Maths at Ogbourne CE Primary

Key features of our Maths curriculum

- **Discrete subject –** Maths is taught as a discrete subject and children have a 50-minute maths lesson and a 20-minute 'Maths on Track' (MOT) session every day. The daily lesson is where new small-step objectives are taught and the MOT session is for times tables practice (KS2), number fact recall (KS1), retrieval and consolidation of learning. Features of lessons and MOT sessions are described further down in this document. We have worked closely with a very experienced maths consultant in setting up our curriculum, training staff and reviewing the progress we are making towards our vision of excellent mathematics.

  Although we have mixed-age classes across our school, within each class, teaching and learning ensures that each year group follows their own year group objectives which have separate tasks and outcomes. This is facilitated by the teacher with the support of the class TA.

- **Curriculum Design –** We have chosen our 'Can Do' curriculum approach because of its focus on learning for mastery and memory. The features of our curriculum which focus on memorable learning are:

  - **Retrieval:** The curriculum from year to year works as a spiral and then within each year the MOT sessions ensure that learners benefit from spaced repetition and retrieval practice to build on prior knowledge.
  - **Vocabulary Development** which enables all children to have the opportunity to develop broad and subject-specific vocabulary to support their understanding of the curriculum. Lessons are built around stem sentences, which aid children's reasoning and independence as well as building their mathematical vocabulary.
  - **Small Step Progression** ensures that all children can access challenging content meaning that learning is accessible to all. The 'Knowledge Organisers' for the unit are displayed on the classroom working wall and emailed to all parents, as part of the start of termly curriculum overview letter.

- **Encouraging independent learning -** All learners need to believe they can succeed and also believe that their teachers and parents, believe they can succeed. Adopting a growth mind set is at the heart of a 'Can Do Maths' approach and knowing that making mistakes is an essential part of learning.

  We use routine, working walls, 'show-me boards', small-steps, manipulatives, models and images to help children to develop independence and to support their mathematical understanding.

- **Equality, diversity and social justice –** The emphasis on vocabulary and explanation in our Maths curriculum has been designed to close language gaps among our children and to help them to develop important verbal reasoning skills. We know that having the right language structures and vocabulary can also aid thinking and so we aim to make the language explicit, in order to give all children equal access to thinking like a mathematician.

- **Belief and investment in children –** We aim to develop the children's procedural fluency, while enabling children to reason and problem solve within their curriculum.

  We operate a 'keep up, not catch-up' mentality and approach using Maths on Track (MOT) sessions, purposeful adaptations to learning and feedback during lessons.

  We aim to achieve success in mathematics for every child by developing a 'can do' mindset, where positive attitudes and consistent effort are encouraged and rewarded.

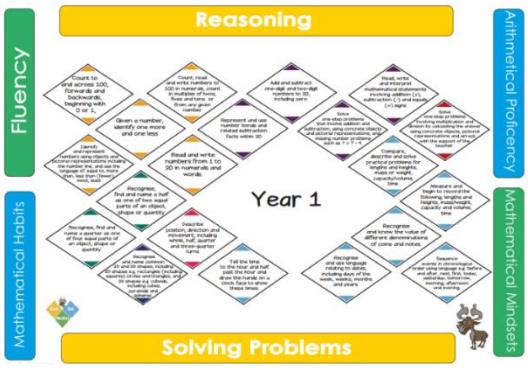
  We have invested in high-quality and engaging mathematical manipulatives that children can use to aid thinking in lessons.

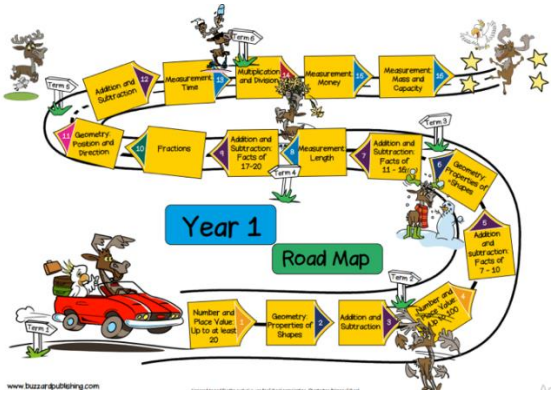
Curriculum Design

From Years one to six, our curriculum is driven by the 2014 National Curriculum for mathematics, the aims of this are to ensure 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.

