Coates Primary School

EYFS Pre-calculation Policy Progression Grids

This has been developed from the NCETM progression documents

Cardinality and counting		
Coverage	Opportunities	Representations
Counting: Saying words in a sequence Children need to know number names, initially to five, then ten, and extending to larger numbers, including crossing boundaries 19/20 and 29/30. Counting back is a useful skill, but young children will find this harder because of the demand it places on the working memory.	• Counting backwards, for example *number rhymes* • Starting from different numbers, not always from 1 or 0, or 10 or 20.	• Number lines • Number tracks • Number cards • Counting sticks
Counting: Tagging each object with a number word. Children need lots of opportunities to count things in irregular arrangements. For example, how many play people are in the sandpit? How many cars have we got in the garage? These opportunities can also include counting things that cannot be seen, touched or moved.	• Counting things of different sizes – this helps children to focus on the numerosity of the count • Counting things that can't be seen, such as sounds, actions, words • Counting things that cannot be moved, such as pictures on a screen, birds at the bird table, faces on a shape.	• Five frames • Ten frames • Loose parts • Cubes, counters *(double sided)* • Numicon
Counting: Knowing the last number gives you the total so far Children need the opportunity to count out or 'give' a number of things from a larger group, not just to count the number that are there. This is to support them in focusing on the 'stopping number' which gives the cardinal value.	• Playing dice games to collect a number of things • Playing track games and counting along the track.	• Board games • Dice- different shapes and representations • Outdoor- hopscotch • Large ten frames • Numicon

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Subitising: recognising numbers without counting them all 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.	• • Using dot cards, dominoes and dice as part of a game, including irregularly arranged dots (e.g. stuck on) • Playing hidden object games where objects are revealed for a few seconds; for example, small toys hidden under bowl – shuffle them, lift the bowl briefly and ask how many there were • All at once fingers' – show me four fingers.	• Dice- different representations • Dot patterns • Dominoes • Five frames • Irregular patterns drawn to count • Fingers- show me 5 etc, in different combinations • Numicon • Loose parts
Numeral meanings Children need to have the opportunity to match a number symbol 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, e.g.4).	• Using numeral dice in games; matching numerals with varied groups of things • Using 'tidy-up labels' on containers and checking that nothing is missing • Reading number books • Putting the right number of snacks on a tray for the number of children shown on a card.	• Numbers in the environment • Numerals on dice • Number books in reading corner/ maths area • Matching objects to numerals • Playing cards • Numicon • Different number cards with representations of numerals eg. 4 or 4
Conversation: Knowing that the number does not change when things are rearranged Children need the opportunity to recognise amounts that have been rearranged and to generalise that, if nothing has been added or taken away, then the amount is the same.	• Correcting a puppet who may say that there are more or fewer objects now, as they have been moved around, e.g. spread out or pushed together	• Five frames • Ten frames • Dot patterns • Hoops

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	• Contexts such as sharing things out (grouping them in different ways) and then the puppet complaining that it is not fair as they have less • Encouraging the children to make different patterns with a given number of things.	

Comparison		
Coverage	Opportunities	Representations
More than/less than Children need progressive experiences where they can compare collections and begin to talk about which group has more things. Initially, the groups need to be very obviously different, with one group having a widely different number of things. Collections should also offer challenges, such as including more small things and fewer large things, to draw attention to the numerosity of the comparison, i.e. the number of things, not the size of them.	Collections for children to sort and compare, which include objects which are identical, and which include objects of different kinds or sizes Collections with a large number of things, and collections with a small number of things.	• Loose parts • Counters, cubes • Bears/objects • Objects in different sizes • Dot patterns • Dominoes
Identifying groups with the same number of things Children need the opportunity to see that groups could consist of equal numbers of things. Children can check that groups are equal, by matching objects on a one-to-one basis.	• Ensuring that when providing groups to compare, there are some that have an equal amount • Asking children to convert two unequal groups into two that have the same	• Loose parts • Counters/cubes • Double sided counters • Ten frames • Numicon

