Blakedown C E Primary School

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1. Strategy

1.1 Introduction

'Pure mathematics is, in its way, the poetry of logical ideas' – Albert Einstein

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and with this in mind, we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics that will stay with them and encourage them to achieve highly within the subject.

1.2 Rationale

As a primary school, it is very important to create an agreed whole school approach of which staff, children, parents, governors and other agencies have a clear understanding. This policy is the formal statement of intent for mathematics. It reflects the essential part that mathematics plays in the education of our pupils. It is vital that a positive attitude towards mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. The policy also facilitates how we, as a school, meet the legal requirements of most recent Education Acts and National Curriculum requirements.

1.3 General Aims

At Blakedown CE Primary School, we aim to provide pupils with a mathematics curriculum, which will produce individuals who have number sense and confidence; can reason and think mathematically and are: inquisitive, independent and confident. We want our pupils to be 'Secondary School ready'; have mastered their curriculum and be able to demonstrate a confidence in manipulating numbers and applying their mathematical understanding and skills in a range of contexts and increasingly greater depth. At Blakedown CE Primary School we ensure that the aims of the Mathematics National Curriculum (2014) are covered through our school's personal curriculum and provision.

2. Policy

The principles of Blakedown CE Primary School for mathematics are:

2.1 Policy and provision are evaluated and reviewed regularly

2.2 Resources of time, people and equipment are planned, budgeted for and detailed when appropriate, within action plans

2.3 The governing body of Blakedown CE Primary school discharge their statutory responsibility with regard to mathematics

2.4 Cross curricular links will be highlighted where appropriate in curriculum mapping and topic teaching

2.5 Planning of mathematics ensures continuity, progression, challenge and equal access across all year groups and key stages to ensure children become masters at their curriculum, through our use of White Rose Maths Hub to support.

2.6 Children are provided with an environment that fosters encouragement, support, challenge and well-being

2.7 Specific Aims

Our pupils should:

2.7.1 Have a sense of the size of a number and where it fits into the number system

2.7.2 Know by heart number facts such as number bonds, multiplication facts and the related division facts, doubles and halves (we refer to them as the 'non-negotiables')

2.7.3 Apply known number facts in mental maths calculations, demonstrating a confidence and ability to manipulate numbers to work efficiently and accurately. This is supported, where appropriate, by the teaching of RA PA CO DA NUMBO across school.

2.7.4 Mental maths tests take place weekly and areas of weakness for pupils are put into the teachers planning or maths interventions as a focus for the following week. Wherever possible, links should be made to RA PA CO DA NUMBO

2.7.5 Times Tables and the recall of facts are taught and delivered through Times Table Rockstars - staff complete these 3 times or more a week and regularly assess pupil competence through timed assessments

2.7.6 Calculate accurately and efficiently, both mentally and in writing and paper, drawing on a range of calculation strategies

2.7.7 Recognise when it is appropriate to use a calculator and be able to do so effectively in KS2 to support transition to KS3

2.7.8 Make sense of number problems, including non-routine problems, and recognise the operations needed to solve them. Opportunities are planned for and utilised within schemes of learning to ensure all abilities have access to problem solving, in line with their ability.

2.7.9 Explain their methods and reasoning using the correct mathematical terms and vocabulary; children are encouraged to use mathematical vocabulary and CPA approach to justify their responses

2.7.10 Judge whether their answers are reasonable and have strategies for checking them where necessary

2.7.11 Suggest suitable units for measuring and make sensible estimates of measurements

2.7.12 Explain and make predictions from the numbers in graphs, diagrams, charts and tables

2.7.13 Develop spatial awareness and an understanding of the properties of 2d and 3d shapes

3. Procedure

3.1 Pupils are provided with a variety of opportunities to develop and extend their mathematical skills in and across each phase of their education. Lessons are in line with the National Curriculum and follow, cohort dependent, on the sequencing provided by White Rose Maths Hub (WRMH). Staff will use their professional judgement, knowledge of the pupils and their assessment outcomes to plan daily lessons and relevant revision sessions and will organise them in a way that suits the needs of pupils and the sequence of learning planned.

