

EYFS Calculation Policy

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organizing counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built.

In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.
(EYFS Framework)

Progression in the teaching of counting in Foundation Stage

<p>Pre-counting</p> <p>The key focus in pre-counting is an understanding of the concepts more, less and the same and an appreciation of how these are related. Children at this stage develop these concepts by comparison and no counting is involved.</p>	<p>Ordering</p> <p>Count by reciting the number names in order forwards and backwards from any starting point.</p>	<p>One to one correspondence</p> <p>One number word has to be matched to each and every object. Lack of coordination is a source of potential error – it helps if children move the objects as they count, use large rhythmic movements, or clap as they count.</p>	<p>Cardinality (Knowing the final number counted is the total number of objects)</p> <p>Count out a number of objects from a larger collection. Know the number they stop counting at will give the total number of objects.</p>
<p>Pre-counting ideas</p> <p>Provide children with opportunities to sort groups of objects explicitly using the language of <i>more</i> and <i>less</i>.</p> <div data-bbox="309 660 678 751" data-label="Image"> </div> <p>Which group of apples has the most? Which group of apples has the least?</p>	<p>Ordering ideas</p> <p>Provide children with opportunities to count orally on a daily basis. Rote count so that children are able to understand number order and can hear the rhythm and pattern. Use a drum or clap to keep the beat.</p> <div data-bbox="813 703 1059 858" data-label="Image"> </div>	<p>One to one correspondence ideas</p> <p>Play counting games together moving along a track, play games involving amounts such as knocking down skittles.</p> <p>Use traditional counting songs throughout the day ensuring children have the visual/kinaesthetic resources eg. 5 little ducks, 10 green bottles</p> <div data-bbox="1473 683 1615 788" data-label="Image"> </div>	<p>Cardinal counting ideas</p> <div data-bbox="1720 544 2022 676" data-label="Image"> </div> <p>How many bananas are in my fruit bowl? Allow children to physically handle the fruit.</p> <p>Provide children with objects to point to and move as they count and say the numbers.</p>

Progression in the teaching of counting in Foundation Stage

Subitising (recognise small numbers without counting them)

Children need to recognise small amounts without counting them eg. dot patterns on dice, dots on tens frames, dominoes and playing cards as well as small groups of randomly arranged shapes stuck on cards.

Abstraction

You can count anything – visible objects, hidden objects, imaginary objects, sounds etc. Children find it harder to count things they cannot move (because the objects are fixed), touch (they are at a distance), see, that move around. Children also find it difficult to count a mix of different objects, or similar objects of very different sizes.

Conservation of number –

Ultimately children need to realise that when objects are rearranged the number of them stays the same.

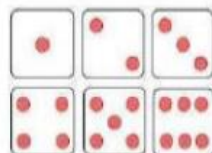
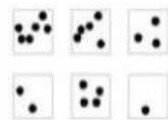
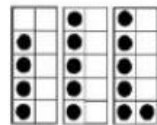
End of year counting expectations

- count reliably to 20
- count reliably up to 10 everyday objects
- estimate a number of objects then check by counting
- use ordinal numbers in context eg first, second, third

- order numbers 1-20
- say 1 more/ 1 less than a given number to 20

Subitising ideas

Provide children with opportunities to count by recognising amounts.



Abstraction ideas



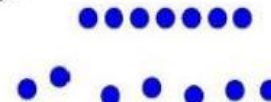
How many pigs are in this picture?

Provide children with a variety of objects to count.



Conservation of Number

- The amount is "seven" and doesn't change.



Addition in the Foundation Stage

Songs, nursery rhymes and books which can be a useful way to begin using the vocabulary involved in addition:

Baa baa black sheep, Handa's Hen, Handa's surprise, The Very Hungry Caterpillar by Eric Carle, The Elephant and the Bad Baby by Elfrida Vipont, Room on the Broom by Julia Donaldson, Ten Little Fingers and ten little Toes by Mem Fox, There was an Old Lady who swallowed a fly.

Key vocabulary: add, more, plus, makes, total, altogether, score, double, one more, two more, ten more how many more to make...?

How many more is ... than ...?

Key skills for addition in Foundation Stage:

- Select the correct numeral to represent 1 to 5, then 1 to 10 objects.
- Count an irregular arrangement of up to ten objects.
- Estimate how many objects they can see and check by counting them.
- Use the language of 'more' and 'fewer' to compare two sets of objects.
- Find the total number of items in two groups by counting all of them.
- Say the number that is one more than a given number.
- Find one more from a group of up to five objects, then ten objects.
- In practical activities and discussion, begin to use the vocabulary involved in addition
- Record, using marks that they can interpret and explain.
 - Begin to identify own mathematical problems based on own interests and fascinations

1. Have an understanding of what “more” means and be able to say what is one more than a given number.

2. Children begin to combine groups of objects or pictures and use concrete apparatus.



3. Solve simple problems using fingers and introduce Numicon shapes when appropriate.



4. Children make a record in pictures, words, Numicon shapes or symbols of addition activities already carried out.



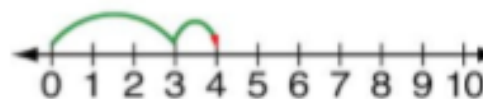
5. Children are encouraged to read number sentences aloud in different ways:

“four add two equals six”

“two add four equals six”

6. Construct number sentences verbally, or by using cards to go with practical activities.

7. Number lines can be used alongside practical apparatus to solve addition calculations and word problems. Children “jump” along the number line to “count on”.



