# Maths



## **Curriculum Expectations**

#### Intent

We recognise the importance of a secure grounding in mathematics to ensure independence into adulthood. Due to the needs of our pupils we have chosen to use the CPA (concrete, pictorial, abstract) approach, facilitated through Numicon to ensure all of our pupils have a sound knowledge of number, measurement & geometry and statistics and probability. The curriculum content follows the National Curriculum

#### **Implementation**

Maths will be taught through engaging, motivating and progressive units across the school. Maths lessons will:

- ❖ Be motivational and accessible to all pupils
- Focus on personal progress and development
- ❖ Be lead by all adults in the class
- Use interactive resources to support the delivery
- Use concrete, pictorial and abstract representations
- Reflect on the progress and recognition of progress
- \* Reinforce and revisit learning to secure learning

#### **Impact**

To evidence that our pupils can do more and know more in PE we will:

- ✓ Collate evidence to monitor progress
- ✓ Interview pupils
- ✓ Monitor teaching
- ✓ Review schemes of work
- ✓ Follow achievements through progression skills maps
- ✓ Accreditation pathways

#### Coverage

The national curriculum for maths is extensive and for each of our pupils they will progress along this at the most appropriate pace to them. Our assessment system allows staff to baseline and develop their pathway in respect of what 'Step' they are working on. These steps mesh from Early Years through to post -14 and accreditation routes.

Engage	Activate	Consolidate
Comparison Composition of Number Shape & Space Patterns & Mathematical relationships Measures (delivered through focussed sessions & continuous provision)	<ul> <li>Number</li> <li>Number &amp; Place Value</li> <li>Addition, Subtraction, Multiplication &amp; Division</li> <li>Fractions (inc. decimal &amp; percentages)</li> <li>Ration, proportion &amp; algebra</li> <li>Measurement &amp; Geometry</li> <li>Weight, length, capacity, temperature, time &amp; money</li> <li>Properties of shape, position &amp; direction</li> <li>Probability &amp; Statistics</li> <li>Statistics</li> <li>Probability</li> <li>Working mathematically</li> <li>Fluency, reasoning &amp; problem solving</li> </ul>	Using numbers and the number system Using common measures, shape & space Handling information & data Solving mathematical problems & decision making (Step 1-7, Entry 1-3, Level 1-2)

#### **Curriculum Design & Progress**

Numicon

#### CPA

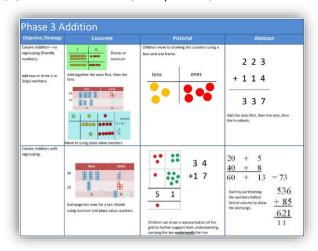
The CPA method involves using actual objects for children to add, subtract, multiply or divide. They then progress to using pictorial representations of the object, and ultimately, abstract symbols.

Children often find maths difficult because it is abstract. The CPA approach helps children learn new ideas and build on their existing knowledge by introducing abstract concepts in a more familiar and tangible way.

<u>Concrete</u> is the 'doing' stage, using concrete objects to solve problems. It brings concepts to life by allowing children to handle physical objects themselves. Every new abstract concept is learned first with a 'concrete' or physical experience.

<u>Pictorial</u> is the 'seeing' stage, using representations of the objects involved in maths problems. This stage encourages children to make a mental connection between the physical object and abstract levels of understanding, by drawing or looking at pictures, circles, diagrams or models which represent the objects in the problem.

Abstract is the 'symbolic' stage, where children are able to use abstract symbols to model and solve maths problems. Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols, for example +, -, x, / to indicate addition, multiplication, or division.



## The aim of Numicon is to make numbers real for children

through them being able to see and touch them.

Each Numicon shape gives children an image of what a number looks like. They begin to see the relationship between numbers, with each piece having one hole more than the previous one.

It appeals to their strong sense of pattern, and helps them understand how numbers fit together. It also has a multisensory approach that's known to help learning.

Children using Numicon typically progress through four stages:

**Pattern:** for example, finding shapes that match and stacking them on the peg board.

**Ordering:** putting the shapes into sequence from the smallest to largest number, and vice versa.

**Counting:** counting each hole one by one to find out what number the piece represents.

**Early calculating:** using the pieces to solve simple problems, for example working out that a three-piece and a four-piece are equal to a seven-piece.

By giving children something physical that they can get their hands on, not just paper and pen, they develop confidence and a greater understanding, which leads to higher achievement.

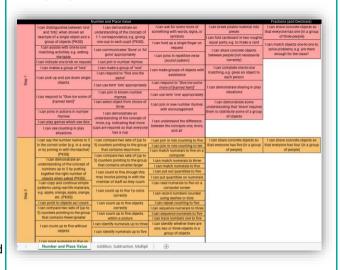


## **Bsquared**

Our assessment platform Bsquared maps out the progression and allows staff to track the depth of learning across the core areas of maths.

Staff take the focus areas/maths statements and evidence these in the planned learning. The depth of learning is also clearly mapped which helps identify if pupil are working more at the concrete or abstract phases of learning.

Where possible the maths statements are written in pupil friendly ways.



#### **Termly Focus**

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Number & PV	- Calculation		Geometry	Measurement	Statistics