

## Introduction

This policy supports the White Rose maths scheme used throughout the school. Progression within each area of calculation is in line with the programme of study in the 2014 National Curriculum. This calculation policy should be used to support children to develop a deep understanding of number and calculation. This policy has been designed to teach children using concrete, pictorial and abstract representations.

## Intent

At each stage of learning, children should be able to demonstrate a deep, conceptual understanding of the topic and be able to build on this over time. Our overall aims for when children leave Willowbrook Mead Academy, are:

- Develop a positive attitude to mathematics as a subject in which all children gain success and pleasure.
- Have access to a high-quality maths curriculum that is both challenging and enjoyable and builds upon previous learning.
- Be provided with a variety of mathematical opportunities, which will enable them to make relevant connections.
- Ensuring children are confident mathematicians who are not afraid to take risks.
- Develop an ability to express themselves fluently, to talk about the subject with assurance, using correct mathematical language and vocabulary.
- Develop mathematical skills and knowledge and recall of basic number facts and the four operations.
- Be able to use this knowledge and understanding to carry out calculations mentally.
- Have an efficient, reliable, compact written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally.

## Implementation

- **Concrete representation**— a pupil is first introduced to an idea or skill by acting it out with real objects. This is a ‘hands on’ component using real objects and is a foundation for conceptual understanding.
- **Pictorial representation** – a pupil has sufficiently understood the ‘hands on’ experiences performed and can now relate them to representations, such as a diagram or picture of the problem.
- **Abstract representation**—a pupil is now capable of representing problems by using mathematical notation, for example  $12 \times 2 = 24$ .

It is important that conceptual understanding, supported by the use of representation, is secure for all procedures. Reinforcement is achieved by going back and forth between these representations.

We believe that all children have the potential to succeed. They should have access to the same curriculum content and, rather than being extended with new learning, they should deepen their conceptual understanding by tackling challenging and varied problems. Similarly, with calculation strategies, children must not simply rote learn

procedures but demonstrate their understanding of these procedures with concrete materials and pictorial representations. This policy outlines the different calculation strategies that should be taught and used in From EYFS to Year 6 in line with the requirements of the 2014 Primary National Curriculum.

How to use the policy: This mathematics policy is a guide for all staff, parents, carers, and other family members support children's learning by providing an explanation of the methods used in our school. All teachers have been given the scheme of work from White Rose Maths and are required to base their planning around their year group's modules and not to move onto a higher year group's scheme work. Teachers can use any teaching resources that they wish to use, and the policy does not recommend one set of resources over another, rather that, a variety of resources are used.

For each of the four rules of number, different strategies are laid out, together with examples of what concrete materials can be used and how, along with suggested pictorial representations. The principle of the concrete-pictorial-abstract (CPA) approach is for children to have a true understanding of a mathematical concept.

Concrete resources that may be found in the classroom will include:



These resources will vary depending on year group and individual needs.

### **Impact**

Pupils will leave us prepared for the next stage in their lives with:

- Quick recall of facts and procedures.
- The flexibility and fluidity to move between different contexts and representations of mathematics.
- The ability to recognise relationships and make connections in mathematics.
- Confidence and belief that they can achieve.
- The knowledge that maths underpins most of our daily lives.
- Skills and concepts that have been mastered.
- Have a positive and inquisitive attitude to mathematics as an interesting and attractive subject in which all children gain success and pleasure.



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