3.1.1 The teaching of mathematics at Blakedown CE Primary School provides opportunities for:

- Group work
- Paired work
- Whole class teaching
- Individual work
- Learning partner work
- Scaffolded and facilitated work, focusing on specific objectives, with trained members of staff

3.1.2 Pupils engage in:

- CPA teaching: beginning with concrete materials (use of manipulative); Pictorial (recording jottings and use of concrete materials pictorially) and then abstract (applying their understanding of mathematical concepts taught to solve abstract equations).
- Exploring, clarifying, practising and applying mathematical skills and concepts.
- The development of mental strategies.
- Written methods.
- Practical work.
- Investigational work.
- Problem solving.
- Mathematical discussion.
- Consolidation of basic skills and number facts.

3.1.3 At Blakedown CE Primary School we recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced.

3.1.4 We plan for mathematical vocabulary to be taught across school and staff are expected to use vocabulary accurately and encourage children to use it in their reasoning and explanations, whether verbal or written. This is taught and fostered through the use of STEM sentences within sessions.

3.1.5 The fluidity of the subject, mathematics, runs through many subjects within the Primary National Curriculum and staff are expected to look, identify and plan, where possible, a variety of rich, mathematical experiences out of a range of activities and real-life experiences; we endeavour to provide the children with opportunities to apply and use mathematics in real contexts.

3.1.6 Staff endeavour at all times to set work that is challenging, motivating and encourages pupils to talk about their outcomes and experiences and to reason confidently ensuring they have a secure understanding.

3.1.7 In the Early Years setting, a baseline assessment is made by the teacher of each child. This gives the teacher a starting point for pupils' academic progress from which progress can be accurately tracked throughout their academic journey at Blakedown CE Primary School. Children will experience some mathematics within their learning environment (indoor or outdoor), some of which will be child initiated and at times adult led. This early introduction to mathematics will generally be undertaken orally and often in the context of a class theme. Evidence of mathematics teaching and learning will be seen in planning, observations in children's learning journeys and through 2Simple software. Wherever possible, opportunities for mathematics are exploited. During the year, children's recording of maths work may become more formal (recorded in a maths book) but this is at the discretion of the teacher when they feel the children are ready.

3.1.8 Mathematics lessons take place every day (unless trips/visitors/ experiences/ special themed days) and normally take place during the morning. However, staff have the flexibility to adapt their timetable so that it meets the needs of the children but they are accountable for these changes and ensuring coverage of the curriculum and effective use of learning time. Lessons should be approximately 1 hour long and have a clear learning intention. There may be an achievable objective for the day's lesson or it may be that each lesson planned is a stepping stone towards achieving a learning objective; as part of a sequence; this should be clear and evident within planning and show a sequence of learning embedding all opportunities for children to learn in different ways.

3.1.9 Maths interventions will also take place daily (where necessary). These will last for around fifteen minutes and will usually take place at the beginning of the afternoon, although again this is down to the discretion

of the teacher and should be clearly timetabled. These maths interventions will be used to pre-teach/re-teach new concepts and/ or vocabulary or to practise the agreed 'non negotiable' KIRF (Key Instant Recall of Facts) number facts for each year group; this could take the shape of a 1:1 session or be held for small groups.

3.1.10 Lessons will be structured to suit the learning taking place and the needs of the learners. Lessons should be differentiated either through level of input from staff required, questioning, type of activity (the use of concrete manipulatives, pictorial recordings/ jottings or tackling abstract equations), whether they are exploring, clarifying, practising or applying the mathematical concept or skill that has been taught or the way in which this is presented or recorded.

3.2 Learning Environment

3.2.1 The school aims to provide a mathematically stimulating environment through displays that promote mathematical thinking and discussion and displays of pupils work that celebrate achievement, including the use if working walls to demonstrate strategies and procedures to develop greater independence.

3.2.2 All classrooms should have mathematical teaching resources and learning tools appropriate to the class and pupil work. Such as: number grids, number lines, multiplication grids and place value charts.

3.2.3 Classrooms should have a designated mathematics display/working wall which should either evidence the work that has been taking place in the classroom or should be an 'interactive working wall' for pupils reminding them of strategies that they have been taught so that they can refer to it and help themselves, especially if working independently.

