

MATHEMATICS POLICY

BIRCHWOOD JUNIOR SCHOOL

2020-2021



Introduction:

This policy outlines the aims, organisation and management for the teaching and learning of mathematics at Birchwood Junior School.

It is based on the implementation of the Mathematics curriculum 2014 for KS2 and links directly to our DREAM BIG curriculum powers. The policy also outlines how we teach for mastery, a practice which we firmly believe secures our children's enthusiasm for maths and prepares them best for success in the 21st century.

This policy will be reviewed January 2021.

Aims:

Mathematics is a life skill. It is an essential element of communication, used daily in society, both in everyday situations and in the world of work. Children need to be able to reason, convey concepts and think flexibly in order to be successful in the 21st century and, alongside our community, it is our job to ensure that they are equipped to do so.

Our aims in the teaching of mathematics are:

- To equip pupils with the mathematics they need to become **fluent** in the fundamentals of mathematics.
- To develop their ability to apply mathematical skills with confidence and understanding when solving problems.
- To enable children to visualise, represent and then generalise when problem solving.
- To enable pupils to express themselves and their ideas using the language of mathematics with assurance.
- To develop positive attitudes to mathematics, recognising that mathematics can be both useful, essential and enjoyable.
- To nurture a fascination and excitement of mathematics building personal qualities through mathematics such as perseverance, independence, self-esteem and confidence.
- To be able to **reason and solve problems mathematically** with the emphasis of application.
- To motivate pupils in mathematics through the use of Games Based Learning.

Teaching for mastery

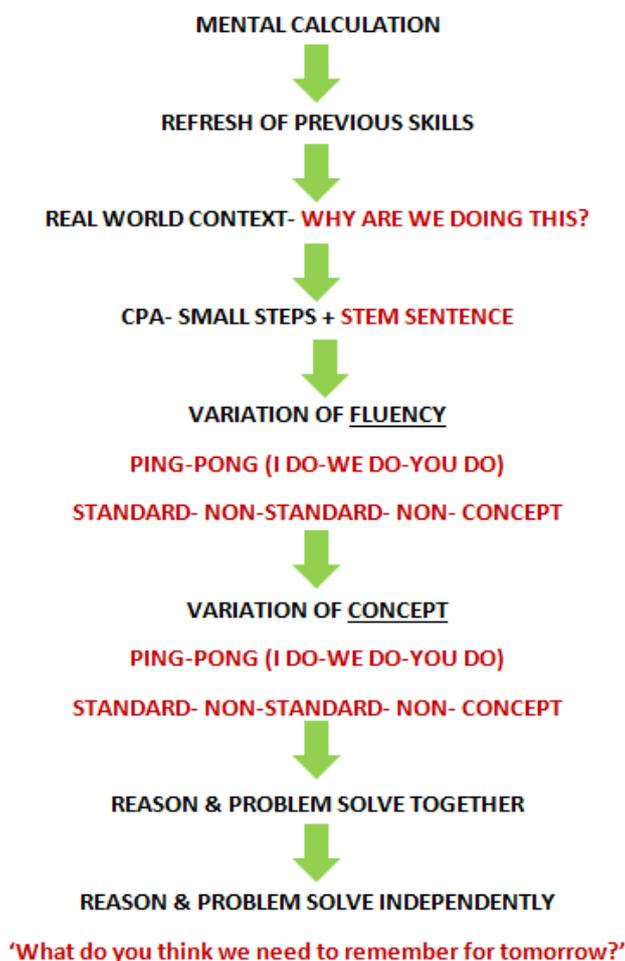
After their four years with us, we believe that ALL of our children should leave with a DEEP knowledge of the mathematics curriculum. This knowledge must be something they can use independently and in particular, that they are proud to say is theirs. In order to provide this, we are building a mastery teaching approach in our school. This simply means that we break objectives down in to very small steps and teach these simply and directly to the children. The process of teach-practise, teach- practise is an approach we refer to as 'ping-pong' and is based on the lessons learnt from our work with the East Midlands Maths Hub.

What is key, is that our lessons then provide children with constant opportunity to intelligently practise a skill until they have the security to know that they can answer it in any context. Just as importantly, the mastery of each skill, ensures that our children are best prepared to build on that with new learning. This approach continues to ensure that our children are more confident with their understanding of mathematics and that most importantly, they have ownership over that knowledge.

