



MATHEMATICS AT SANDBROOK

The underlying aim of maths teaching at Sandbrook is to give our children an understanding of the patterns and processes of mathematics and at the same time to enable them to see the purpose and the uses of what they are learning.

Introduction to Mathematics

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Subject Aims

The national curriculum for mathematics aims to ensure that all children:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that children 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.

Mathematics is an interconnected subject in which children 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 children 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 expectation is that the majority of children will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage. Children who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on. (*National Curriculum 2014*)

Key Skills to be developed in mathematics

At Sandbrook, we follow the legal requirements of the National Curriculum 2014 when teaching mathematics. Maths is taught in five strands: Data Handling, Shape, Space and Measure, Number, Calculation and Using and Applying.

At Sandbrook we provide a daily maths lesson that seeks to reinforce learning and allow children to take on new skills and apply these in a range of contexts. Children are grouped according to ability which allows teachers to target different needs.

The daily maths lesson is structured to include mental skills, teaching points, independent learning and reflection time. Children work individually, in pairs and as a group to solve calculations and problems.

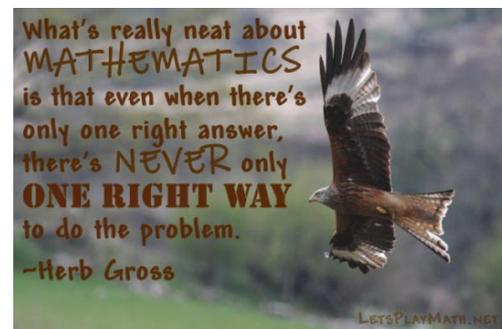
Children are continually assessed through daily evaluations, key objectives on a weekly basis and termly teacher assessments. These assessments inform planning and intervention groups. Children are encouraged to assess their own work and recognise when targets have been achieved. At Sandbrook we also have intervention groups across all year groups to provide extra maths support when needed.

We use a calculation policy that covers the teaching of addition, subtraction, multiplication and division methods. We aim to teach strategies that develop children's understanding of these difficult concepts and build on this year by year so that each teacher is using the same range of methods. This policy is available from your child's teacher.

A yearly overview, ensuring continuity and progression informs the half termly medium plans which lead into the weekly plan. These plans are annotated when necessary after assessments to ensure children's learning is moving forward.

FOUNDATION STAGE

In the Foundation Stage (Nursery and Reception) children follow the EYFS (Early Years Foundation Stage) curriculum in PRSN (Problem Solving, Reasoning and Numeracy). The emphasis is on practical mathematics experience which will often be integrated with other areas of learning. There is a designated whole class teaching



session every day. The children will have experience of sorting, measures, shape and space and problem solving, and will develop their understanding of the number system, mainly working with numbers to 10.

KEY STAGE 1 (Years 1 and 2)

The principal focus of mathematics teaching in Key Stage 1 is to ensure that children develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, children should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, children should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Children should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

LOWER KEY STAGE 2 (Years 3 and 4)

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that children become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that children develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, children should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that children draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, children should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Children should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

UPPER KEY STAGE 2 (Years 5 and 6)

The principal focus of mathematics teaching in upper Key stage 2 is to ensure that children extend their understanding of the number system and place value to include larger integers. This should develop the connections that children make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, children should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, children are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that children classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, children should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Children should read, spell and pronounce mathematical vocabulary correctly.

Below are the Mathematics overviews for each year group:

Below are the Key Learning in Mathematics for each year group:

HELPING YOUR CHILD

Talk to your children about what they have done at school. Don't be discouraged or alarmed if they deny having done any maths; much of the mathematical work that goes on in school is in the form of play activities, particularly with very young children, and they, or you, may not realise that by 'playing' with a box of different shapes they are beginning to develop concepts in their own minds related to measurement, area, angles, volume, and data handling.

Many activities which have no obvious links with maths can prove a rich source of mathematical conversation which will extend ideas and vocabulary.

Try to make maths as much fun as possible - games, puzzles and jigsaws are a great way to start. It's also important to show how we use maths skills in our everyday lives and to involve your child in this.

Identifying problems and solving them can also help your child develop maths skills. If you see him or her puzzling over something, talk about the problem and try to work out the solution together.

Don't shy away from maths if you didn't like it at school. Try to find new ways to enjoy the subject with your child.

Below are some useful activities to do with your child:

List of Maths Websites for Parents.pdf