Intent

Maths pays close attention to guidance provided by the National Curriculum sequence and content. It is infused with evidence-led practice and enriched with retrieval studies to ensure long-term retention of foundational knowledge. We Develop **fluency** in the fundamentals of Mathematics (Number, Measurement, Geometry and Statistics) enabling our children to **reason mathematically** and **solve real-life problems**. We intend that pupils gain a deeper understanding of concepts, by using concrete resources and pictures prior to abstract learning.

Through excellent teaching and generative tasks, the connection between the mathematical content and the context is relevant to the everyday lives of children.
The foundations of mathematics are cemented in the EYFS through learning within the Mathematics. Our ambitious interpretation of the National Curriculum places knowledge, vocabulary, working and thinking mathematically at the heart of our principles, structure and practice.

Substantive knowledge
This is the subject knowledge and explicit vocabulary used to learn about the content.
Misconceptions are pre-empted within our Power Maths scheme of learning. This supports teacher knowledge and enables staff to support learning.

Our Mathematics subject leader receives regular updates and training to lead the subject through the **local Origin Maths Hub and NCETM.**

The Maths lead provides regular CPD sessions to all staff through staff meetings and INSET.

Disciplinary knowledge
To understand how Mathematics is underpinned, reasoning and problem solving is embedded within every lesson to enable pupils to look for similarities, differences, make generalisations and strive to prove what a concept is or is not.

This is knowing how to think like a mathematician, using their own number sense and rich connections. This is taught. It is not assumed that pupils will acquire these skills by luck or hope. Pupils construct understanding by applying substantive knowledge to reasoning tasks. The skills covered in each unit are mapped out on our school LTP with greater depth opportunities included.

Principles
The principle aim of our Maths curriculum is that **'everybody can'** by using concrete objects before moving onto pictorial and abstract representations (C- P -A) to draw upon prior learning and provide the children with the understanding to enable them <u>all</u> to work mathematically.

Our Calculation policies reflect our rationale with clear concrete, pictorial and abstract examples.

For example, in the EYFS, pupils may learn about **Mathematics** through daily activities and exploring their environment. This is revisited and positioned so that new and potentially abstract content in Year 1 is related to what children already know. This makes it easier to cognitively process and accelerate new learning as children integrate prior understanding. All lessons start with the mathematics in a real-life concept. This helps the children to ***discover*** the Maths in a familiar way.

Sequencing

Our Maths curriculum is sequenced into meaningful and connected 'chunks' of content to reduce the load on the working memory as well as creating coherent and strong long-term memories. Each unit builds upon the previous one, allowing the children to constantly return to prior learning and build upon it.

We use ***Power Maths*** scheme as our primary scheme of learning, founded on the conviction that ***every child can achieve***. Power Maths' cohesive approach builds on each concept in small, progressive steps, through child-centred learning. Each lesson embraces the ***C-P-A approach*** (Concrete - Pictorial - Abstract) enabling children to build on prior learning, see patterns and make connections.
White Rose Maths and NCETM materials are used to supplement the Power Maths scheme.

Clear sequencing provides the necessary steps for **all** learners to reach the end point as evident in our medium-term plans.
The sequence of substantive and disciplinary knowledge enables pupils to become more proficient with each unit and grow an ever broadening and coherent mental model of the subject.

All year groups are also following the Mastering Number programme which develops all children's Early Number Sense to reduce the children's cognitive load.

Spaced retrieval approach

Our Maths curriculum is delivered through a series of units which are deliberately spaced throughout the academic year with opportunities to introduce and revisit key concepts. This approach enables staff to deepen pupils' understanding and embed learning.

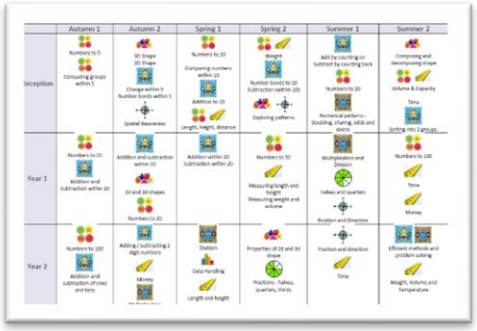
Implementation

Early Years

In Early Years, early Maths content is taught through **Mastering Number**.