Our curriculum is carefully structured to ensure progression year on year. There is a strong focus on number and place value at the beginning of each new year, so that there is time to secure this throughout the next 12 months.





Early Years

Early Years also follow the 'Can Do' scheme, focussing on counting to 20, conservation of number, calculation within and up to 10 and continuous provision learning opportunities, both inside and outside of the classroom.

Medium term plans identify small key learning points creating manageable steps for number. Teaching sessions are based on 'what it is also' and 'what it is not', putting a spotlight on misconceptions to secure learning. Adult-led activities focus on the small step that has been taught, to assess and challenge the children's understanding. Continuous provision is planned to provide opportunities to secure learning and solve problems within the teaching. There are also additional opportunities to explore learning within spatial reasoning and patterns and relationships across the year.

Key Stage 1 and 2

Within Years 1-6, medium term plans identify small key learning points creating manageable steps. Independent activities and questions are designed using the following approach: ***Do It****: what it is/what it is also;* ***Challenge It****: what it is not;* ***Solve It****: challenges to apply learning.*

Learning focuses on developing conceptual understanding, and practising gives all learners the chance to have a go and be successful. Concrete and pictorial representations are chosen carefully to help build procedural and conceptual knowledge together. Support and challenge is integrated into lessons and reasoning and solving problems takes place throughout the lesson. Challenge is provided by going deeper rather than accelerating too early into new mathematical content.

There are staff support videos for every unit of study and these recommend key models and images and how they could be used.

Typical Features of a maths lesson

Engage: An anchor task/hook is frequently used to engage the pupils in their learning. Pupils are given time to explore or discuss.

Teach It: Concrete and pictorial representations are chosen carefully to help build procedural and conceptual knowledge together.

Practise it: Children practise their new learning (including methods and models) with support as needed from a peer or adult, using 'show-me boards'. Teachers use a 'My turn…' 'Your turn…' approach.

Do It: Children have a go and complete a few examples independently, including 'What it is' and 'What it is also'.

Challenge It: 'What it is not' (a key misconception) is used to secure understanding of what the learning is. Children have a go independently and a class discussion explores it further. Stem sentences and key vocabulary (displayed on the maths working wall or whiteboard) are used to ensure deeper understanding.

All pupils are expected to develop at least a secure understanding of each small key learning point.

Solve It: Opportunities to solve problems applying the key learning.

Review It: An assessment of key learning

Pupils difficulties and misconceptions are identified throughout the lesson through immediate assessment for learning and addressed with intervention within the lesson or the same day or week.

Typical Features of a Maths on Track (MOT) Session

MOT is a 20-minute daily session that is crucial in securing sustained progress. The session is designed to be flexible, developing children's arithmetic toolkit, practising and applying the week's learning and providing opportunities for immediate intervention and for solving problems. Accurate assessment of learning will inform decisions about the content of the MOT sessions.

A MOT session includes:

- Retrieval practice, focusing on learning from previous; units, terms and year groups
- A focus in on number facts and rapid and accurate recall of times tables
- Addressing identified gaps and misconceptions in children's knowledge and understanding
- Problem solving to develop problem-solving strategies

Maths Home Learning

To support our work on key number facts recall and times table recall, all KS1 children are issued with a Numbots log-in and all KS2 children are issued with a Times Tables Rockstars log-in which form a key part of home learning, which is detailed in the 'Home Learning Policy'. Some children may also have dedicated time in school to work on this programme.

Working Walls

Working walls form an integral part of our teaching environment and they are a very powerful visual tool for our pupils when they are actively used and well-maintained.

Each classroom needs to have a space on the working walls for each year group's learning. The purpose of the working wall is for it to be a resource for the children.

Working walls should be referred to and support pupils in their independent learning.

The stem sentences, key vocabulary and knowledge organisers should be displayed on working walls.

Calculation Strategies

An appreciation of number and number operations, which enable mental calculations and written procedures to be performed efficiently, fluently and accurately is key to children being successful in mathematics.

