

Calculation Policy

Introduction

Children are introduced to the processes of calculation through practical, oral and mental activities. As children begin to understand the underlying ideas they develop ways of recording to support their thinking and calculation methods.

By using models and images, such as empty number lines, they support their mental and informal written methods of calculation. These methods become more efficient and lead to written methods that can be used more generally.

Sharing written methods with the teacher encourages children to think about the mental strategies that underpin them and develop new ideas. Therefore, written recording both helps children to extend and clarify their thinking. Children should be encouraged to see maths as both a written and spoken language. Children should be supported and guided through the following stages:

- Develop the use of CPA (Concrete, Pictorial and Abstract) methods and use of words to represent numerical activities.
- Use standard symbols and conventions.
- Use of jottings to aid a mental strategy.
- Use of pencil and paper procedures.

The overall aim is that when children complete KS1 they:

- Have a secure knowledge of number facts and a good understanding of the four operations (addition, subtraction, multiplication and division);
- Are able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using 1-digit and 2-digit numbers and particular strategies to special cases involving greater numbers;
- Make use of diagrams and informal notes to help record steps and part answers when using mental methods that generate more information than can be kept in their heads;
- Have an efficient and reliable written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally.

Progression of Addition Skills

- Respond to addition rhymes.
- Number recognition using Numicon.

- Find 1 more than any group of objects to 5.
- Combine two groups of objects; count on from any number.
- Use their fingers.
- Find 1 more of any number to 10.
- Place the larger number in their head and count on using their fingers.
- Recognise that addition can be done in any order.
- Make addition facts to 10 using Numicon.
- Know addition facts to 10 and choose a method of representation.
- Use number lines to count on in ones.
- Use hundred squares to count on in tens and ones.
- Use blank number lines to add a single digit number.
- Use Base 10 and jottings to add a single digit number.
- Use a blank number line to add a two-digit number; be able to partition numbers; be able to count on in tens.
- Use Base 10 and jottings to add a two-digit number; be able to partition numbers; be able to count on in tens.
- Use the blank number line method, Base 10 and jottings to solve addition word problems and addition sums involving three-digit numbers.
- Use the vocabulary related to addition.

Progression of Subtraction Skills

- Respond to subtraction rhymes ie; 5 little speckled frogs.
- Find one less than any group of objects to 5.
- Relate subtraction to taking away.
- Use their fingers to hold up the larger number and take away the smaller.
- Count back from any given number - place larger number in their head, hold up the number of fingers to take away and count back, putting fingers down.
- Find one less than any given number to 10.
- Use Numicon to solve a subtraction question,
- Use a number line to count back.
- Use hundred squares to count back in tens and ones.
- Use a blank number line to subtract a single digit number.
- Use Base 10 to subtract a single digit number.
- Recognise subtraction as the inverse of addition.
- Use a blank number line to subtract a two-digit number.
- Use jottings to subtract a two-digit number.
- Use the blank number line and / or jottings method to solve subtraction word problems and subtraction sums involving three-digit numbers.

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- Use the vocabulary related to subtraction.

Progression of Multiplication Skills

- Count in 2s, 5s and 10s.
- Highlight patterns on a 100 square.
- Understand repeated addition as multiplication, which can be shown as **lots of**.
- Use circles and dots as a written method (or topic related items)
- Use circles and numbers as a written method.
- Understand that 4×2 gives the same answer as 2×4
- Use written methods to solve multiplication word problems.
- Use the vocabulary related to multiplication.

Progression of Division Skills

- Share objects into equal groups through play.
- Count in 2s, 5s and 10s.
- Use the vocabulary of halving and doubling and understand they are the inverse.
- Use Numicon to link division to reversed addition.
- Practically half shapes.
- Share out a given number of objects between 2.
- Use circles and dots as a written method.
- Use circles and numbers as a written method.
- Use written methods to solve division word problems.
- Use the vocabulary related to division.

See attached sheets for some suggested methods of calculations.

Also see:

- Using Numicon in Maths
- Calculations in KS1.

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