Subtraction in the Foundation Stage

Songs, nursery rhymes and books which a useful way to begin using the vocabulary involved in subtraction:

Five Little Men in a Flying Saucer, Ten Green Bottles, Five Currant Buns take, five little monkeys swinging on a tree, ten in the bed, Five little speckled frogs

Key Vocabulary:

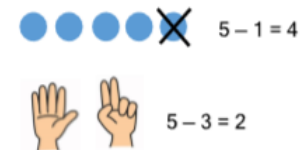
take away, leave, subtract, minus, equals, number sentence, count back, one less, two less, ten less how many are left left over? how many have gone? how many fewer is ... than ...?

Key skills for subtraction in Foundation Stage:

- Select the correct numeral to represent 1 to 5, then 1 to 10 objects.
- Count an irregular arrangement of up to ten objects.
- Estimate how many objects they can see and check by counting them.
- Use the language of ‘more’ and ‘fewer’ to compare two sets of objects.
- Say the number that is one less than a given number.
- Find one less from a group of up to five objects, then ten objects.

- In practical activities and discussion, begin to use the vocabulary involved in subtraction
- Record, using marks that they can interpret and explain.
- Begin to identify own mathematical problems based on own interests and fascinations

1. Have an understanding of what “less” means and be able to say what is one less than a given number.
2. Children begin to use objects, pictures and concrete apparatus to relate subtraction to taking away and counting how many objects are left.
3. Solve simple problems using fingers and introduce Numicon where appropriate.



4. Children make a record in pictures, words, Numicon shapes or symbols of subtraction activities already carried out.



5. Construct number sentences verbally or using cards to go with practical activities.
6. Number lines can be used alongside practical apparatus to solve subtraction calculations and word problems “jump” back to “count down”

the number line.



$$5 - 4 = 1$$

Multiplication in Foundation Stage

Songs, nursery rhymes and books which are a useful way of introducing multiplication:

The animals went in two by two, How many legs by Kes Gray and Jim Field, One is a snail, ten is a crab by April Pulley Sayre

Key Vocabulary: lots of, groups of, times, repeated addition, double, combine, twos, fives, tens

Key skills for multiplication in Foundation Stage:

- Select the correct numeral to represent 1 to 5, then 1 to 10 objects.
- Count an irregular arrangement of up to ten objects.
- Estimate how many objects they can see and check by counting them.
- Find the total number of items in two groups by counting all of them.
- Record, using marks that they can interpret and explain.
- Begin to identify own mathematical problems based on own interests and fascinations.

The link between addition and multiplication should be introduced through doubling and reinforced through repeated addition of the same number.

1. Children begin with mostly pictorial representations.



How many groups of 2 are there? 3 groups of 2 = 6

2. Real life contexts and use of practical equipment to count in repeated groups of the same size.



How many wheels are there altogether?



How much money do I have?

4. Count in twos, fives and tens, both aloud and with objects, such as Numicon or other concrete apparatus.

"2, 4, 6, 8, 10, 12..."

"10, 20, 30, 40..."

5. Children are encouraged to read number sentences aloud in different ways

e.g. "Five groups of two makes ten"

"Three lots of two makes six"

6. Children are given multiplication problems set in a real life context and are encouraged to visualize the problem.

e.g. "How many fingers on two hands?" "How many sides on three triangles?" "How many legs on four ducks?"



Division in Foundation Stage

Songs, nursery rhymes and books which support division vocabulary:

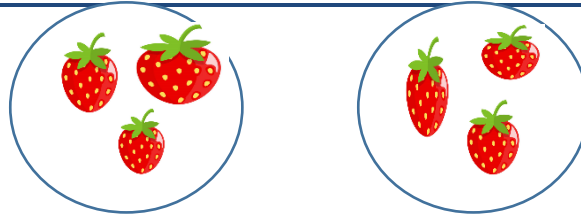
The Lion's share by Matthew McElliott

Key Vocabulary: halve, share, share equally, one each, two each, three each, group in pairs / threes / tens, equal groups of, in equal parts, left, left over

Key skills for division in Foundation Stage:

- Select the correct numeral to represent 1 to 5, then 1 to 10 objects.
- Count an irregular arrangement of up to ten objects.
- Estimate how many objects they can see and check by counting them.
- Record, using marks that they can interpret and explain.
- Begin to identify own mathematical problems based on own interests and fascinations.

1. Division should be introduced through halving or sharing an equal amount into 2 groups.



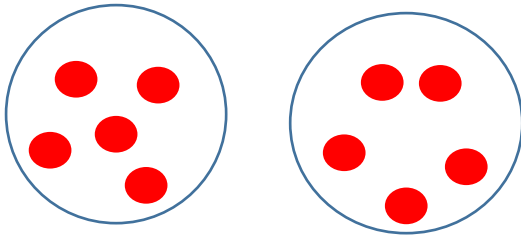
2. Children begin with mostly pictorial representations linked to real life contexts:

Grouping Model:



Fred has six socks. He grouped them into pairs.
How many pairs did he make?

Sharing Model:



I have 10 sweets. I want to share them with my friend.
How many will we have each?

Children need to see and hear representations of division as both grouping and sharing.

3. Children have a go at recording the calculation that has been carried out:

e.g. by drawing pictures in groups or by arranging concrete apparatus into groups.



12 shared equally by three is four.