With this approach, we ensure that all learners are given the time to secure their knowledge and develop it to the highest level so that ALL of our children master each skill. With high expectations at the root of who we are, we also offer creative open-ended investigations to ensure that there are no glass ceilings for our students, and that they ALL have the opportunity to reach their own individual potential.

Teaching Mathematics

Lesson organisation: The Birchwood Mastery Framework



Further teaching strategies and non-negotiables:

In order to provide the children with active and stimulating learning experiences, a variety of teaching and learning opportunities are adopted:-

- Children may work individually on a task, in pairs or in a small group, depending on the nature of the activity.
 - Wherever possible practical 'real' activities are used to introduce concepts and reinforce learning objectives.
 - Opportunities to transfer skills learnt, to real situations, are used whenever possible.
 - Activities are planned to encourage the full and active participation of all pupils.
 - Teachers differentiate tasks throughout the lesson in order to meet the needs of all abilities. Teachers will encourage the use of appropriate resources to allow children to represent problems and visualise concepts.
 - Teachers place a strong emphasis on correct use of mathematical language; this is supported by **key vocabulary** being displayed.
 - Teachers value pupils' oral contributions and create an ethos in which all children feel they can contribute. Opportunities are sought for children to convince others of their findings.
 - Children will be encouraged to reason, discuss, notice, visualise and prove statements and mathematical concepts.
 - A daily mathematics lesson of 60 minutes is taught in Year 3 – 6.
 - The skills acquired in the numeracy lesson are applied across the curriculum.
 - Lessons in Year 3-6 are varied depending on the needs and ability of the class but will always be planned based on the mastery framework. This has been proven to work for the needs of the children in our setting.
 - Oral work and mental calculation involves whole-class work to **Pre Assess**, Rehearse, Recall, Refresh, Refine, Read or Reason mental and oral skills,
 - Ping pong activities offer children to have a go at the learning before beginning main tasks. Children work together in mixed ability groups and opportunities are provided so that they can **make mistakes**, problem solve and **discover** strategies to support them.
 - Children will work at their own pace, with adult support where required to guide them. This will be based on their own individual needs.
 - Independent task. Children will always be offered the opportunity to practise the skills they have learnt across a range of contexts. This is mastery for our children.
- A plenary. 'What do you think we need to remember for tomorrow?'

We recognise that children need to recognise the links between areas of learning. This question offers an opportunity for **Post Assessment through applying** with the whole class to refer back to Learning objective and success criteria, address misconceptions, identify progress, to summarise key facts and ideas, clarify what needs to be remembered, to make links in other work and to discuss next steps in learning.

Curriculum Planning

Medium Term Planning:

Teachers use the national curriculum objectives for medium term planning. Each year group begins on number objectives with then leading onto applying the skills they have been taught. Each year group uses the excel objectives grids to ensure accurate and full coverage of Mathematics based on the ability and age of the children. The medium term planning is linked to the long term map that offers opportunities to link threads such as number and measures.

CROSS-CURRICULAR ISSUES:

In line with our values to prepare children for the future, we recognise that mathematics does not appear as a stand-alone subject in the real world. With this, we ensure that opportunities exist throughout the whole curriculum to extend and promote mathematics. Teachers seek to take advantage of all these opportunities within our new topic based curriculum. Statistics, measures and geometry objectives **are met** in termly cross curricular science sessions.

DIFFERENTIATION:

This should be incorporated into all mathematics lessons and can be done in various ways:

- Pre & Post tasks to address known knowledge of specific mathematical tasks.
- Stepped Activities which can be accessed at different steps, supporting and challenging all.
- Common Tasks which are open ended activities/investigations where differentiation is by outcome.
- Resourcing which provides a variety of resources depending on abilities eg. counters, Numicon, Base10, cubes, 100 squares, number lines, mirrors.

Equal Opportunities:

All pupils will have equal opportunity to reach their full potential across the mathematics curriculum regardless of their race, gender, cultural background, ability or physical disability. The school's equal opportunities policy applies to the teaching of mathematics as to all other subjects.

Games Based Learning:

In order to stimulate mathematics at Birchwood children are involved in a range of game based technologies, which are being used to help make teaching and learning experiences within Curriculum for fluency, challenging, demanding and appealing.

