



Curriculum Overview for Maths ~ September 2021

Intent

At Birkwood Primary School, we strive to promote a **life-long love for learning** of mathematics; we believe that **enjoyment** is paramount. Equally, we believe that this is promoted by providing a high-quality and varied curriculum packed with meaningful opportunities. We aim to bring the curriculum to life in order to develop **fluent mathematicians** and **resilient learners** who can problem solve, using mathematical reasoning, with unconscious competence. We have adopted this ethos and subsequently our teaching of mathematics promotes the belief that all of our children have the potential to **succeed and exceed at all levels**.

We teach maths as an inter-connected subject, providing opportunities to explore mathematical ideas and their relationships. We recognise the need for procedural fluency to be linked with conceptual understanding, to promote the strong development of proficient mathematicians. In order to achieve this, we have a strategically planned and embedded curriculum in place that allows our children to, 'systematically acquire mathematical facts, concepts, methods and strategies to be able to celebrate success' (Ofsted, 2021).

We have worked hard to create a culture of deep understanding, confidence and competence in mathematics, promoting the mastery of mathematics throughout school. To support our mastery approach to teaching and learning, we have adopted the White Rose Maths-Small Steps programme from Foundation through to Year 6, which is implemented in conjunction with our mastery approach (Mastery Policy). This is carefully designed, logical and systematic sequence to teaching mathematics which is implemented based on the needs of our pupils.

We strive to ensure that our children move through the curriculum confidently. However, we focus on providing children who grasp concepts quickly to be offered a rich and varied array of sophisticated problems. Those who do not are identified early through stringent pre-assessments, and a network of targeted support is implemented with the intention of giving children the opportunity to 'keep up' as opposed to 'catch-up'. In addition to this, children are provided with targeted intervention and support, inside and outside the classroom, to consolidate and develop understanding at their own pace. This is planned and delivered with consideration of the 'Non- statutory Guidance for the National Curriculum in England'. We also intend to provide 'Booster sessions' to targeted groups, highlighted through our assessment data and teacher assessment.

To strengthen this, the Ready to Progress criteria has been embedded within our practice and is something that is evident through quality first time teaching, as it has been included as a key feature of our planning. We strive to ensure that all children have the same opportunities to excel in maths, regardless of circumstance, and this is something that we have devoted a considerable amount of time, money and effort into achieving.

In order to ensure that we meet and exceed these expectations at all levels, we have set out a range of subject intentions, how we aim to implement them and considerations of the impact they have/ will have.

Our Core Intentions are:

- To provide a well-designed, bespoke and age appropriate curriculum that considers declarative, procedural and conditional knowledge, promoting a deeper understanding of the relationships between concepts **(Planning/ Lesson Structure/ Calculation Policy)**
- To develop mathematicians through a solid infrastructure with systematic provision of sequenced core content that becomes the building blocks of later success **(Planning/ lesson structure)**
- To provide our children with a variety of mathematical opportunities, which will enable them to make the connections in learning needed to enjoy greater depth in learning. **(Mastery approach)**
- To provide a network of intervention and boosters that allows children who may be disadvantaged to have access to high-quality provision, giving them the best possible opportunity to meet and exceed the expectations of the National Curriculum.
- To equip and support teachers and staff with the necessary tools and confidence to provide high-quality first teaching for all of our children. **(CPD- staff development)**
- To use formative and summative assessment to identify gaps in learning and design support networks that enable our children to 'close the gap'. **(Intervention and assessment)**
- To be ambitious and aspirational in the acquisition and application of key mathematical vocabulary to enable them to clarify, explore, consolidate and reorganise their new knowledge. **(Maths talk)**
- To develop mental arithmetic through providing exciting opportunities to learn in and out of the classroom. **(Daily Arithmetic, mental starters, Times table development)**

Implementation

Planning

Each year group has a clear rationale for the teaching of maths that is mapped out (implemented White Rose- Small Steps) and delivered using:

- **Long term** - A yearly overview which introduces the mathematical concepts and vocabulary across the strands of maths in term 1, and revisits with a higher degree of complexity throughout the year with opportunities to problem solve and reason. (Considers RTP Criteria)
- **Medium term** - A termly plan which breaks down the strands into key progressions that are taught sequentially, with a consideration of relationships between key concepts of maths.
- **Short term** - Focused objectives with specific acquisitions (new learning and vocabulary) with differentiated support for particular learners, clear progressions from practice and consolidation with varied fluency, through to problem solving and reasoning. We also consider the provision of low floor, high ceiling questions- combining problem solving with reasoning, to ensure our learning has no limits and is all-inclusive.