3.2.4 Vocabulary, mathematical concepts, number facts and models evident in the classroom should be appropriate to the age group curriculum being taught in the environment but also the needs of the pupils within it.

3.2.5 Staff are responsible for ensuring that there is at least one display in the corridor space outside their classrooms which has a maths focus. These corridor displays should demonstrate the learning that has been taking place recently and preferably have a cross-curricular or real-life mathematical link.

3.3 Homework/Home–School Links.

3.3.1 At Blakedown we feel it important to make links between home and school and encourage parental involvement with the learning of mathematics. This is done through a number of ways: through parent's consultation meetings; maths workshops; parent forum and assemblies; calculation booklets and homework links on the class website.

Homework provides opportunities for children to:

- To practise and consolidate their skills and knowledge.

- To develop and extend their techniques and strategies.
- To share their mathematical work with their family.
- To prepare for future learning.

3.3.2 Please see Homework policy for more specific details on expectations for mathematics homework for each year group in school.

3.3.3 The school website holds copies of all mathematics themed parent support booklets

3.4 Planning

3.4.1 Long Term and Medium-Term Planning

3.4.1.1 Staff should prepare for teaching their year group by looking at the National Curriculum (5.1) and mapping out the progression of mathematical concepts and skills in line with our whole school approach of using and following the WRMH Schemes of learning and long-Term Overviews to ensure a consistent delivery of education throughout school. (5.2)

3.4.1.2 Staff should also utilise the most recent documentation (5.3) outlining any recap steps base on a disturbed flow of education, due to the recent lockdown. Staff should use this to identify next steps for individuals and to guide any adaptations made within pre-prepared, medium-term sequences (Re: Coronavirus Pandemic 2020)

3.4.1.3 The School's Calculation Policy, adopted from WRMH, should be referred to, to plan for appropriate manipulatives, models and strategies to be used and taught. Staff should have an awareness of the curriculum children have covered in the previous year and the end of year expectation for their pupils. (5.4 & 5.5)

3.4.1.4 When planning for themes, staff should also consider and plan for opportunities for interconnected learning, to make cross curricular links and to set mathematics in real life, purposeful contexts.

3.4.2 Short Term Planning.

3.4.2.1 Staff should use the agreed school planning format for their individual lessons; displaying clear differentiation for all learning groups.

3.4.2.2 These plans should be annotated to show assessments of children and effectiveness of the lesson in working towards the learning objective.

3.4.2.3 It is expected that planning may have to be adapted on a daily basis to ensure that it meets the needs of the children and

ensures that misconceptions are addressed and children have opportunities to practise and apply their understanding of mathematical concepts and skills

3.4.2.4 Short term planning should be used as a working document and adapted where necessary to suit the needs of all learning groups

3.4.2.5 Short term planning is monitored periodically and occasionally will be required to be shared with SLT and other staff

3.5 Resources

3.5.1 Mathematics resources are kept in classrooms and extra sets are provided and are kept in Class 5 and the community room for staff to have access too. All classrooms have access to basic resources such as number lines, bead strings, number fans.

3.5.2 Resources for numeracy shall be audited annually and staff will have the opportunity to place requests for anything which they feel would support their teaching and the children's learning further

3.6 Assessment, Recording and Reporting

Marking and Feedback

3.6.1 All work should be neatly presented with the short date and *WALT* or *I Can*. Children will be trained to set work out and use squares in their maths books putting one digit per square. Staff will have high expectations of children's presentation skills and the work that they produce.

3.6.2 Work should be marked daily, where necessary, and should inform teachers on the children's needs for the learning to take place the next day. The marking could be issued by staff, learning partners, self-marking or through guided group TA support.

3.6.3 Work in books should demonstrate progress and reflect the children's learning journey through their learning in mathematics. Within a class there should be clear evidence of differentiation and challenge between children working at differing levels of mastery.

3.6.4 Feedback to children should be in the form of a comment in green by a class teacher, to identify strengths, weaknesses and next steps (where appropriate and most effective to moving learning on) and corrections or gap tasks should be completed in purple pen to be followed by an acknowledgement in green from the class teacher. Any errors will be made visible to children by the use of a pink highlighter.

