



Mathematics is the study of relationships in number, measures, space and data-handling and their application to solving problems in a variety of situations. It provides children with a way of viewing and making sense of the world in which they live. Building on their own experience, it encourages thinking and reasoning skills, embraces natural curiosity and develops the confidence to tackle problems, which arise not only in mathematics but other areas of the curriculum. At Nook Lane, it is our aim to encourage our children to understand Maths at a practical level by using resources, and making jottings. Children are encouraged to regularly solve problems, mathematically reason and explain their thinking. We actively encourage parents, carers and the wider community to engage with children in their learning of mathematics. It is our aim to develop mathematicians, who are passionate about their learning and are equipped with the numerical skills needed for a successful future.

Aims and Objectives

At Nook Lane Junior School we aim to develop the following:

- A positive attitude to maths for all children enabling them to approach mathematical activities with confidence, understanding and pleasure.
- Provide a curriculum which meets the needs of National Curriculum (2014), which will develop enquiring, logical, investigative and problem solving approaches.
- Build upon and extend the children's previous experiences and ensure progression in the development of their understanding, knowledge and use of mathematical language.
- Encourage a deeper understanding of maths by ensuring children have a sound conceptual understanding of a concept before moving onto more challenging concepts and algorithms.
- Develop children's mathematical language in order for them to fully articulate their reasoning.
- Encouraging the children to communicate with each other and with adults, question, explain, predict and try alternative ideas and methods.
- Ensure all children are correct in their understanding of mathematical instruction (e.g. \times - $+$ \div /).
- Appreciation of a range of recording methods.
- Develop the ability to select and use a range of mathematical resources.
- Promote independence in mathematical application.
- To value the process of enquiry as well as the answer and to appreciate that the definitive answer is not always possible.
- Regularly Inform parents of their child's progress and suggest ways they can support them in their learning.

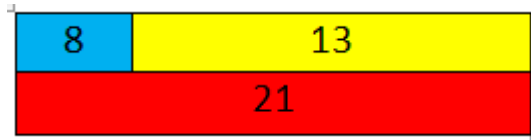
The Teaching and learning of Mathematics.

At Nook Lane Junior School children are taught Maths daily. Lessons are carefully planned to meet the needs of all the learners within our school in order for every pupil to make progress and be challenged. The use of readily available apparatus to support learning and the use of models and images to support learning is a regular feature within all of our classrooms. Within each of our classes is a focused area for mathematics where key vocabulary and resources are displayed. Daily maths teaching provides rich opportunities for developing reasoning and using and applying mathematics. Making mathematical choices and explaining thinking are encouraged along with increased opportunities for reflection and exploration. Our mathematics teaching encourages children to become flexible problem solvers with a skilful application of their reasoning ability. Children are taught through exploration of conceptual ideas and mathematical rules and develop independence when applying knowledge, skills and understanding. Our maths teaching reflects a balance between computational fluency, reasoning and problem solving, thus ensuring depth of understanding and mastery.

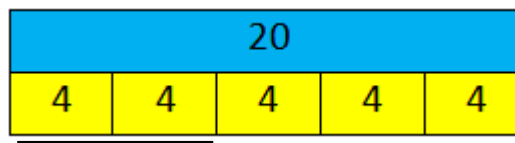
Using models, images and structures

The use of models and images underpins the structural teaching of mathematics in all year groups from understanding operational procedures to modelling ratio, fractions and algebraic constructions. The use of models and images is intended to not only aid calculation but to develop a deeper understanding of mathematical structures. Children use models, diagrams and structures to link the practical to the abstract. This can come in the form of dienes and represented (drawn) diagrams, bar modelling and visual processes (e.g. tables to exemplify ratio). These structures form an essential part of our delivery of the cognitive elements of the maths curriculum for all children at all stages.

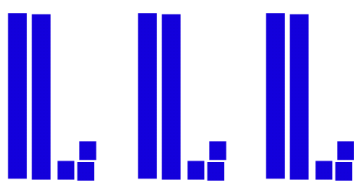
Bar model: Addition $8+13=21$


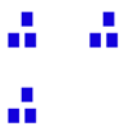


Bar model: Fractions 8 is $\frac{2}{5}$ of a number. What is the whole?



Using dienes to represent multiplication. 23×3



X	20	3
3		

Key Stage Two

As a junior school, we take great pride in building upon the excellent foundations that have been taught at Stannington Infant school, where the vast majority of our children were taught.