Key Stage 1 and 2

As pupils progress through Key Stage 1 and Key Stage 2, new knowledge is integrated with pre-existing understanding. New substantive knowledge is constructed and made sense of through **fluency, problem solving and reasoning tasks.**



Development of Mathematical skills

Mathematical fluency (Mastering Number programme) has been prioritised for all to ensure pupils become confident mathematicians and have strong number sense through developing their skills of:

EYFS

Subitising	Cardinality, ordinality and counting	Composition	Comparison

Year 1

Subitising	Cardinality, ordinality and counting	Composition	Comparison	Addition and subtraction/ Number facts

Year 2

Subitising	Cardinality, ordinality and counting	Composition	Comparison	Addition and subtraction/ Number facts

In EYFS throughout the week, the children complete maths within real-life contexts, share their ideas in whole class and group learning, complete focussed tasks and use their mathematical thinking across the provision adopting the following format:

- There are ***4 x Mastering Number*** sessions of 10-15 minutes per week. This develops their early number sense (fluency).
  - Revisit of prior learning.
  - Teach / practise of new learning including questions given within plan.
- Shape, space, measure and pattern is taught using the **Power Maths resources** for 8 weeks during the academic year.

Power Maths lessons

Every year group receives regular, **whole class Mathematics teaching** which includes fluency, real life problems and reasoning.

As well as ensuring pupils are taught key knowledge, each unit is designed to offer pupils the opportunity to undertake problem solving and develop their skills as a Mathematician through reasoning activities.

Minimum lesson expectations

- There are ***4 x Mastering Number*** sessions of 10-15 minutes per week. This develops their early number sense (fluency).
  - Revisit of prior learning.
  - Teach / practise of new learning including questions given within plan.
- In addition, there are ***4 Power Maths session***s per week, covering the broader mathematical content.

In Power Maths, lessons are taught a minimum of 4x weekly and incorporate the following elements:

- **Discover:** *Generate curiosity using a real-life example.*
- **Share:** *Following on from above, encourage children to share methods used to solve the problem. Talking and further eliciting the Maths linked to the problem, within mixed ability pairings using concrete and / or pictorial representations.*
- **Think Together:** *'I do, we do, you do' to encourage further thinking through a series of problems, practising the new learning, using C-P-A.*
- **Independent practise:** *ALL children should now be ready to practise, independently accessing CPA as appropriate. The concept should be shown through variation, problem solving and reasoning.*
- **Reflect:** *Help children evaluate if they have understood the sessions key concept and small step usually through reasoning problems.*

Please also see the 'Expectations for Maths Lessons' document.

Concrete, Pictorial and Abstract Strategies

- Children use **concrete objects** when first exposed to new learning.
- Children develop **pictorial strategies** once confident with the mathematics.
- Children use **abstract workings** as per mathematicians once the concept is fully understood.

- **Problem solving and reasoning examples** are used based on our children's knowledge of the world. E.g. school-based examples such as PE lessons, numbers of children in a class.

Vocabulary
The use of stem sentences is embedded to encourage all to speak in full sentences using correct mathematical vocabulary and make connections to the written calculations.

EYFS
We want our children to have an expansive vocabulary and through teacher modelling and planning, children are given opportunity to use and apply appropriate vocabulary. Mathematical language is taught and built upon with vocabulary being a focus. This is also encouraged through continuous provision activities e.g. construction and building areas, role play with counting opportunities

Vocabulary in Years 1 - 6
Vocabulary instruction is at the heart of the curriculum and subject specific words are incorporated in each unit. Children use stem sentences alongside gesture or recorded expressions to help learn the correct mathematical vocabulary. A small number of words should be focussed on at the start of a Power Maths lesson.

Homework
In Key Stage 1, pupils receive **fluency-based** homework on a weekly basis to enable them to practise the quick recall of numbers and number facts. Each year group has a counting or calculation-based fluency skill for the whole half term. Enjoyment of Maths is at the heart of the homework and tasks set are often practical with opportunities for those to record pictorially and abstract if ready.
In Key Stage 2, pupils will receive homework that incorporates all elements of the maths curriculum in order to develop their substantive and disciplinary knowledge.

