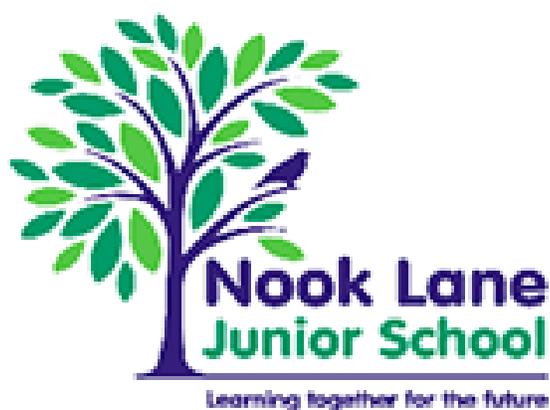


Nook Lane Junior School



Maths Policy 2019

Nook Lane Junior School Mathematics Policy

Louise Bullen 2018

This policy is to be used to deliver the aims of the National Curriculum (2014) and in conjunction with the Nook Lane Junior School calculation document.

Vision

At Nook Lane Junior School we aim to grow passionate, enthused mathematicians who are excited about learning. By encouraging learners to be resilient and persevere when solving problems, we aim to equip pupils with the skills needed to be academically successful and ultimately responsible global citizens.

Our rich and engaging curriculum, which develops a love of number, is progressive and challenges pupils at an appropriate level. Rather than moving through new academic content too quickly, we encourage pupils to deepen their understanding by providing our pupils with motivating problems to solve and explain their reasoning using appropriate mathematical vocabulary.

Our broad and balanced curriculum offers regular opportunities to apply maths into foundation subjects such as design technology, history and geography, and this cross-curricular work is an intrinsic feature of our maths-rich curriculum. We have worked hard to forge strong links with our community allowing pupils to be involved in enterprise projects, which allow them to handle real money and discuss profit and loss.

Central to our curriculum is physical and mental well-being. We encourage children to use concrete apparatus, that allow pupils to understand the basics in maths before moving on to increasingly abstract examples. Where possible, we encourage pupils to learn through games and take maths lessons outside, where pupils can engage in physical activity while learning.

The teaching and learning of Mathematics.

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 within the classroom. Procedural algorithms are developed in line

with children's understanding and directly reflect children's prior experiences of operating practically.

Before any procedural algorithms are demonstrated to the children, a clear understanding of the key concepts must be established.

Our mathematics teaching encourages children to become flexible problem solvers with a skilful application of their reasoning ability. Children are taught to explore conceptual ideas and mathematical rules, developing independence when applying knowledge, skills and understanding to mathematical problems. At Nook Lane teaching reflects a balance between computational efficiency, reasoning and application; ensuring depth of understanding and mastery.

The progression of mathematics is delivered as follows:

Visual / diagrammatic representation of values (pictures, cubes, counting bears).

Begin to relate to value, numerals and names ($\therefore = 3 =$ 'three')



Operating with practical / diagrammatic resources.

Verbal descriptions of mathematical functions.

e.g. 23×3 recorded as $|| \cdot || \cdot || \cdot$



Using symbols to represent 'real life' operations

e.g. Teacher shows 23 cubes, child records, teacher removes 4 cubes child records operation symbol and balance equation.



Written procedures introduced and are direct recordings of the practical models.

e.g. division algorithms record precisely the steps taken when using apparatus



Upon clear understanding of the procedures, shorter more compact methods are introduced. Links between procedures are clearly established.

e.g. transition clearly explained in a move from grid multiplication to column methods



Children are taught to manipulate mathematics in order develop efficiency.
e.g. repeated subtraction to aid sharing in division



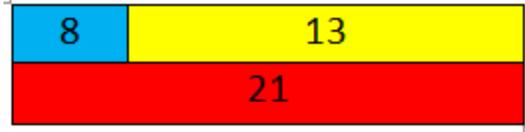
Depth of learning developed.

Higher order thinking explored. Mathematical choices, development of numerosity and efficiency and further explore more sophisticated problems including reverse engineering and linking mathematical principles.

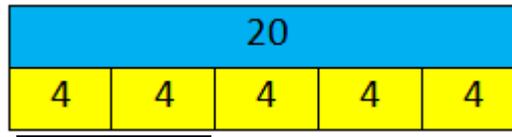
Using models, images and structures

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 develop an understanding of structures, not to merely aid calculation. 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.

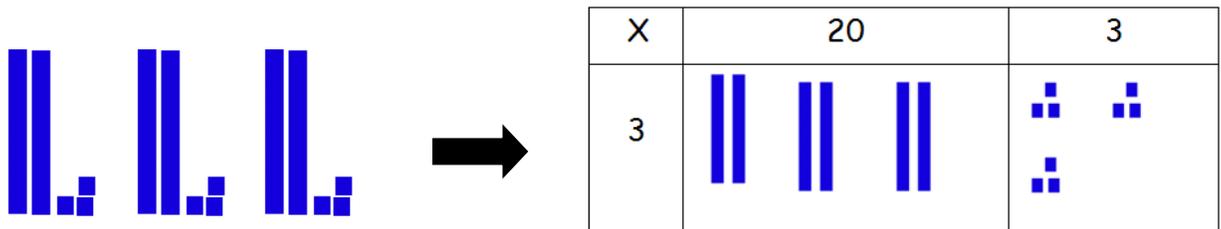
Bar model: Addition $8+13= 21$



Bar model: Fractions 8 is $2/5$ of a number. What is the whole?



Using diennes to represent multiplication. 23×3



Deep Learning in Mathematics

At Nook Lane we actively encourage children to explore a subject domain in depth before moving on to new. Our maths teaching deepens learning through carefully structured questioning, tasks and experiences to develop secure understanding of key structures within their learning. Deepening learning makes links between varying areas of mathematics, contextual problem solving and reasoning problems. A focus on intellectual processes, as opposed to pure academic procedure and fact acquisition, is explored using open ended and wider forms of learning.

The focus at Nook Lane is not to accelerate children through the breadth of curriculum content, but to spend longer exploring strands to ensure a deep and secure understanding of key concepts. Progress is measured through the increasing ability to access more sophisticated, intellectually demanding material which builds on basic conceptual learning.

Delivering Mathematics Teaching

Teachers at Nook Lane use the White Rose planning materials as a starting point and adapt these materials to meet the needs of the children within their class. Support using concrete materials is encouraged, as is the availability of cognitively rich problems for early graspers to grapple with.

We aim for all children at our school to make good progress. Teachers make regular assessments of pupils learning in their day-to-day teaching and at the end of each unit of work. Any child who is making slower than expected progress will be identified and a targeted intervention will be actioned in order to help the pupil catch up. All support is bespoke to the children's needs, addressing the gaps in their understanding.

Post Learning

Post Learning is timetabled on to the school timetable four times a week. Pupils have found a topic conceptually challenging can then be taught by the teacher either 1:1 or in a small group. This session can also be used to introduce new learning that the rest of the class may begin next lesson, giving some pupils a head-start in order to build confidence.