

# Maths in the early years



# Developing maths in the early years.

- Playing, e.g. block play, number rhymes
- Games and activities indoors and out, e.g. cooking, scoring
- Making the most of routines, e.g. snack time, tidying
- During key worker time and directed time
- Fun, hands on and in a meaningful context



# Problem solving

- Young children need problems:
- Which they understand -in familiar contexts,
- Where the outcomes matter to them -even if imaginary,
- Where they have control of the process,
- Involving mathematics with which they are confident.

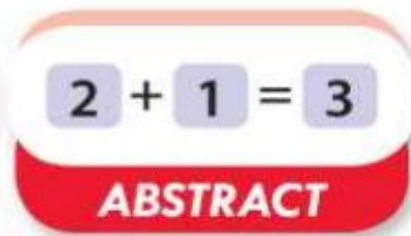
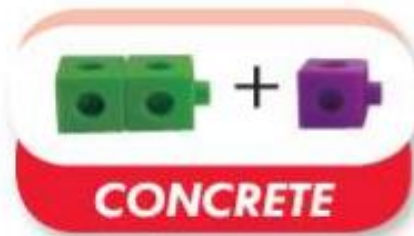
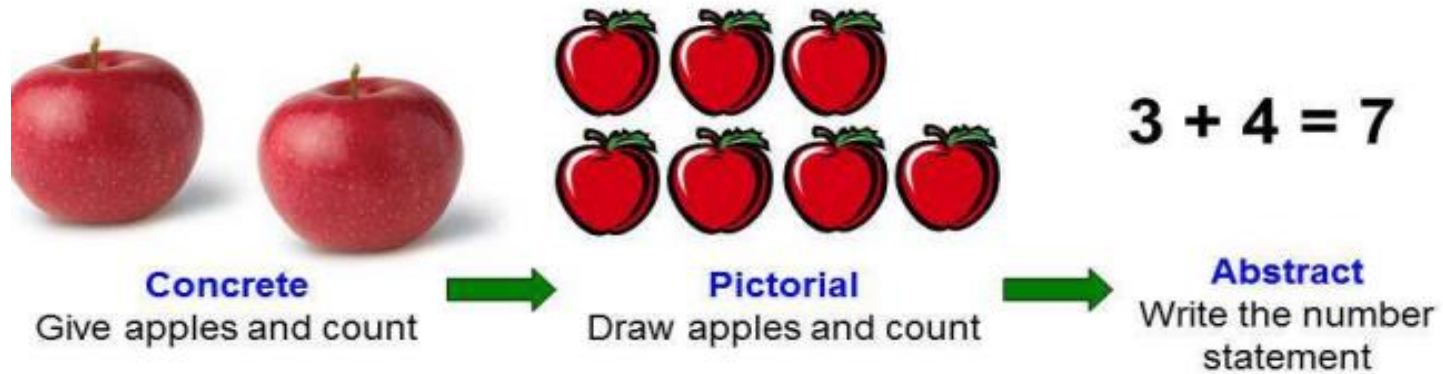
Do you need to add, subtract, divide or times to get the answer?



CPA Approach	
Stage	Characteristics
Concrete	Refers to the use of manipulatives, measuring tools or objects that the student handles.
Pictorial	Refers to the use of drawings, diagrams, charts or graphs that the student draws
Abstract	Refers to abstract representations such as numbers and letters that the student writes

Example:

Tom had 3 apples. His mother gave him 4 more apples. How many apples did he have altogether?



# Daily language developing into mathematical language.

Big, small	Biggest, smallest, longer, shorter, taller
Round one, flat one	Square, triangle, sphere, cube, corner, side, face
Heavy, light, full, empty	Heaviest, lightest, balance, the same
On, in, under	Behind, next to, in between
Less, more, a lot, a little, the same	Add, plus, altogether, makes, equals, takeaway, share, half, double
	Before, later, soon, weekend

Lots of counting (including zero 0), order, next

In games (5, 4, 3, 2, 1 blast-off, hop scotch)

Songs (1, 2, 3, 4, 5, once I caught a fish alive)

Time "its 8 o'clock, lets get ready for nursery"

Money "That will be 20p please"

# Numicon

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Shapes are designed to exploit three strengths:

- Learn by doing
- Learn by seeing
- Exploit their strong sense of pattern
  
- Have a play!

