

Foundation Stage Calculation Policy

In Reception, the main focus is developing mathematical minds that are ready for calculating, by developing their Number Sense. Number Sense is the conceptual understanding of what a number is and it is essential for children's fluency in maths. Here are some of the ways we develop this understanding. Children are encouraged to use this understanding to solve problems.

Noticing and reasoning

As soon as children start school, maths is introduced in fun, meaningful ways. Children are encouraged to notice, talk and reason about objects and quantities long before they begin to represent numbers in written form. We go on noticing walks to find things that interest the children and begin conversations that are meaningful to them. The skill to notice patterns, shapes, similarities and differences is fundamental to children's ability to subitise (notice an amount without counting), recognise number patterns such as odd and even, and sort and classify shapes and numbers. Children are encouraged to reason about the things they notice, for example, "Do you think 3 trains can be on the tracks at the same time? Could an apple go through the hole?" They are also encouraged to explain their answers.



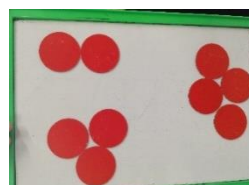
Rhymes and songs

Children also sing songs and rhymes. Vocabulary such as more, less, what is left, taken away, and gone are reinforced and the use of fingers helps children attach a physical motion to increasing and decreasing amounts.



Subitising

In the Foundation Stage, the children are encouraged to use their innate ability to notice amounts without counting to see a quantity. They talk about each amount they see. For example, three dots might be seen as two dots and one dot, or 1 dot, 1 dot, 1 dot. Once children are confident seeing smaller amounts they are encouraged to recognise that when they see a 2 and a 2, they are seeing 4. Children progress throughout Reception noticing amounts within numbers and talking about numbers up to 10. They very quickly begin using this skill to answer questions such as, "If I had 3 cakes and took one away how many cakes are left?" Their conceptual knowledge of the number three helps them answer the question without having to count back or physically take something away.



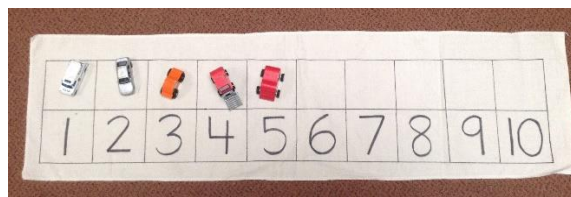
Using Fingers

Children are encouraged to use their fingers to represent numbers and explore the many ways they can 'split up' or partition a number by separating an amount on one hand to some on one hand and some on another, showing the total.



Counting

In the Foundation Stage, children are taught to count reliably with numbers from one to ten and beyond. The children begin by counting actions accurately using one to one correspondence (saying one number for one action), understanding that the number allocated to the final action represents how many actions there are (cardinality). This skill, alongside subitising, helps them to order numbers correctly and develop their understanding that numerals represent the amount. They also use number tracks to reinforce the link between the numeral and the amount.



Regrouping and partitioning

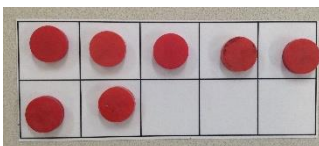
As mentioned briefly above, partitioning a number into its parts is an essential skill that we expect all children to become fluent in. Using 5's frames, 10s frames, counters, and part-whole diagrams/resources, children explore ways of taking apart amounts, putting them back together and taking them apart in a different way. They are encouraged to talk about what they are doing and when they are confident in their explanations they begin to create pictorial representations.



"I need 2 more to make 5."



"4 is split into a 2, a 1 and a 1."



"I can see a 5 on the top and 2 on the bottom."



"There is 1 finished group of ten and 3 of the next ten. There are 13 pinecones."

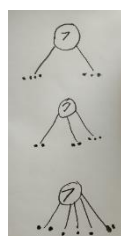
Using manipulatives (objects they can move)

Children learn to add and subtract by noticing that the amounts can be combined to make other numbers. For example, when they have developed a conceptual understanding of the number six, they will be able to answer problems such as "if there are four chicks in one nest and two in another, how many are there altogether?" They know 6 is made of 2 and 4 so they know the answer is 6. To scaffold their learning and strengthen their conceptual understanding, children are encouraged to use five and/or tens frames, counters and other loose parts or Numicon. Children are given lots of opportunities to work practically and solve problems that interest them or that support their play such as scoring their games.