At Nook Lane Junior school most lessons begin with a mental and oral session or problem linked to prior learning. These introductions are usually short and provide an opportunity to develop and practice methods of calculation and number facts. Children in Y3 and Y4 have a particular focus on learning times tables and associated division facts in preparation for the Multiplication Times Table check at the end of Y4. As a school, we believe that instant recall of multiplication facts is key to the acquisition of later learning in Y5, Y6 and secondary school.

Following this, the day's mathematical vocabulary (Star Words) is shared with the children. Mathematical activities are then introduced to the children through concrete experiences and abstract work is reinforced with practical activities. We encourage children to independently select and use appropriate equipment as much as possible to support their understanding. Children work in groups, pairs or as individuals on differentiated tasks to meet their individual needs. Working in groups or pairs provides children with the opportunity to talk which develops their mathematical reasoning and understanding of concepts. Discussion with peers, describing, explaining, clarifying ideas, predicting and reporting outcomes and asking questions, all fosters the development of mathematical language and conceptual understanding. The children work on a variety of activities, usually practically at first using concrete objects, before moving onto using pictorial representations and finally abstract methods. As children develop, they are encouraged to record their work in a variety of ways, develop personal methods of recording, compare and discuss alternate methods, refine and practise useful methods. These will vary according to the type of activity. They may include symbolic, statistical, diagrammatic, pictorial, verbal reporting or the construction of a model. As children become more involved in investigative activities the onus is on them to decide the most appropriate methods of recording.

SEND

Inclusion is very much at the heart of our school and we recognise that some of children, especially those who access our Integrated Resource, may access curriculum below that of Y3-Y6. We take great pride in providing rich mathematical experience for these children that is tailored to their individual needs. For some of these children, teachers plan lessons using the objectives from the Birmingham Toolkit to ensure a personalised and progressive approach for these pupils.

For our more able mathematicians, it is our aim to provide rich and challenging questioning and problem-solving activities that allow the children to master a concept in depth.

Same Day Maths

Same Day Maths is a 15 minute session that is delivered after the Maths session. It is an open session where children are invited by their teacher/teaching assistant to take part in additional learning linked to the day's lesson. This can be directed at pupils, in the first instance who have found the lesson challenging and need further support to access the next day's Maths lesson or could be a session to target pupils who are falling behind their targets. The aim of this session is to ensure that all pupils make good progress and no pupil is left behind.

In addition to this, we also plan for an additional, hourly, fundamentals revision session for all pupils, once a week, which allow teachers to plan sessions that enable pupils to practise and over-learn topics that they have learnt from the year. This facilitates learning and enables our pupils to successfully embed mathematical skills into their long-term memory.

Planning

Teacher planning takes three forms: long, medium and short term.

Long Term Planning

Long term planning is derived from the key principles that are set out by the National Curriculum (2014). The school then follows the planning overview as set out by the White Rose Maths Hub (WRMH) for each year group.

Medium Term Planning

The WRMH has provided medium term plans for Autumn, Spring and Summer, which have been evaluated and agreed by our teaching team. Teachers have permission to be creative with these plans in consultation with the Maths lead but as the plans are progressive and build upon children's knowledge and understanding, they are largely adhered to.

Short Term Planning

Working from the medium term overview each teacher then produces a weekly short term plan which contains details of lesson objectives, activities, resources needed and key vocabulary for each lesson. Activities are differentiated to meet the individual needs of children. Teachers use resources from the WRMH and I See Reasoning and I See problem Solving (Gareth Metcalfe) to facilitate their teaching.

Assessment

Children are assessed using both formal and informal assessments. Informal assessments are carried out daily by observing the children, looking at their work and listening to their responses to questions and peer discussions. At the end of each unit of work the teacher records their assessment on Nook Lane's Teacher Markbook in order for the teacher to keep track of pupil's progress.

Children are assessed formally at the end of each term: Autumn, Spring and Summer. Nook Lane used the WRMH assessment materials for arithmetic and reasoning in addition to informal day-to-day assessments in order to make an overall teacher assessment, which will be added to our internal assessment tracker (Tracker +). The progress of each pupil is discussed termly at our Pupil progress Meetings. The process of assessment ensures that we keep a constant and reliable track of our pupils progress as they continue their mathematical education through school.