




# Mathematics Policy

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## Introduction

Mathematics is one of the core subjects of the National Curriculum. It is a subject that equips children with a range of skills that include logical reasoning, problem solving and the ability to think in abstract ways.

At Heather Ridge we believe that Mathematics is a subject that can stimulate moments of pleasure and wonder when pupils see patterns, make connections and solve problems.

Our main aim at Heather Ridge is to open our children's eyes to the fact that Maths is **all around us** and part of everything that we do every day. From reading our alarm clock when we wake up, to building a model using bricks, to finding the page in the book we are reading!

We can make mathematics fun and real for our children by providing them with opportunities that develop:

- Mathematical thinking through the experiences that we give children.
- Concepts and skills sequentially through carefully structured activities.
- Learning which is meaningful and purposeful.
- Exciting activities which instil a passion for mathematics.

At Heather Ridge we want children to become confident, excited to learn, numerate and to acquire a sound understanding of all mathematical concepts such as shape, space, measures and handling data. The children are taught strategies to help them carry out mental calculations and to tackle problem solving activities with confidence. This is achieved by providing numeracy lessons and activities that are enjoyable and stimulating, relevant and thought provoking. Lessons and activities also involve effective questioning and ensure good mathematical progression throughout the school. Through these many and varied mathematical experiences, children at Heather Ridge are provided with a sound foundation on which future mathematical development can be achieved. Key aspects of learning such as thinking, communication and social skills are also developed throughout the range of mathematical activities provided. All pupils have access to the Mathematics curriculum and regardless of gender, race or disability all pupils have opportunities to achieve to the best of their ability.

## Objectives

At Heather Ridge we want children to:

- Be curious and to question and problem solve
- Develop confidence in mathematics and understand its practical uses in everyday life.
- Become numerate and to be able to calculate mentally.
- Be able to apply their skills and knowledge in different mathematical situations.
- Select and use a range of resources appropriately
- Develop key skills and apply these
- Recognise that all children enter our school with a varying degree of mathematical understanding and knowledge depending on their prior experiences.
- Promote an enjoyment of mathematics for all children whatever their needs, talents or cultural background.
- Become independent mathematicians who are confident and logical thinkers who understand the importance of maths beyond the classroom.

## **At Heather Ridge we aim to ensure that our children can...**

- Become confident, creative and imaginative.
- Reach the highest standard possible and become independent.
- Work mentally with increasing confidence.
- Enjoy taking on challenges.
- Think logically.
- Solve problems, by becoming secure in a number of different methods and selecting the one that is most appropriate.
- Access resources to support their own learning.
- Discuss their methods both with adults and other children.
- Learn the facts and techniques that they will need to support their Maths through all stages of their education.
- Learn to work collaboratively listening to others.

## **Organisation of Mathematics Curriculum**

### **Early Years**

In Reception, pupils engage in many practical and hands on experiences which prepare them for Key Stage 1. These “characteristics of effective learning” are

- How children play and explore.
- Their motivation for learning.
- How they develop their thinking.

The planned programme of work is based on the Development Matters in the Early Years Foundation Stage Curriculum (EYFS). The children are working towards the Early Years Outcomes. Mathematics is one of four specific areas of learning that is divided into two aspects: -

- Numbers
- Shape Space and Measure

### **Numbers**

Children work from the practical of counting, saying, naming, ordering and recognising numbers to 20 to developing their own ways of recording and using mathematical language. Using quantities and objects children count up and back to 20, learn to estimate and calculate totals by adding and subtracting two single digit numbers, adding 1 more and 1 less and begin to understand the importance of place value and solving real life problems. Numicon is used extensively and develops the children's knowledge of pattern, numbers, ordering and calculation. Children are working on correct number formation and they are beginning to record calculations by end of the year.

### **Shape Space & Measure**

This area of learning starts with everyday language (such as full empty...) and involves lots of practical and investigative activities. It encompasses many topics including time, money, 2D and 3D shapes, length, height, capacity, weight, positional language and patterns. Children work from practical real life problems (how much water can my container hold?) and they explore characteristics of objects and shapes (such as ordering according to size, weight etc) and use mathematical language and using non-standard units.

## **Problem solving**

Reception children have many opportunities to develop problem solving skills which involve lots of practical counting and measuring activities. They link problem solving to addition and subtraction, during whole class activities, in small groups or individually. Children do problem solving at the end of a week to reinforce learning objectives.

## **Key Stage 1**

### **Aims**

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

- *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.

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils 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, pupils 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, pupils 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.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

To support the objectives in KS1, we have planning based on the statutory Programmes of Study (Progression statements including KPIs) contained in the New National Curriculum.

