

## Overview

The ability to calculate mentally lies at the heart of the mathematics taught at primary school. During Key Stage 1, emphasis will be placed upon developing mental calculations. Written recordings are used to support and develop these mental strategies.

Children will always be encouraged to look at a problem and then decide which method is the best to use. They should ask themselves...

‘Can I do this in my head?’

‘Can I do this using drawings or jottings?’

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In **Year R**, children’s understanding of mathematics develops through rich, child initiated play and first hand experiences.

We provide a mathematically rich environment, both indoors and outdoors where children are able to access resources independently all of the time.

This is achieved by:

- Direct Teaching of number recognition, accurate counting skills, sharing, sequencing, shape recognition and pattern making through practical activities.
- Enhancing their play with topic based mathematics and role play. For example,
  - Learning about ‘Me and my Family’ lends itself to work on size and number.
  - A topic on ‘Space’ encourages counting backwards from ten to blast off, 3D shape rocket modelling and subtraction (one less).
  - A card shop when children are learning about ‘Celebrations’ provides opportunities for number recognition, pattern or shape work and of course, money exchange.
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- Maximizing the mathematical potential of classroom routines. For example,
  - How many children are having red/green school dinners?
  - How many altogether?
  - Chairs are stacked in piles of six. This stack has three, how many more can you put on?

In **Year 1** and **Year 2** the children's understanding of the properties of numbers is developed, this vital understanding gives the children a range of strategies, from which to choose the most effective to solve all kinds of number problems, for example:

- Learning all the pairs of numbers that make 10:  
 $0+10$ ,  $1+9$ ,  $2+8$ ,  $3+7$ ,  $4+6$ ,  $5+5$ . We call these number bonds.
- Learning all addition doubles to 10:  $1+1$ ,  $2+2$  etc to  $10+10$  and then the corresponding halves: half of 10, half of 8, etc
- Learning what each digit is in a two digit (and then three digit) number represents: 24 is two tens and four ones, etc
- Learning to add and subtract 1 and then add and subtract 10.
- In Year 2 children will begin to learn their times tables.

When teaching these key skills, whenever possible, they are taught in context, for example using money or units of measure and presented to the children as a problem to solve. The children are encouraged to think of ways to solve a problem and to notice any patterns as they are working.

Children first work practically and are encouraged to use a large range of apparatus (not just fingers!), then they record using pictures and finally record using more formal number sentences.

As the children become more confident they are expected to explain to others how they have solved a problem.

Teachers will challenge and extend the children's understanding by asking them further questions as they work.

## Glossary of mathematical terms

**Bridging:** when children cross a boundary e.g. multiples of 10, 100, 1000. We refer to this as bridging e.g. adding 8 onto 17 children will add 3 to 20 then add 5 (the children have partitioned 8 into 3 and 5 and used 20 as a bridge).

+3

+5



**Number line (structured):** a line marked with numbers.

**Number line (unstructured):** a blank line that numbers can be written on.

**Number sentence:** mathematical sentence written in numerals and mathematical symbols e.g.

$3 \times 7 = 21$ ,  $6 + 3 = 9$ ,  $10 - 2 = 8$ ,  $15 \div 3 = 5$

**Partition:** to partition a number means, 'breaking the number up in different ways.' The most common way to partition in primary school is into hundreds, tens and ones e.g.  $472 = 400 + 70 + 2$  but numbers can also be partitioned in different ways e.g.  $8 = 7 + 1$ ,  $6 + 2$ ,  $5 + 3$ ,  $4 + 4$ .

**Place value:** the value of a digit depending on its place in a number e.g. 354 the value of the 4 is four ones\*, whereas in the number 435 the 4 has a value of four hundreds.

\*Please note that we no longer use the term 'units' but say 'ones' instead.

**Single-digit numbers:** 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are single-digit numbers.

**Word problem:** a calculation put into a context e.g.  $5 + 10$  as a word problem could be, *'Mary has a 5 pence coin and a 10 pence coin. How much does she have altogether?'*