



PROBLEM SOLVING

- Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

GUIDANCE

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects

The above skills should be taught throughout the week within everyday mathematics teaching and cross curricular tasks as much as possible.

In addition to this, problem solving session should take place weekly which focuses on investigation. This may be in mixed ability groups or paired work in EYFS, where appropriate, and should cover the following types of problem over the course of each year:

Logical reasoning

Finding all possibilities

Diagrammatic/visual problems

Finding rules/patterns

In EYFS these skill will link closely to personal and social development and emphasis will be on working together, sharing ideas and use on language.

VOCABULARY

- Use number names correctly
- Uses the language of 'more' and 'fewer' to compare two sets of objects.
- In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting
- Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems



NUMBER

Number and place Value	30-50 months	<ul style="list-style-type: none"> • Uses some number names and number language spontaneously. • Uses some number names accurately in play. • Recites numbers in order to 10. 24 • 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. • Shows curiosity about numbers by offering comments or asking questions. • Compares two groups of objects, saying when they have the same number. • Shows an interest in number problems. • Shows an interest in numerals in the environment. • Shows an interest in representing numbers. • Realises not only objects, but anything can be counted, including steps, claps or jumps
	40-60 months	<ul style="list-style-type: none"> • 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 beginning to count beyond 10. • 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. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations.
	ELG	<ul style="list-style-type: none"> • Children count reliably with numbers from one to 20, • Place 1 to 20 in order



Addition /Subtraction	30-50	<ul style="list-style-type: none">• Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same.
	40-60	<ul style="list-style-type: none">• 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.
	ELG	<ul style="list-style-type: none">• 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.
Fractions	30-50	
	40-60	
	ELG	<ul style="list-style-type: none">• They solve problems, including doubling, halving and sharing





Shape, Space and Measure

Measure	30-50m	
	40-60m	<ul style="list-style-type: none"> Orders two or three items by length or height. Orders two items by weight or capacity. Beginning to use everyday language related to money.
	ELG	<ul style="list-style-type: none"> Children use everyday language to talk about size, weight, capacity, distance, and money to compare quantities and objects and to solve problems.
Shape	30-50m	<ul style="list-style-type: none"> 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. 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'.
	40-60m	<ul style="list-style-type: none"> 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. Uses familiar objects and common shapes to create and recreate patterns and build models.
	ELG	<ul style="list-style-type: none"> They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.
	30-50m	
	40-60m	<ul style="list-style-type: none"> Uses everyday language related to time. Orders and sequences familiar events. Measures short periods of time in simple ways.
	ELG	<ul style="list-style-type: none"> Children use everyday language to talk time and to solve problems.
Position	30-50m	<ul style="list-style-type: none"> Uses positional language.
	40-60m	<ul style="list-style-type: none"> Can describe their relative position such as 'behind' or 'next to'.
	ELG	