The **Calculation Policy** has recently been revised to provide a clear progression of the delivery of the four operations (Addition, subtraction, multiplication and division) year by year. It considers the use of manipulatives and provides clear links to appropriate mathematical vocabulary

(See Calculation Policy- separate link- website)

Lesson Structure

Daily Lessons include:

- Times Table Challenges (Counting Stick- focused rehearsal)
- A mental starter which revisits and builds on declarative understanding
- Recap of previous Learning- providing context for next steps
- Objective for learning and steps to success based on prior knowledge (Success Criteria)
- Key Vocabulary
- Teacher input with the use of concrete manipulatives (Where appropriate) to explore the mathematical concept being taught.
- The opportunity for children to practise and communicate new learning with the use of a range of concrete manipulatives, moving to pictorial when ready, becoming familiar with different representations of the maths concept)
- The opportunity to move to abstract once required (use of problem solving is embedded within)
- The provision of questions to promote problem solving, promoting reasoning through high-quality 'maths talk'.
- *Pupils develop reasoning through problem solving with use of STEM sentences and mathematical partner talk.*
- Plenary- Consolidation of learning and next steps formulated. Assessment for learning used to inform next steps.

Mastery Approach

Please Refer to our Mastery Policy 2021/22

CPD- staff development

We are committed to ensuring that our teachers are equipped and confident in the delivery of a high-quality maths curriculum. We invest in the ability to provide 'Quality first teaching' linked to teaching standards:

All teachers:

1. 'Know where their children are' through the use of concise summative assessment and low stakes testing (See below)
2. 'Understand where children need to be' through a secure understanding of year group expectations and/or pre key stage expectations and incisive, ongoing, formative assessment
3. 'Know how they are going to get them there' through the use of a range of strategies to promote independence, mastery and high expectations of ALL.
4. Effectively deploy adults, specifically during introductions, plenaries & catch-up sessions

In order to develop confident mathematicians, we must ensure our teachers have the necessary tools to accommodate learning at all levels. In order to support this, we undertake:

- 'Deep dives' into the delivery of mathematics. This involves visiting classrooms, asking key questions to children and staff and sharing a 'maths experience' in the classroom
- Book Scutinies to assess the quality of work produced. Focus on the use of fundamentals to drive mastery and greater depth
- Curriculum coverage analysis to ensure children are being taught a rich and varied programme of study

Observations are made to identify clear areas for development, both individual and across school. This provides us with the chance to deliver:

- Personal support for teachers in the delivery of maths. 1:1 coaching with SLE
- Joint delivery of lessons and paired observations to share best practice when delivering mathematics
- Staff meetings to reinforce the school's vision and offer development points for future teaching

Assessment

We undertake assessment formatively (Daily) and summative (Termly), accompanied by low- stakes testing, to allow us to pinpoint attainment and progress in every year group. We use:

- Summative/reported assessment – White Rose Maths (3 times per year)
- Formative / ongoing – * See Marking, Assessment & Feedback policy
- Prior & Post learning assessment (White Rose Maths) – inform future planning, demonstrate progress in books and to celebrate effort and achievement

How is the data used?

At the beginning of each year, children are set targets based on previous attainment. Teachers are set three key data deadlines (Autumn, Spring Summer.) Once data is collected, it is collated with a focus on cohorts, children in receipt of pupil premium, vulnerable groups and individual. This data is used as the stimulus for termly pupil progress meetings.

Pupil Progress Meetings between the teacher and assessment leader and aim to:

- Celebrate successes and what has worked well
- Identify children that haven't met their targets
- Create group and individual plans for future progress
- Identify the need for intervention

In partnership, a cohort action plan is put in place to support the children and staff in future planning and delivery of maths.

Intervention and small group support

We place a very big emphasis on the need for quality first time teaching, however, we do understand that all children learn in lots of different ways and at different paces. Therefore, we have dedicated staff who deliver intervention programs that are designed to meet the individual needs of all of our children. With the current pandemic in mind, since 2020, we have upskilled staff in the delivery of maths groups, using the non-statutory maths guidance (DfE, 2020) and White Rose- Small Steps. The groups are formed after block-assessments as we feel it provides opportunities for teachers to design bespoke, meaningful support.

Groups are also undertaken in the form of boosters, where staff are deployed solely for the development of maths. These take place during the school day (in small ratio groups) and after school (in 2/4:1 tuition groups). These lessons have proven successful for many years and we continue to timetable these important sessions into our school calendar and provide additional finances.

Impact

Children enter our setting below or well below age related expectations. As children move through school, the gap between National figures is narrowed significantly. As a result of our structured approach, most children make outstanding progress, considering their starting points, which is sustained throughout all year groups.

