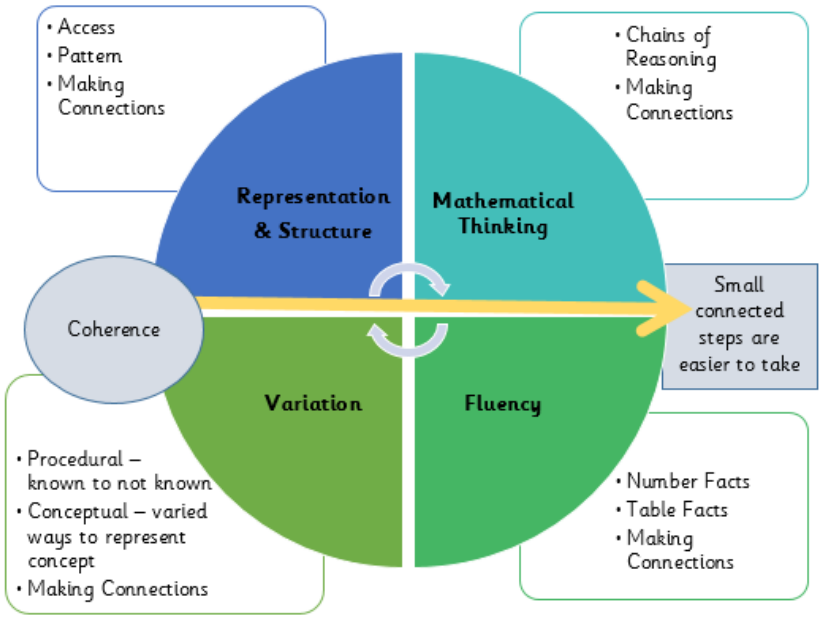
Mathematics at Holywell Primary and Nursery School

Our principles and beliefs

At Holywell Primary and Nursery School, we strive to ensure that all children enjoy mathematics and have the confidence to apply their knowledge and skills to their everyday lives. Our mathematics teaching is fun and engaging, fosters positive 'can-do' attitudes and develops fluency, reasoning and problem solving skills.

To achieve this, teaching for mastery forms the basis of our approach to mathematics. Teaching for mastery promotes the idea that **all pupils should develop a deep understanding of the mathematics they are learning** as opposed to accelerating through curriculum content. As a result, we are committed to spending a longer time exploring key concepts, especially number, to develop fluency, promote mathematical reasoning and encourage pupils to make connections in their learning. In order to support this, we use concrete and pictorial models alongside abstract concepts, giving all children the opportunity to explore key ideas and build a solid, in depth understanding of the mathematics that they are learning. There are 5 big ideas behind the NCETM's approach to teaching for mastery that underpin our maths curriculum:



As a school, we believe that the vast majority of pupils can master the key ideas in mathematics and we have the confidence to take learning at a steadier and deeper pace in order to achieve this. In our lessons, the whole class work together on the same key idea ensuring that no child is left behind. During every lesson, we assess the children's understanding and plan greater depth activities and teacher-led support to ensure all children make progress. We focus on all children having a deep and sustainable understanding of their year group targets and not accelerating beyond this. In this way, we believe pupils will become true masters of mathematics, applying and reasoning with new knowledge and skills in multiple ways.

Our mastery curriculum

The national curriculum for mathematics (2014) 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*

In order to achieve these aims, our curriculum is mapped out across each term and ensures more time is spent on teaching key mathematical ideas and concepts. This allows for the development of depth and sustainable learning for all. In addition, our curriculum maps are supported by Maths No Problem, a detailed scheme of learning, which ensures year group objectives are covered in depth, and incorporates fluency, reasoning and problem solving skills in to all lessons.

Lesson design

Our lessons are carefully designed to ensure a coherent, step-by-step journey, where key learning points are identified and the tricky bits are identified so that they can be addressed. A typical lesson often follows all or part of the following format:

- Fluency and retrieval
- Explore and Master – exploring and making connections with explicit teaching of the key teaching point
- Guided practice – opportunities for children to apply their new learning
- Independent practice – including journaling, workbook work and challenge and support as required
- Review and challenge

Calculation policy and guidance

In addition to this document, please refer to our calculation policy where you will find an in-depth guide to the calculation strategies taught at our school.

Classroom practice

When visiting our classrooms, you will see confident children who are engaged in their learning and able to reason and explain their understanding. This is achieved in a number of ways, including:

- The use of well-chosen practical resources, models and images e.g. bar modelling
- Paired and group work to support exploration and promote maths talk
- Lots of reasoning and problem solving with children talking about, sharing and reflecting on their learning
- No grouping or preconceived ideas of a child's ability
- 'Ping pong' style teaching - to share ideas, misconceptions, pose questions and challenge

- A real focus on precise mathematical language
- Positive use of mistakes/misconceptions, developing a positive, 'growth mindset' learning environment
- Teachers and learning support assistants supporting learning, asking skilful, probing questions and capturing children's reasoning skills through effective formative assessment
- Open ended investigations incorporating low threshold/high ceiling tasks
- Arithmetic fluency activities that promote number sense across the 4 operations
- Displays that support learning through the modelling of key vocabulary and important models and images
- Journaling

Meeting the needs of all our learners

> *'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.' (NC 2014)*

As the majority of children access the same curriculum content at the same time, some will grasp it more quickly while others may require additional support. Assessment for learning strategies are used throughout our lessons to ensure these children are identified and the appropriate support or challenge is put in place. It is important to remember that these children do not remain the same each lesson and will change depending upon the learning that is taking place.

Children are challenged through:

- Questioning that encourages children to develop understanding of the structure of mathematics
- Exploring the mathematics in a variety of ways
- Explaining their reasoning to others
- Greater depth application challenge
- Generalising and testing rules
- Maths challenge boards and questions
- Encouraging them to ask their own questions 'What if…?'

We support children by:

- Identifying misconceptions prior to the lesson so they can be addressed
- Explaining the same key idea in different ways (finding the explanation that is most relatable for the child)
- Rapid, same day intervention
- Small, connected steps in learning
- Pre-teaching
- Targeted intervention

Arithmetic fluency

In order to develop our children's sense of number and ability to recall number facts efficiently and accurately, short fluency sessions form part of our daily curriculum. In EYFS and KS1, Mastering Number is the main driver for these fluency sessions.

How we assess learning

As a school, we use formative and summative assessment to assess our pupils' learning. Assessment does not solely focus on memorising key facts, but values the children's ability to apply mathematics to new and unfamiliar situations. Children who can do this successfully will be assessed as working at greater depth.

Home learning

In order to promote number sense and confidence in our learners, the focus of our home learning is fluency. This include the practice and retrieval of times tables and number facts.

Computing

The use of technology plays a huge role in our teaching of mathematics, from whole class interactive models and games, to iPad apps such as Times Tables Rock Stars. In line with our computing and online safety policy, we promote the safe use of computing equipment.