3.6.5 The level of support required for children to complete activities/ work will be clearly identified as per the school's marking policy; all support

staff will mark in red to show clear support opportunities. (See Blakedown CE Primary marking policy)

3.7 Recording and Reporting

3.7.1 Assessment is regarded as an integral part of teaching and learning and is a continuous process.

3.7.2 Children are assessed on a day-to-day basis against the learning objectives (WALT) and the 'I can' statements taken from the school target systems for mathematics. Evidence is recorded in a variety of ways and this is clearly identified on daily planning. These can include photographs of practical work, annotations on plans, observations recorded on post-its or in books, worksheets, pictorial recordings/ jottings, video taken on cameras or I-pads and work completed in books. EYFS have access to 2-simple which allows recordings of everyday observations; and all classes are expected to continuously update OTrack (School Tracking System) on a half-termly basis to demonstrate progress

3.7.3 The objectives within our planning, are taken from the National Curriculum and link to the school online tracking system (OTrack) Once taught and supported by sufficient evidence, these targets will then be completed on OTrack so that both staff and parents can monitor a child's progress.

3.7.4 The tracking system, along with other forms of summative assessment used within the classroom, will form the basis for discussions of pupil progress meetings, parent consultations, written reports and identifying targets for Individual Education Plans and Interventions.

3.7.5 Formal assessments are carried out yearly at the end of each key stage in Year 2 and Year 6, with Years 2 and 6 completing DFE compulsory SAT's tests.

3.7.6 In Early Years 2-simple profiles are updated with regular observation and the EYFS profile at the end of the year is completed to show progress

3.7.7 In all other year groups, staff should use their knowledge of the children from ongoing marking and assessment, along with recorded data on the tracking system to ensure that children are secure in and master their year group curriculum and make good progress. This information is then passed on to the children's next class teacher so that they know the prior attainment of children in preparation for teaching them.

3.7.8 Moderation opportunities have been timetabled into the school yearly programmes (within school but also within the pyramid of schools) in order to provide opportunities for staff to gather evidence to validate their judgements with their colleagues, using OTrack, mastery tasks and

problem solving to reach shared conclusions. Thus, ensuring conformity of standards regarding the levels that teachers assess their pupils at.

3.7.9 The data generated is used to identify strengths and areas for development. Tracking is used to monitor children's progress throughout the year and form part of the discussion for Pupil Progress meetings with the Head teacher.

3.7.10 Early Years and Year 2 work is moderated externally by Worcestershire County Council on a 4-yearly cycle.

4. Monitoring

4.1 The Governing Body and senior leadership will monitor and review the effectiveness of this policy on a regular basis, but no less frequently than every three years.

4.2 A whole school programme of monitoring is planned into the schedule for the year to distribute monitoring activities throughout the year and eliminate conflicts of interest. This monitoring is completed regularly by the Head teacher, Assistant Head teacher, maths leader and lead governor. At times monitoring may also be completed by other outside agencies such as the LEA advisor.

4.2.1 Overarching messages relating to general improvements noted in monitoring will be fed back to staff promptly in whole staff meetings identifying positives, areas to improve and to share good/ best practise in school.

4.2.2 Individual staff will also be given feedback so that they can be thanked for their hard work, told specifically what they are doing well and areas where their practise can be improved.

4.2.3 Monitoring may also be used as evidence towards appraisal targets and also the need for capability.

4.3 Review

4.3.1 Reports are made to the governors on the progress of mathematics provision and to the Learning and Development Committee.

4.3.2 The Headteacher will report to the governing body on the effectiveness of the policy at least annually and if necessary, make recommendations for further improvements. Governors will also monitor the effectiveness of this policy through school visits.

5. Linked Policies:

5.1 PRIMARY_national_curriculum_-_Mathematics_220714.pdf

5.2 https://whiterosemaths.com/resources/primary-resources/primary-sols/

5.3 https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools

5.4 Addition and subtraction calculation policy.pdf

5.5 Multiplication and Division calculation policy.pdf