	number, e.g. 'There are 6 apples in one bag and 2 in another bag; can we make the bags equal for the two hungry horses?'	
Comparing numbers and reasoning Children need opportunities to apply their understanding by comparing actual numbers and explaining which is more. For example, a child is shown two boxes and told one has 5 sweets in and the other has 3 sweets in. Which box would they pick to keep and why? Look for the reasoning in the response they give, i.e. 'I would pick the 5 box because 5 is more than 3 and I want more.' If shown two numerals, children can say which is larger by counting or matching one-to-one. Children can compare numbers that are far apart, near to and next to each other. For example, 8 is a lot bigger than 2 but 3 is only a little bit bigger than 2.	• Explaining unfair sharing - 'This one has more because it has 5 and that one only has 3' • Comparing numbers that are far apart, near to, and next to each other.	• Five frame • Ten frame • Part Whole model • Hoops • Loose parts • Compare bears • Counters • Coins • Number cards
Knowing the 'one more than/one less than' relationship between counting numbers Children need opportunities to see and begin to generalise the 'one more than/one less than' relationship between sequential numbers. They can apply this understanding by recognising when the quantity does not match the number, i.e. if a pack is labelled as 5 but contains only 4, the children can identify that this is not right.	• Labelling groups with the correct numeral. Do children spot the error if a group is mislabelled? For example, 'The label on the pot says 4 and we have 5 – what do we need to do?' A child may say, 'We need to take one out because we have one too many.' • Ensuring children focus on the numerosity of the group by having items	• Numeral cards • Loose parts • Playing cards • Pots and bowls to group in

Support children in recognising that if they add one, they will get the next number, or if one is taken away, they will have the previous number. For example: 'There are 4 frogs on the log, 1 frog jumps off. How many will be left? How do you know?'	in the collection of different kinds and sizes. • Making predictions about what the outcome will be in stories, rhymes and songs if one is added to, or if one is taken away.	

Composition		
Coverage	**Opportunities**	**Representations**
Part whole model- identifying smaller numbers within a number 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.' Encourage exploration of all the ways that 'five' can be and look. Children are encouraged to look closely at numbers to see what else they can see. This reinforces the concept of conservation.	Encouraging making arrangements with (e.g.) ten; ensuring the children talk about the different arrangements they can see within the whole.	• Part whole mode- different representations • Tens frames • Cubes • Counters • Loose parts • Numicon
Inverse operations Children need opportunities to partition a number of things into two groups, and to recognise that those groups can be	Exploring songs; for example, 'Five Currant Buns' – show that the whole is still five, but some are in the shop and some have been	• Physical games- skittles, bowls, hoops, throwing • Hoops • Part whole model • Dot patterns

recombined to make the same total. Encourage children to say the whole number that the 'parts' make altogether. 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.	taken away; check throughout that there are still five currant buns Playing skittles and looking at how many are standing. How many have fallen over? How many are there altogether?	• Loose parts • Numicon
A number can be partitioned into different pairs of numbers Children need opportunities to explore a range of ways to partition a whole number. The emphasis here is on identifying the pairs of numbers that make a total. Children can do this in two ways – physically separating a group, or constructing a group from two kinds of things.	Numicon towers: layering up Numicon pieces of the same total Putting things into two containers in different ways Making a number with two different kinds of things. For example, make a fruit skewer with five pieces of fruit, using bowls of bananas/strawberries to choose from; then ask the children to describe how they have made theirs. They should compare it with a partner's: 'What is the same about your skewers? What is different?' Bunny Ears: using your fingers like bunny ears. 'With two hands, show me five fingers. Can you do it in a different way?' Or, 'Show five fingers altogether with a friend.' Spill the Beans: using double-sided counters or beans, where one side is coloured, throw the	• Numicon • Peg boards • Pots and tubs • Five Frame • Fingers- different representation • Double sided counters • Bean bags

	collection and note how many of each type can be seen and how many altogether. Using six bean bags with different fabric on each side, throw the collection and note how many of each type can be seen.	
A number can be partitioned into more than two numbers Children need opportunities to explore the different ways that numbers can be partitioned, i.e. into more than two groups. Situations to promote this include increasing the number of pots to put a given amount into, e.g. planting ten seeds into three or more pots.	Role play, e.g. in a toy shop, ten toys need arranging onto the three shelves. How will you organise them? Having more than two places to sort things into in any given context, e.g. arranging characters in small-world play in different locations Games such as 'Posh Ducks' (Griffiths, R., Back, J. & Gifford, S. (2016) *Making Numbers: Using manipulatives to teach arithmetic*, OUP): using a set number of ducks, for example ten in three different locations (nest, water, decking), roll the dice and make one group match the amount shown without adding or taking any away.	• Part whole model- more than 2 parts • Hoops and bean bags • Loose parts • Cubes • Coins
Number bonds: knowing which pairs make a given number Children need opportunities to say how many are hidden in a known number of things. For example: 'Five toys go into a tent, then two come out. How many are left in the tent?' The child should respond that there are still three toys in the tent.	Playing hiding games with a number of objects in a box, under a cloth, in a tent, in a cave, etc. Utilising classroom routines such as tidy-up time to identify how many are still missing from a pot with a number label.	• Part whole models • Numicon • Number cards • Pots and tubs • Cube towers

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