Pictorial Representations

When children are confident using manipulatives to represent numbers, they begin to draw their own pictures. Below is an example of partitioning using a cherry diagram.

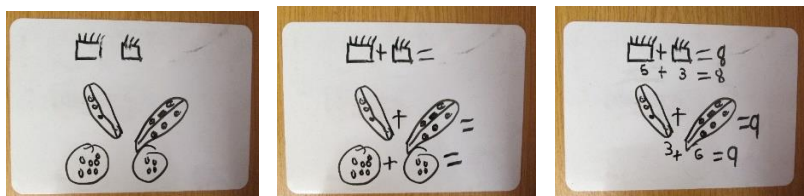


"7 can be 4 and 3."

"7 can be 2 and 2 and 3."

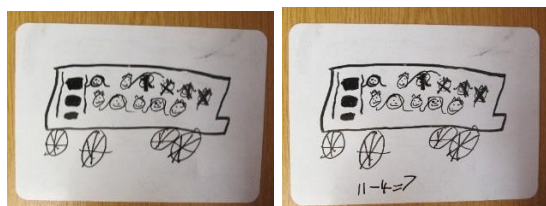
"7 can be 2 , 1, 1, 1, and 2."

Following on from practical calculations, and only when they have a solid conceptual understanding of the numbers they are using, children are taught to use pictorial representations to support adding and subtracting such as candles on a cake, ladybirds on a leaf, eggs in a basket or people on a bus.



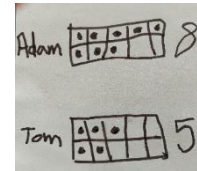
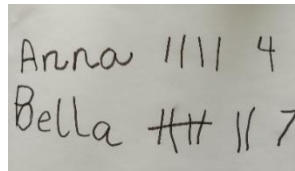
There were 5 candles on one cake and 3 on the other. How many altogether?

Children are encouraged to use their knowledge of each number to solve these sorts of problems. For example. "I see a 5 and a 3 and I know that is 8 so there are 8 candles." The use of tens frames helps them recognise the amounts and support their conceptual knowledge of calculations. They are introduced to the symbols and written number sentences when they are confident reasoning about numbers verbally. They are then encouraged to say "5 add/plus 3 equals 8."



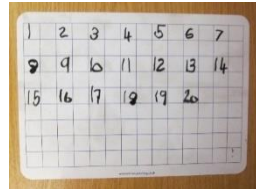
There were 11 people on a bus and 4 got off. How many people were left on the bus?

Children also begin to record their scores for the games they play and the information they collect by using tallies and tens frames.



Numbers

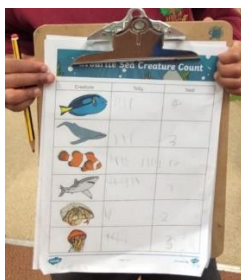
After children develop their number sense of a number they learn its written representation and learn to read and order numbers. Children are also taught how to write numbers using the correct number formation.



Children learn what is one more and one less than numbers up to 10. Resources such as number tracks, tiles, tens frames, cubes or a counting frame (abacus/rekenrek) can be used.

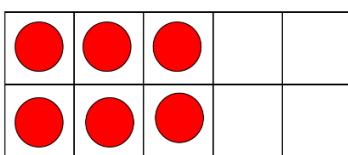
Interpreting data

Children regularly vote for things such as stories, songs, games etc and these votes are represented in pictograms, tallies and graphs. They use their number sense, the resources and the pictorial representations to find the difference between two groups and notice which one is the favourite. They calculate the difference by finding what is the same and thus noticing what is different. How many more children like bananas than oranges?



Other skills to support calculation

In Reception, children also develop an understanding of numbers that can be partitioned into two equal groups (halved) by recognising their pattern on a tens frame and notice when there are groups of equal amounts. A child might say "I see 2 groups of 3. That's 6". Images that show a strong conceptual representation of doubles and halves are used regularly and children are encouraged to solve problems that involve sharing fairly. Children are also encouraged to solve problems such as, "We have 2 tables and there are 4 children on each table. How many apples do we need to get?"



Vocabulary

add, total, altogether, plus, and, together, calculation, subtract, minus, take away, difference between, equal to, the same as, equals, more than, fewer than, most, least