Adaptive Teaching
We aim for all Maths lessons to be accessible to all pupils.

- Quality First Teaching (QFT) for SEND pupils, and any other focus pupils, will typically include any of these 5 effective strategies:
- *Scaffolding e.g. sentence stems, CPA approach*
- *Explicit instruction e.g. small steps*
- *Cognitive & metacognitive strategies e.g. chunking, pre-teaching of vocabulary*
- *Flexible grouping*
- *Use of technology*

- For more rapid grasping pupils, our curriculum is ambitious, clearly stating challenge through more complex problems and reasoning.

Links with other subjects
The Maths curriculum is sequenced so each unit builds upon the previous one. Other subjects have been planned to fit with the Mathematical knowledge the children have acquired. The use of mathematical concepts is embedded within other subjects, with examples demonstrated below:

Oracy
When discussing their findings or presenting information, pupils are encouraged to speak using full sentences and incorporating key vocabulary. This is modelled by teachers e.g. **using My turn, Your turn.**

Science
Pupils are expected to record their results in Science with teachers modelling how to use their maths purposefully e.g. sorting skills, data handling through pictograms and block graphs.

Geography
When exploring the world around us, there are clear links made to position and direction e.g. compass points.

History
When exploring chronology, children apply their knowledge of number and place value to sequence dates.

PE
Application of fraction and turn is applied within PE units e.g. jumping and landing. Children use stopwatches and timers to calculate personal-bests.

Impact

Formative assessment

- Teachers use formative assessments within lessons to check on whether children **know more – do more - remember more –** linked to the key learning planned.
- Misconceptions are used as key teaching points – these may have been identified prior to teaching or within the lesson.
- Children identified by the Maths lead should be checked upon at each stage of the Maths lesson to ensure they are understanding the new learning.
- Pupils who may benefit from same day ***Keep Up*** sessions are identified and provided with brief sessions during the week by the class teacher / teaching assistant.

Summative assessment

- In Mathematics there are clear criteria (end points) to determine if a child has reached the expectation for that unit of learning (on LTP). Throughout, and at end, of each unit of learning, teachers reflect on the child's evidence / observations of how they have solved problems to decide if that child is meeting age-related expectations, whether they are working at greater depth / or whether they require further support to enable them to access the next steps in learning.
- At the end of each unit, teachers will assess pupils using an end of unit assessment to check gaps in understanding and use if creating an intervention plan.
- At the end of each term teachers provide summative assessments as to whether children are Working Towards, Expected or Beyond / Greater Depth in the Maths units taught so far that academic year.
- Assessment data enables the Maths lead to support & advise teachers for future learning. It also helps identify individual children for more detailed book study and gauge a % of children meeting expected standards.
- Pupils who are not reaching age-related expectations receive further intervention through **Catch Up** sessions as identified on class provision maps.

Monitoring

- The Maths lead undertakes minimum of half-termly lesson drop ins to ensure QFT. Clear guidance has been created and provided to all teachers and teaching assistants on the expectation for high quality Maths lessons.
- The Maths lead undertakes termly workbook checks with a member of the Senior Leadership Team to ensure content and coverage against the LTP. This could lead to the curriculum being reviewed and adjusting which units are taught when.
- The Maths lead scrutinises planning to ensure full coverage of the curriculum.
- The Maths lead undertakes termly pupil book study to investigate how and when pupils are using the expected vocabulary, and to ensure that all learners have been able to access the content to know more and remember more. The subject leader will talk to a range of pupils about what they have learnt, what strategies they use and what they can remember. The leader will assess their use of and understanding of the subject specific vocabulary for that unit of work, and use this assessment to feedback to staff about gaps in knowledge and understanding, and ensure progress for all from individual starting points.
- Triangulation of evidence is used to determine overall impact of Quality of Education in Maths with a member of the SLT.
- The Maths lead will meet with a Trustee annually to undertake/feedback some of the above monitoring activities and/or present at Full Trust Board meetings.