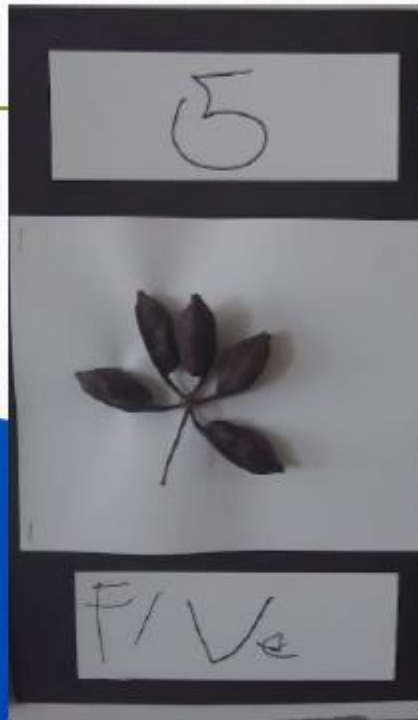


## 30-50 Months (Nursery) Number

- Recites numbers in order to 10
- Knows that numbers identify how many objects are in a set.
- Beginning to represent numbers using fingers, marks on paper or pictures.
- Sometimes matches numeral and quantity correctly.
- Compares two groups of objects, saying when they have the same number.
- Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same.
- Shows an interest in numerals in the environment.
- Realises not only objects, but anything can be counted, including steps, claps or jumps.



# 40-60 Months (Year R) Number



- Recognise some numerals of personal significance.
- Recognises numerals 1 to 5.
- Counts up to three or four objects by saying one number name for each item.
- Counts actions or objects which cannot be moved.
- Counts objects to 10 and beyond.
- Counts out up to six objects from a larger group.
- ~~Selects the correct numeral to represent 1 to 5, then 1 to 10 objects.~~
- Counts an irregular arrangement of up to ten objects.
- Estimates how many objects they can see and checks by counting them.
- Uses the language of 'more' and 'fewer' to compare two sets of objects.
- Finds the total number of items in two groups by counting all of them.
- Says the number that is one more than a given number.
- Finds one more or one less from a group of up to five objects, then ten objects.
- In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting.
- Records, using marks that they can interpret and explain.
- Begins to identify own mathematical problems based on own interests and fascinations.



# Progression in calculation

## FOUNDATION

### Calculation Strategies

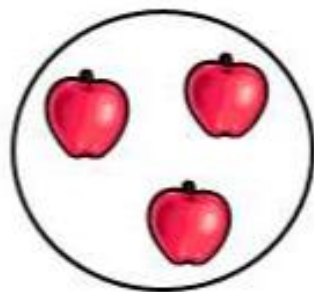
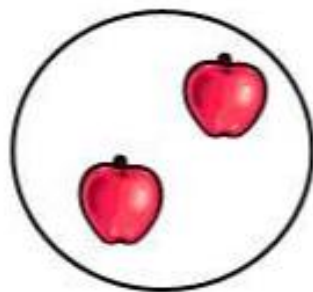
#### Counting on from a number to find the total

I have 5 pennies in my tin. I put in one, two, three pence more. How many pennies are in the tin now?

Use moveable objects when finding totals.  
Touch and align each object as it is counted.