The school has adopted.

- The use of Nintendo D.S's to promote independence and motivation in mental calculations.
- Visual images, such as film and still images to encourage self-reliance and self-determination through problem solving and critical thinking.
- Making mathematics relevant and linking it to other areas of the curriculum. (Cross-curricular)
- Times table rock star and my maths linked learning

Assessment, Recording and Reporting:

Assessment takes place at three connected levels: short-term, medium-term and long-term. These assessments are used to inform teaching in a continuous cycle of planning, teaching and assessment.

Summative assessments of all individual areas of mathematics are undertaken by all children termly using the Rising Stars termly assessments. Data is used as one measure on cohort attainment and progress. Children still working towards age related expectations are entered into specific intervention groups to narrow the gap.

To moderate our summative assessment using the White Rose Hub arithmetic and reasoning papers in summer terms.

Day-To-Day Assessments:

As part of the on-going teaching and learning process, teachers will assess children's understanding, achievement and progress in mathematics. Assessment may be based upon observation, questioning, informal testing and the marking and evaluation of work. These judgements will be formed and then recorded using classroom monitor. **This should be an on going process.** This data will be accessed by the subject leader and discussed at termly pupil progress meetings. Class teachers will use the assessments to inform day-to-day teaching and learning and provide feedback to children. Learners will also be taught to assess and evaluate their own achievements by recognising successes, learning from their own mistakes and identifying areas for improvement.

Periodic Assessments:

Will take place during each term at the end of each unit of work. Teachers assess key ideas, End of Year Expectations, targets and areas of concern that have been covered during these units. Pink and Grey grids along with APS trackers (amended for assessment without levels) for tracking pictures of pupil's progress are completed in December, April and July. They are used by teachers on a weekly basis and are the focus for pupil progress meetings between class teachers, subject leader and Headteacher.

Children are prescribed work for their ability and individuality, which challenges the application of their fluency, mathematical reasoning and problem solving as in line with the new curriculum (2014).

Transitional Assessments:

Carried out towards the end of the school year to assess and review pupils' progress and attainment. This enables attainment to be tracked year on year and will inform early intervention strategies.

These are made through compulsory National Curriculum mathematics tests for pupils in 6 (following National directives) and supplemented by end of Year Expectations or Previous Learning and supplementary notes and knowledge about their class to produce a summative record. Accurate information is then reported to parents and the child's next teacher.

Environment:

It is important that the classroom environment supports both the learning and teaching of mathematics.

The school aims to provide a mathematically stimulating environment:

- Through the development and use of learning walls to support learning and teaching in a lesson or series of lessons.
- through interactive displays that promote mathematical thinking and discussion
- through displays of pupils' work that celebrate achievement
- by providing a good range of mathematical vocabulary for the children to use.

In every classroom there is an abundance of practical resources that the teaching staff or children can draw on to aid them with their mathematical thinking.

These include:

- Base Ten sets
- Cubes
- Cuisenaire rods
- Counters
- Playing cards
- Place value sheets (Written methods)
- Fraction pieces
- Number lines
- Hundred squares
- Money

Homework:

We recognise the importance of making links between home and school and encourage parental involvement with the learning of mathematics. Throughout the school, Maths homework is set on alternative weeks on a Monday to be handed in on the Friday of the same week. Different approaches to homework have been trialled and parents have been consulted. The system we now have in place has taken parental and pupil's views into consideration.

Homework provides opportunities for children

- to practise and consolidate their skills and knowledge,
- to develop and extend their techniques and strategies, and
- to share their mathematical work with their family
- to prepare for their future learning.

See **Homework** policy for further details

Role of The Subject Leader:

- To take the lead in policy development
- To support colleagues.
- To monitor progress in Mathematics – eg leading staff CPD, scrutiny of work, analysis of formal assessment data.
- To moderate and quality assure the assessment procedures within school.
- To take responsibility for the choice, purchase and organisation of central resources for Mathematics, in consultation with colleagues.
- To be familiar with current thinking concerning the teaching of Mathematics, and to disseminate information to colleagues.
- The co-ordinator will be responsible to the Headteacher and will liaise with the named link Governors.

This policy will be reviewed in March 2020.

This policy was agreed and adopted by the staff and Governing Body.

Headteacher.....

Date.....

Chair of Governors.....

Date.....