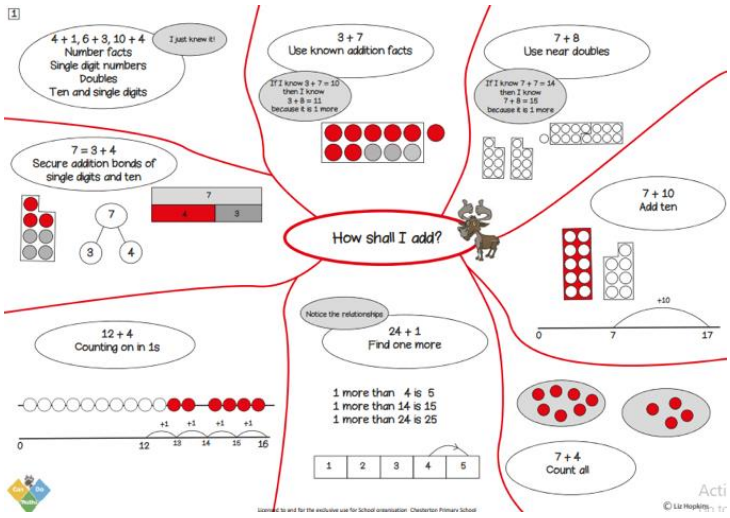
We aim for all children to be:

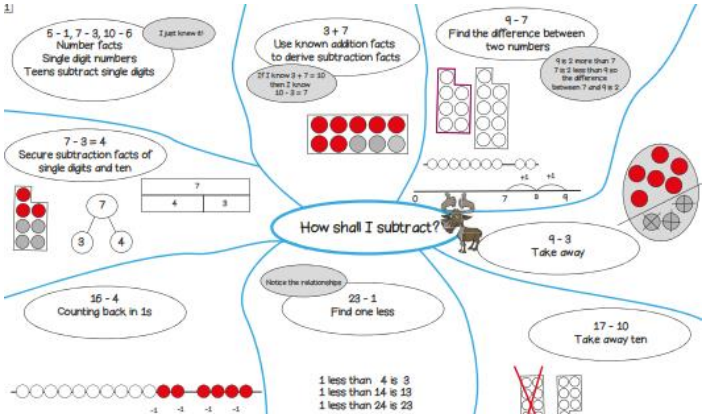
- Able to recall quickly and accurately basic number facts (e.g. number bonds, multiplication and division facts)
- Fluent in applying quick, efficient written and mental methods of calculation.

Before doing a calculation, all teachers and pupils look at a calculation and think *'What do I notice? 'and 'Can I do it in my head, with jottings or do I need to use a written method?'*

All teachers use concrete and pictorial representations to teach conceptual understanding of mental and written calculation methods. The Mathematics Curriculum prioritises time for developing conceptual understanding of calculation methods and learning facts. It is therefore our intent that:

- All teachers are confident and skilled to teach mental methods (in your head or with jottings) and written calculation methods.
- All children have a secure understanding of mental and written methods of calculation suitable for their stage of learning.
- All children choose appropriate calculation methods depending on the numbers.
- All children can recall, understand and make connections using facts suitable for their stage of learning.





Assessment

During the lesson teachers will continually be using Assessment for Learning which informs the next steps in their teaching and help them identify gaps in pupils' knowledge which can be targeted during the MOT session.

Remember Its – These include three types of questions; Can you do it? Can you convince me? Can you solve a problem? This is based on the term's learning. Teachers use the question level analysis to identify gaps in children's learning, to be addressed in MOTs.

Time tables speed recall check – termly

NFER Standardised tests – We have a formal Maths test 3 times a year with a standardised result from the NFER. This gives students much-needed experience of formal tests, in order to reduce their cognitive load when the time comes for SATs and also to give them confidence in their own capabilities to express their learning in this way. Additionally, it gives us a good national benchmark which helps us to judge how we are getting on and any interventions or changes that need to be put in place to improve.

Feedback

As we aim to achieve success in mathematics for every child, the 'Do it' part of the independent work is marked in **GREEN PEN** (during the lessons as much as possible) and should ensure that all children are successful, before moving onto the 'Secure it' task.

Wherever possible, verbal feedback is used to support children in understanding their next steps, challenge the children's thinking, and to develop and deepen their understanding.

Children's corrections and next steps are written in **PURPLE.**

Staff Continued Professional Development

Within the CanDoMaths approach, there are online subject expertise videos for every unit of maths, to support teachers in understanding and developing their instruction, with clear subject specific vocabulary and appropriate models and visual representations to use. There are also live planning clinics every Thursday for further professional development within the mastery approach.

There has been continued work alongside a maths consultant to ensure that our maths curriculum is fit for purpose and is matched to our children's needs.

There is also ongoing in school support to develop and evaluate the individual needs of teachers in order to achieve the subject aims within maths.