



Newdale Primary School and Nursery Calculation and Number Sense policy

September 2019

Updated October 2020

Review due September 2021

As a school we endorse the view expressed in the National Curriculum document:

*Mathematics is a **creative and highly interconnected** 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.***

Mathematics National Curriculum 2018

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

Mathematics is an interconnected subject in which pupils 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 pupils 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 pupils 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 pupils' understanding and their readiness to progress to the next stage. Pupils 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.

<https://www.gov.uk/government/publications/national-curriculum-in-england-mathematicsprogrammes-of-study/national-curriculum-in-england-mathematics-programmes-of-study>

Rationale

At Newdale we aim to inspire all children to reach their full potential. In mathematics this means ensuring a curriculum that is fully inclusive of all children which:

- Develops children's knowledge and understanding of Mathematical concepts whilst enabling them to practice and hone skills and methods;
- Enables them to think critically and communicate their understanding;
- Gives them opportunities to apply learnt mathematical skills in different contexts across the curriculum.

- Provides opportunities to develop problem solving skills useful for maths and across the curriculum.

As a result of their learning in mathematics and problem solving across the curriculum children will:

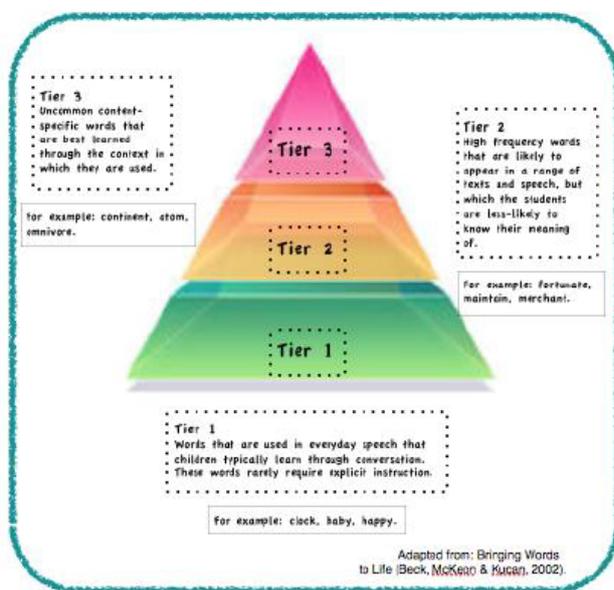
- Be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place.
- Have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

Through teaching, children will learn to understand, distil and clarify information; consider what they know that will help them to solve problems, realizing what they need to know next; create systems and strategies, organizing information in a way that helps find patterns and ultimately solutions and to communicate and present their findings effectively.

The importance of vocabulary in Mathematics

Understanding vocabulary is a key component of being successful in Mathematics. At Newdale we place a high emphasis upon children understanding key Mathematical terms and have identified words which are essential in each year group.

In their three-tiered model of vocabulary development, Beck, McKeown, and Kucan (2013) classify words as follows:



Tier 1: These are the common, everyday words that most children enter school knowing already. These words are common in children’s vocabulary and therefore should not require any formal teaching.

Tier 2: This tier consists of words that are used across the curriculum areas and are important for children to know and to understand. Included here are process words like analyse and evaluate that the children will encounter into on many tests and that are also used at the university level, in many careers, and in everyday life. We need to commit these words from the short term into children’s long-term memory.

Tier 3: This tier consists of content-specific vocabulary—the words that are often defined in textbooks or glossaries. These words are important for imparting ideas during lessons and helping to build children’s background knowledge

Children at Newdale will be taught tier 2 words as a matter of course during their Mathematics lessons.