Count first group, start count from first group's total when counting second group



3



4

# Number



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- **Early Learning Goal (Expectation for the end of Year R) -**

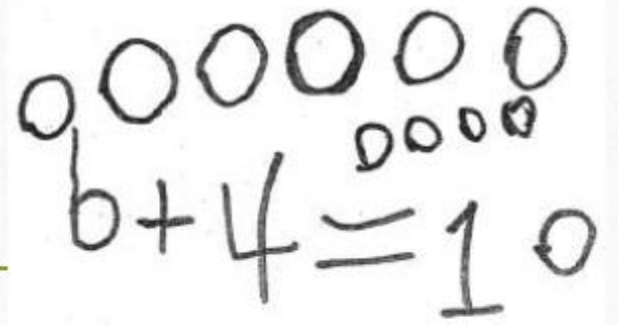
Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

- **Exceeding (for those already achieving the Early Learning Goal) -**

Children estimate a number of objects and check quantities by counting up to 20. They solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups.

Doubling - ice cream scoops in the café using 'double' scoops, Two teddies have come for lunch - now two more have arrived, how many do we have now? How could we record this?

## ELG- End of Year R Number



A handwritten mathematical equation  $6 + 4 = 10$ . The number 6 is represented by a vertical line with six small circles attached to its left side. The number 4 is represented by a vertical line with four small circles attached to its top. The number 10 is represented by a vertical line with ten small circles attached to its top. The equation is written in black ink on a white background.

Counting reliably - 1:1 correspondence to 20

O. went over to the farm display. counted out 6 sheep and then shared them between 2 barns. Repeated the activity for 8, 10 sheep, and then for 14 sheep.

**Observation: When playing in the shop Christopher was able to use his shopping list to add 2 amounts. He said "the beans are 5 pence and the bananas are 3 pence, altogether that is 8 pence."**

Halving - Sharing a group of objects equally between two children - food in a café, cutting fruit for snack in half



# 30-50 Months (Nursery) Shape, Space and Measure



- Shows an interest in shape and space by playing with shapes or making arrangements with objects.
- Shows awareness of similarities of shapes in the environment.
- Uses positional language.
- Shows interest in shape by sustained construction activity or by talking about shapes or arrangements.
- Shows interest in shapes in the environment.
- Uses shapes appropriately for tasks.
- Beginning to talk about the shapes of everyday objects, e.g. '*round*' and '*tall*'.

## 40-60 Months (Year R) Shape, Space and Measure



- Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2-D shapes, and mathematical terms to describe shapes.
- Selects a particular named shape.
- Can describe their relative position such as '*behind*' or '*next to*'.
- Orders two or three items by length or height.
- Orders two items by weight or capacity.
- Uses familiar objects and common shapes to create and recreate patterns and build models.
- Uses everyday language related to time.
- Beginning to use everyday language related to money.
- Orders and sequences familiar events.
- Measures short periods of time in simple ways.

# Shape, Space and Measure-

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- **Early Learning Goal (Expectation for the end of Year R) -**

Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.

- **Exceeding (for those already achieving the Early Learning Goal) -**

Children estimate, measure, weigh and compare and order objects and talk about properties, position and time.

# ELG- End of Year R Shape, Space and Measure



While my neighbours were on holiday, I looked after their 2 rabbits, Stanley and Gladys. I fed them dry food on a morning and vegetables on an evening.



After collecting twigs, children use plasticine to make shapes. They discuss the properties of shapes with the practitioner. "Look, I have made a triangle with three twigs. It's got three corners."

"The keyboard is 23 centimetres."

When discussing dinosaurs James said "the one with the longest neck is the tallest."



Emma and Leo are playing in the rockpool. They talk about how heavy the rocks are. Emma adds more to her net. "Now it's extremely heavy" she says, then adds another, "it's even heavier now!"



# How can you support at home?

- Have fun, playing with mathematical ideas
- Observe your child. Look, listen and note-share with us their magic moments or in their learning journals.
- Keep an eye on the website/Newsletter for ideas of ways to support your child at home
- Use ideas from the Parents Guide

Check out websites like:

[www.ictgames.co.uk](http://www.ictgames.co.uk)

<http://nrich.maths.org/early-years>(Further resources section)



# Website to help with fluency

- Oxford Owl Maths
- NNS parents tool kit
- Top Marks times tables
- Maths is fun
- Woodlands resources
- Free numicon resources
- Nrich website

