

Progression in calculation- Addition

Year Group objectives

Foundation Stage

Counting and understanding number

Say and use number names in order in familiar contexts

Know that a number identifies how many objects in a set

Count reliably up to 10 everyday objects

Estimate how many objects they can see and check by counting

Use language such as more or less to compare two numbers

Use ordinal numbers in different contexts

Recognise numerals 1 to 9

Knowing and using number facts

Observe number relationships and patterns in the environment and use these to derive facts.

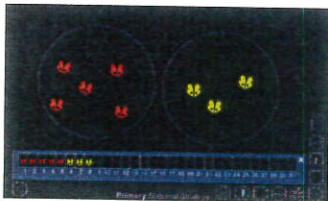
Find one more or less than a number from 1 to 10

Select two groups of objects to make a given total of objects

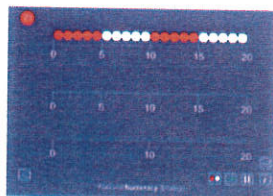
Calculating

Begin to relate addition to combining two groups of objects and subtraction to taking away.

In practical activities and discussion begin to use the vocabulary involved in adding and subtracting



Counting ITP



Ordering numbers ITP



Numicon images



Number facts ITP

Models and images

Initially an empty 'number' track will help children learn to jump along a track, but without numbers distracting them



Using a number track.

4 red counters add 2 black counters



Use a variety of contexts for number tracks, bead strings and number lines:

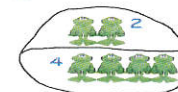


People number line

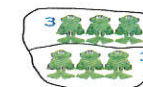
Ways in which children could record

Practical recording and explanations of making 6

$$2 + 4$$

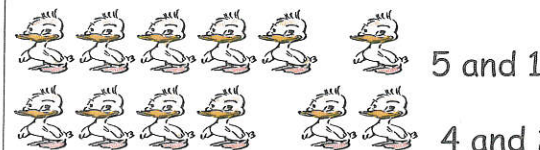


$$3 + 3$$



Counting all strategy:

- Count 2
- Count 4
- Count all 6



5 and 1



4 and 2

I have 2 red buttons and 4 yellow buttons so altogether I have 6 buttons

Counting on strategy:

- Count 2
- Count on 4 more to reach 6

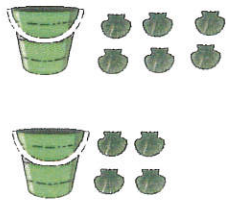
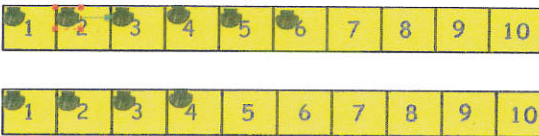




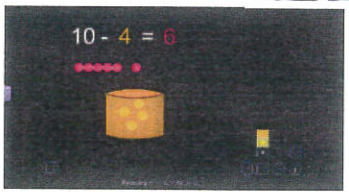
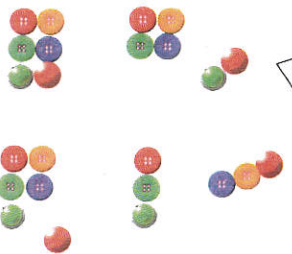



$$2 + 4 = 6$$






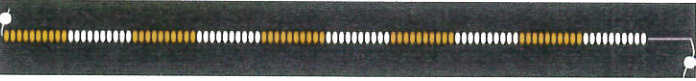


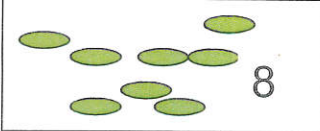
Begin to start counting on from the biggest number

Children need opportunities to mark make in a variety of contexts - e.g. recording their score in a game, writing prices on labels for the shop... Provide a range of different sized papers and card, white boards, post-its, self-adhesive labels and clipboards etc. to encourage mark making. Ask questions like, 'Can you put something on paper to show me your score...?'


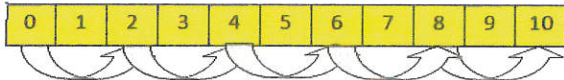

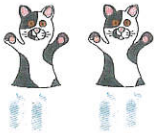

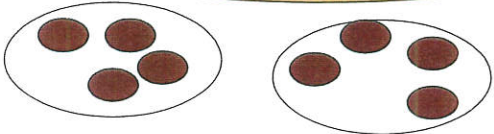
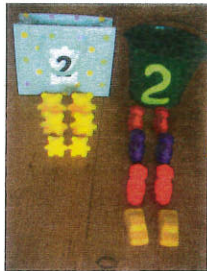
Progression in calculation- Subtraction