The programme of study for Key Stage 1 includes:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measurement
- Geometry
- Statistics (Year 2)

## **Learning and Teaching Across the School**

Detailed mathematics teaching, planning and assessments can be found in our medium and weekly plans.

### **Early Years**

In Reception children have regular short mathematics teaching inputs and are taught practically in small groups on planned activities, which are practical and relevant to their stage of development. Oral and mental maths is taught and practised during these short sessions. Opportunities for child initiated activities using their mathematical skills, knowledge and understanding are provided as part of children's play. Adults seek to progress children's understanding through sensitive support, observation and intervention (including questioning) while the children are engaged in their play.

### **Key Stage 1**

In Key Stage 1 regular numeracy lessons are timetabled. In these lessons pupils are taught as a class, individually and in groups working on differentiated activities. Pupils learn strategies for carrying out mental calculations develop problem solving skills and are taught to make informal jotting when doing calculations. ICT is used as a teaching tool and also to enhance the children's learning. Children also apply their mathematical knowledge and skills across the curriculum e.g. using tables to communicate findings in Science, and measuring accurately in DT.

### **Assessment**

Assessments are made in line with the school assessment policy. Teachers use effective assessment for learning to ensure planning is based on prior attainment and that pupils know what they need to do to achieve the next steps. Marking is in line with the school marking policy. Teacher assessment judgements in mathematics are reported at the end of KS1. Teacher assessment is based on a broad range of evidence from across the curriculum and knowledge of how a pupil has performed over time and in a variety of contexts. It is carried out as part of teaching and learning. Teacher assessment is the only data used in school performance accountability at the end of KS1.

### **Home Learning**

Parents are kept informed about which particular areas are being covered during each half-term, and encouraged to engage in games and activities, and access relevant websites (e.g. Mathletics) to reinforce what is already being taught in class.

### **Resources**

Each year has appropriate resources to support the teaching programme. The children have access to a wide range of suitable resources, including Numicon and IT programmes, to support and aid the learning and teaching throughout the school.

### **Practical work**

To promote a deeper understanding mathematical activities are introduced to the children through hands on practical experiences. All children have access to mathematical resources to help support their learning which we encourage them to select and use as they deem appropriate. This practical work is not always required to be recorded.

### **Number**

It is vital that all children become secure in number and therefore it is our policy to ensure this understanding is secure before moving on to more abstract maths. We teach place value by referring to the numbers as tens, and both ones and units to help the children become secure with these terms.

## **Problem Solving**

This is an important aspect of Maths as it shows the children's deeper understanding and rightfully has become a main emphasis in the new National Curriculum (2014). We give children the opportunity to solve problems, both their own and ones posed by others. Children have free access to Maths resources and are able to self-select the resources that they believe best suit the task.

## **Reasoning**

Children are encouraged to explain their answers. It is not just about getting the correct answer but is also about the process of getting to the answer. Children are often asked to 'Prove it'.

## **Teaching and Learning**

At our school we believe in teaching to meet every child's needs. Success is vital, but so is challenge, therefore we aim to ensure children are actively engaged both practically and mentally.

## **Mental Work**

Fluency and confidence in number is highlighted in the new curriculum therefore all children are encouraged to develop mental methods of calculation, recall of number facts and mental imagery.

## **Oral work**

Oral work is a major aspect of all activities, including discussion with peers, describing, explaining, clarifying ideas, predicting and reporting outcomes and asking questions, all of which promotes the development of mathematical language.

## **Recording**

Children should not be encouraged to move too quickly to written work. In the early stages mental, oral and practical work will take precedence. As children develop their mathematical skills they are encouraged to record their work in a variety of ways, so that they can develop personal methods of recording, compare and discuss alternate methods and refine and practise useful methods. As children become more involved in problem solving activities the onus is on them to decide the most appropriate methods of recording.

## **The Role of the Maths Curriculum Leader is to:**

- Take a lead in developing the policy and monitor the teaching of mathematics across the school, adapting it to ensure progression and consistency across the year groups.
- To develop long term plans across KS1 in order to ensure coverage of the new mathematics curriculum.
- Support colleagues in planning and implementing their schemes of work and in assessment and recording activities.
- Manage a defined budget in liaison with the School Business Manager.
- Keep up to date with developments in the new mathematics curriculum and disseminate information as appropriate to staff.
- Raise standards by identifying areas for development.
- Identify strengths and weaknesses in the quality of teaching and learning, and then share good practice and address shortcomings.
- Track and monitor the progress and attainment of individual pupils and groups of pupils within and between year groups.
- Provide documentary evidence of pupils' progress and attainment over a period of several years.