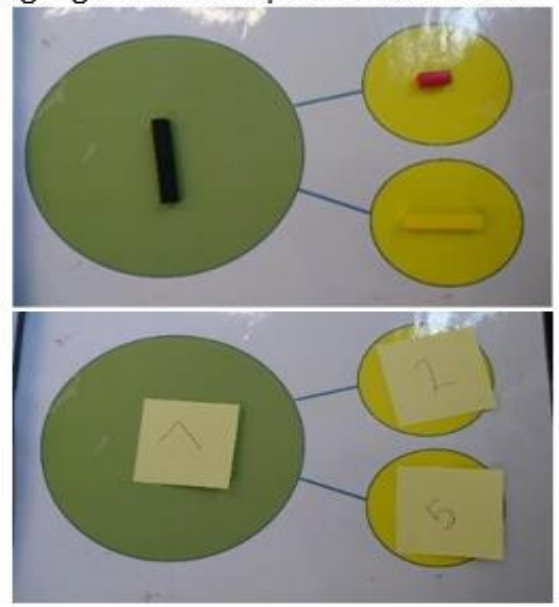
Subitising:

The ability to instantaneously recognise the number of objects in a small group without the need to count them.

Concrete:	Pictorial:	Abstract:
Children replicate a range of physical representations, which they then verbally interpret without a need to count objects.  	Children use picture prompts to practise their recognition of number representations.  	Children use finger paint to show various 1-6 representations. 

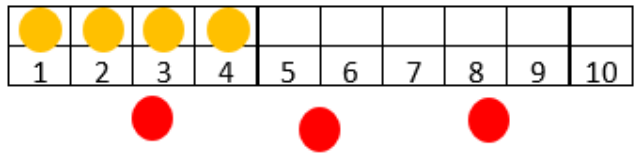
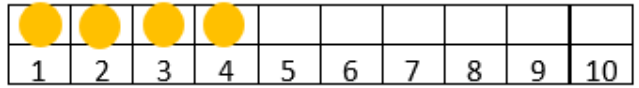
Equality:

In **mathematics**, **equality** is a relationship between two quantities or, more generally twomathematical expressions, asserting that the quantities have the same value, or that the expressions represent the same **mathematical** object.

Concrete:	Pictorial:	Abstract:
Children use physical equipment when learning about equality (also inequality), and also use related language, e.g. 'the same as,' 'more than'  and less than.'	Children use pictorial representations to show equality or values that are 'the same as,' whilst also verbalising their reasoning, e.g. 'pink and green are the same as black…' 	Children use the cherry model to record either written numerals or pictorial representations that highlight the concept of 'the same as…' 

Counting on:

Being able to **count** starting at any number is important for two main reasons. One reason is that it shows how well a student understands numerical order. For example, when students use rote **counting** or **counting** in order, teachers can't really determine how well they understand number order.

Concrete:	Pictorial:	Abstract:
Children use physical objects to learn the skill. For example, they count on from the larger value by using their fingers whilst pointing at each 'extra' dot on the second side of a domino.  In addition, pupils use counters on number tracks to rehearse the process of counting on.  	Children use a die to generate numbers and count on from pictorial representations of counters already positioned on a number track.  	Children apply their understanding of this skill by playing games such as 'snakes and ladders.'