| Year Group objectives | Models and images | Ways in which children could record |
|--|--|--|
| <p>Foundation Stage</p> <p>Counting and understanding number</p> <p>Say and use number names in order in familiar contexts</p> <p>Know that a number identifies how many objects in a set</p> <p>Count reliably up to 10 everyday objects</p> <p>Estimate how many objects they can see and check by counting</p> <p>Use language such as more or less to compare two numbers</p> <p>Use ordinal numbers in different contexts</p> <p>Recognise numerals 1 to 9</p> <p>Knowing and using number facts</p> <p>Observe number relationships and patterns in the environment and use these to derive facts.</p> <p>Find one more or less than a number from 1 to 10</p> <p>Select two groups of objects to make a given total of objects</p> <p>Calculating</p> <p>Begin to relate addition to combining two groups of objects and subtraction to taking away.</p> <p>In practical activities and discussion begin to use the vocabulary involved in adding and subtracting</p> | <p>We have got 6 shells. We put 2 into the bucket and there are 4 left.</p>  <p>There are 6 shells. Take 2 away. There are 4 left.</p>  <p>Modelling on a 1-20 bead string</p>  <p>Teacher may model and write a number sentence</p> $5 - 2 = 3$  <p>Numicon images</p>  <p>Number Facts ITP</p>   <p>Also use: Counting ITP</p> | <p>How many ways can you split these 6 buttons into 2 groups?</p>  <p>The children will 'record' with objects. Adults should be using the vocabulary of subtraction to support thinking – 'So, if you've got 6 buttons and you take away/subtract 4 of them, there's 2 left!'</p> <p>Making comparisons</p> <p>I have got 6 cars, you have got 4 cars. I have got 2 more cars than you.</p>  <p>Practical examples from stories - pupils modelling action with practical resources</p>  <p>'Ten in the bed' story</p> <p>Children modelling the story, taking one away and discussing how many left? How many have rolled out now?</p> $10 - 6 = 4$ <p>Number washing lines to keep track of numbers for children to point and touch</p>  |

Progression in calculation- Multiplication

| Year Group objectives | Models and images | Ways in which children could record |
|---|--|---|
| <p>Foundation Stage</p> <p><i>Counting and understanding number</i></p> <p>Say and use number names in order in familiar contexts</p> <p>Know that a number identifies how many objects in a set</p> <p>Count reliably up to 10 everyday objects</p> <p>Estimate how many objects they can see and check by counting</p> <p>Count aloud in ones, twos, fives and tens</p> <p>Use language such as more or less to compare two numbers</p> <p>Use ordinal numbers in different contexts</p> <p>Recognise numerals 1 to 9</p> <p><i>Knowing and using number facts</i></p> <p>Observe number relationships and patterns in the environment and use these to derive facts.</p> <p>Select two groups of objects to make a given total of objects</p> <p><i>Calculating</i></p> <p>Count repeated groups of the same size</p> <p>Share objects into equal groups and count how many in each group</p> | <p>I have three pairs of socks in the bag. How many socks are there?</p>  <p>Check the answer by counting the socks in ones and then in twos.</p> <p>Hopping in 2s along a number track or number line when ready</p>  <p>I jump 2, jump 2, jump 2, jump 2, jump 2. I land on 10. Number tracks could be used to consolidate</p> <p>Counting fingers in 5s or 10's with flashing hands.</p>  <p>5, 10, 15, 20. 20 fingers altogether.</p> <p>Counting beads in 10s.</p>  <p>10, 20, 30, 40, 50, 60, 70, 80, 90, 100</p> <p>Use story contexts to support the understanding of counting in groups:</p>  | <p>'I collected 2 big bears, 2 medium bears and 2 baby bears. I have got 6 bears altogether.'</p>  <p>'My beanbag landed in the 2 bucket 4 times. I scored 8 points.'</p>  <p>Children need opportunities to mark make in a variety of contexts - e.g. recording their score in a game, writing prices on labels for the shop...</p> <p>Provide a range of different sized papers and card, white boards, post-its, self-adhesive labels and clipboards etc. to encourage mark making.</p> <p>Ask questions like, 'Can you put something on paper to show me your score...?'</p> |

Progression in calculation- Division

| Year Group objectives | Models and images to support teaching | Ways in which children could record |
|--|---|---|
| <p>Foundation Stage</p> <p><i>Counting and understanding number</i></p> <p>Say and use number names in order in familiar contexts</p> <p>Know that a number identifies how many objects in a set</p> <p>Count reliably up to 10 everyday objects</p> <p>Estimate how many objects they can see and check by counting</p> <p>Count aloud in ones, twos, fives and tens</p> <p>Use language such as <i>more or less</i> to compare two numbers</p> <p>Use ordinal numbers in different contexts</p> <p>Recognise numerals 1 to 9</p> <p><i>Knowing and using number facts</i></p> <p>Observe number relationships and patterns in the environment and use these to derive facts.</p> <p>Select two groups of objects to make a given total of objects</p> <p><i>Calculating</i></p> <p>Count repeated groups of the same size</p> <p>Share objects into equal groups and count how many in each group</p> | <p>Children need opportunities through play to understand and experience division in terms of</p> <ul style="list-style-type: none"> ❖ Sharing - 'one cake for me, one cake for you...' ❖ Grouping - 'let's put three cakes on each plate' ❖ Both terms are to be used from the beginning <p>I have 6 socks in the bag. How many pairs of socks are there?</p>  <p>Check the answer by counting the socks in ones and then in twos.</p> <p>Hopping in 2s along a number track</p>  <p>I landed on 10. How many jumps of 2?</p> <p>Counting fingers in 5s.</p>  <div data-bbox="1211 948 1415 1027" style="border: 1px solid black; padding: 5px; display: inline-block;"> 20 fingers, how many hands? </div> <p>We have got 4 cartons of milk, so 2 cats can have 2 cartons each.</p>  <p>Talk about 'half' in a context - 'You can have half...', 'We'll do that in half an hour'</p> | <p>Explaining what they are doing</p> <p>I am counting the animals in two's</p>  <p>Modelling from a story focus - 'The Doorbell Rang'</p> <p>I am sharing the 8 cookies between my friend and me</p>  <p>'I have got 6 bears, that's 2 big ones, 2 medium ones and 2 small ones.'</p>  <p>'I scored 8 points. I threw my beanbag into the bucket 4 times.'</p> <p><i>Children should be supported in mark making as part of independent play and games. They should have access to paper, card and clipboards and pens. Adults can discuss with children how they might show what they have found out.</i></p> |