Our current school attainment (2018-19) is as follows:

EYFS- 68% ELG in maths and 68% GLD

- Year 1- 70% ARE GD
- **Year 2- 73% ARE 25%GD**
- Year 3- 68% ARE 30% GD
- Year 4- 72% ARE 21% GD
- Year 5- 60% ARE 31% GD
- **Year 6- 73% ARE 23% GD**

Progress Key progress headlines from 2018-19 highlighted that:

- Over 85% of children made at least 3 steps progress Maths
- Children in receipt of pupil premium achieve in line with those not in receipt of pupil premium
- 3/4 of SEND children achieved 2+ steps progress over the year (Ks1)
- 2/3 of SEND children achieved 3+ steps progress over the year (Ks2)

In order to ensure that Maths continues to improve and remains high profile following outcomes from the Primary Inspection Data Summary Report 2021 and Ofsted Report 2014, Maths has been made a key priority in our School Development Plan. A strategic approach to improvement is in place with CPD and resources purchased to support this improvement. There have been a number of advancements since our last inspection but, in order to improve further and make this sustainable, we have outlined a number of key performance indicators and suggested areas for development in our 2021/ 2022 SDP (REFER TO SDP 2021/ 2022).

What does the school need to do to improve further? (Ofsted 2014)

Improve the teaching of mathematics even further so that more pupils gain knowledge, understanding and skills more quickly in order to raise standards to an even higher level by:

~ **Furthering teachers' expertise in mathematics and raising their expectations higher**

~ **Pupils applying their mathematical skills to even greater mathematical challenges**

Summary Outcomes

EYFS

In order to raise attainment in mathematics and increase GLD in line with national, EYFS have fostered a research-based approach to the delivery of mathematics. Children engage in adult directed activities each day which are carefully planned, following guidance from the White Rose Scheme, which is in line with the new statutory framework. Children's learning is then consolidated and deepened through an 'In the moment' approach to teaching and learning where Early Years Educators, across Nursery and Reception, are experts in providing high quality interactions with children. There is a focus on developing the acquisition of mathematical language and encouraging children to use and understand new vocabulary through hands on experiences in all areas of provision. Our enabling environment, both inside and outside provides children with the opportunities to play, explore, discover and experiment with resources and concrete manipulatives. Therefore, children can really embed their understanding and knowledge of numbers, the patterns between them and their spatial reasoning skills, including shape, space and measures. By allowing children to lead their own learning and follow their interests with Early Years Educators facilitating the process, there are no limits and all children see themselves as mathematicians. To further raise the profile of mathematics, mathematicians are celebrated weekly on a 'Maths Stars' display and their successes are shared with parents and carers.

Key Stages 1 and 2

Through bespoke planning and delivery (with a mastery approach), we have developed a 'love for learning' in maths. This has looked to break down the barriers to learning for all of our children, regardless of pupil premium and SEND. This, when considering the current pandemic, has also looked to provide support for all of our children and reduce the impact that lost learning has had upon our children. This has been boosted through our link with the Maths Hub, receiving bespoke support for over three years. This professional development has been the driving force for significant improvement in the delivery and attainment at Birkwood Primary School.

Our children are taught using a CPA (Concrete, pictorial and abstract) method for mastery and, after three years of embedding, we place no ceiling on our learning and it is articulated beyond the classroom door. Staff and children are passionate about 'diving deeper' and we feel that this has created a 'buzz' for maths that is evident on a daily basis. The foundations for this are systematic and consistent delivery of maths and assessment, strong subject knowledge and a clear rationale- to celebrate being mathematicians.

In particular, we have continuously focused on the development of arithmetic (in particular x tables) and this has also proven very successful. Through mental starters, and the reintroduction of a times table focus, we feel that our children are becoming fluent in facts and are confident in applying these skills to all areas of maths. We have placed a big emphasis on this continue into 2021-22, through the relaunch of TT Rockstars, through a Reward scheme, and a focus on arithmetic through our daily 'Fluent in Five' practice.

To coincide with the need for more application and reasoning, we have invested heavily in the delivery of an approach that makes maths relevant to children. We have invested in the resources and training around using manipulatives to support the mastery of maths, not to mention to use as concrete resources when supporting intervention groups and catch-up. We have also focused heavily on the development of mathematical language which has supported the push for a deeper understanding and mastery.

Areas for Action

- To work to provide meaningful opportunities for children to acquire, practice and apply facts, concepts, methods and strategies (Carefully sequenced planning)
- To ensure that children who have been affected by the COVID-19 pandemic have access to high quality opportunities to 'catch-up'
- To continue to provide opportunities for children to develop fluency and acquisition through meaningful and mapped out arithmetic program.
- To continue develop times table application through a range of methods to ensure children meet 12 x by the end of year 4 (National requirement)- promotion of TT Rockstars Reward Scheme.
- Ensure that classrooms promote maths talk and children exposed to key vocabulary related to their learning
- To ensure that staff and children are competent with the use of manipulatives to promote a mastery approach to maths.

***FOR SPECIFIC MATHS ACTIONS, PLEASE REFER TO 2021/22 MATHS ACTION PLAN**