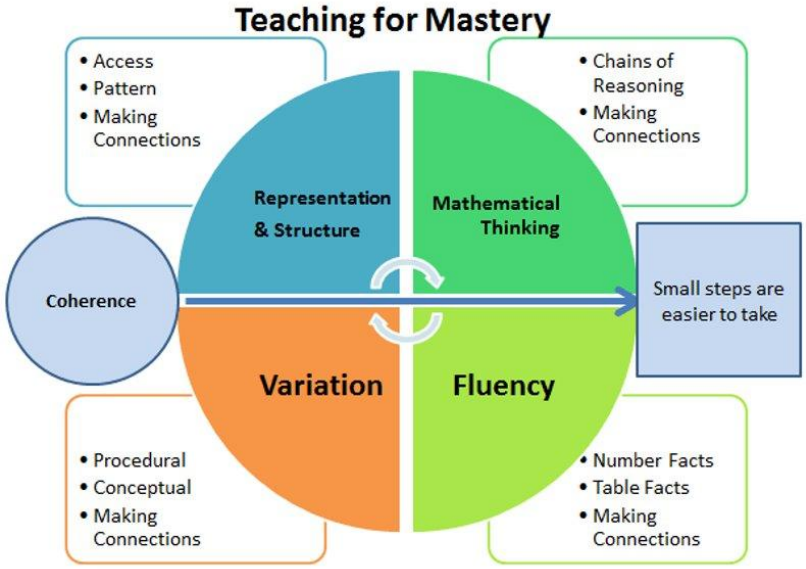
Maths at Cropwell Bishop Primary School

The teaching and learning of mathematics is an integral element of the school curriculum and it is taught in classrooms where children are supported, guided and encouraged to achieve their maximum potential in challenging but achievable lessons. To enable this to happen, teachers use a mastery approach to carefully produce lesson plans, designed around the concept of the 5 Big Ideas. Children's understanding of mathematics is deepened and secured through cross curricular links, which builds upon our belief that methods, skills and knowledge are only of use when children know how to use them.



Children's understanding is consolidated, developed and extended:

- fluency (instant-recall facts and processes)
- arithmetic (targeted key age-appropriate methods).
- reasoning (ensuring children have the capacity and knowledge of how to apply their understanding).
- using wider and varied concrete, pictorial and graphical representations.
- across the curriculum, to ensure knowledge becomes meaningful.
- through set homework tasks on websites and online learning applications.

Curriculum design and sequencing of content

All year groups follow an adapted White Rose Maths scheme, which is a nationally recognised scheme of work that is fully in line with the expectations laid out in the Primary Curriculum. Each year groups has a series of small step objectives, which build upon prior learning from previous year groups. Each teacher will support children of all abilities to develop a depth of understanding so they can apply their methods, knowledge and understanding in progressively more challenging contexts.

In the Foundation Stage, children's understanding is scaffolded through exploration in real-life play. As children start to become familiar with and make sense of the concepts of number and shape, they will be provided with varied concrete and pictorial resources. In all year groups, lesson content is carefully designed to follow the 'mastery' approach to learning, to enable students to develop a secure and 'deep' grasp of both arithmetic skills and reasoning abilities. To extend and deepen the children's understanding, the objectives are explored in a varied representations, which ensures the children learn how to use and apply what they have been learning about.

Arithmetic

How often, what, how and when arithmetic is taught, from one year group to the next, will vary depending on the learning objectives for that particular year group. Arithmetic sessions can be incorporated within maths lessons or delivered as a discrete subject but all sessions serve the clear and distinct purpose of supporting all pupils, irrespective of ability, on their journey to becoming number-fluent. From an early age, children will be working hard to develop a strong sense of what each number means and exploring the many connections between each of the numbers so when concepts become increasingly more abstract, they have their secure understanding to scaffold their new learning. The ultimate goal is for children to leave our school having developed a secure, efficient and confident understanding and grasp of the relationships between numerical values.

Mastery Approach and Reasoning in Mathematics

All staff across our school work exceptionally hard to teach mathematics using the 'Mastery Approach. For this to be achieved, staff have developed a deep understanding of all objectives so they can deliver all lessons with a view to maximising all pupil's progress. The core principles of the 'Mastery Approach' ensure children secure and build upon their understanding of methods and skills so that they have a firmer and deeper grasp of how these can be applied in a wide and varied range of contexts. To enable children to develop a depth to their understanding, our pupils learn and develop their skills and knowledge using concrete and pictorial resourcing before moving onto more abstract concepts. Once children have demonstrated a grasp of a method, their skills and abilities are 'deepened' and extended, rather than pushing students onto the next year's objectives when they don't have a true grasp of how to apply their understanding. Maths knowledge without the awareness of how and when to apply it is quite useless!

Mathematical Vocabulary and Stem Sentences

From the Foundation Stage through to Year 6, children are taught age-appropriate mathematical vocabulary to ensure that maximum progress is not prevented due to a lack of familiarity with terminology. It is of paramount importance that this is achieved throughout the school because at the end of the primary years, the children will need to be familiar with and comfortable using multiple terms, interchangeably, for the same meaning i.e. times, multiplied by, lots of, groups of, product of. Each lesson, children are regularly required to explain their thinking in sentences using mathematical language and with clarity. This is only possible when teachers model and children practise using the relevant mathematical language, in context, on a daily basis. Therefore, each lesson, children will be taught and actively encouraged to use their 'stem sentences', which are either partially completed sentences or statements of understanding, which use mathematical language to help structure a worded explanation of their understanding. The mathematical terminology and stem sentences will be displayed in the classroom and changed regularly, depending on what is being taught.

Depth of Understanding

Within lessons, each child's depth of understanding is secured and challenged to enable our children to apply their knowledge in varied and challenging representations of the daily objective. Examples:

- ✓ worded and contextual questions
- ✓ questions which are presented pictorially
- ✓ always, sometimes, never questions
- ✓ true or false and why questions
- ✓ which is the odd one out and why
- ✓ children identify missing values from within a number sentence (not just finding 'the answer')
- ✓ completing Carroll and/or Venn Diagrams
- ✓ adopting the role of the teacher and providing written feedback when a question has been completed incorrectly (teacher has modelled a common error / misconception)

Number fluency - number bonds

At the core of our approach to mathematics is our ambition for all children to become 'number-fluent'. At the very heart of this target is a secure grasp of their number bonds. Our teachers in FS and KS1 work tirelessly to support children in achieving this goal. Children have also been given logins to 'Numbots', a highly motivational online learning platform aimed at improving children's recall of number bonds and addition and subtraction facts.

Number fluency - times-tables

As children work towards their goal of becoming 'number-fluent', we support pupils to build upon their number bonds and develop a security and efficiency of their times-table recall. Across the school, wide and varied methods are used to support all types of learners: songs are learnt, rules are taught; challenges are set. If there is a strategy out there – we use it! One of our ways of striving to improve speed of recall is to use Times-Table Rockstars: a highly popular application which allows children to embrace their competitive side! The application enables children to track and develop their speed of recall, has in-built algorithms which identify the developmental times-tables facts the children need to be working on, compete with one another and compete as part of their house-groups on a whole school basis.