



Mathematics Policy

Approved by Governing Body on February 8th 2018

RATIONALE

1.1 This policy describes our values and philosophy in relation to meeting the needs of all mathematical learners at Ox Close Primary School. It outlines the framework within which all staff work and gives guidance on planning, teaching and assessment. It is designed to describe how the school intends to meet the needs of mathematics learners of all ages.

1.2 In the first instance this will be through working within the Foundation Stage Curriculum using the Early Learning Goals. From Y1 to Y6 statutory requirements of the National Curriculum in Mathematics will be met by fully implementing the New National Curriculum objectives through the use of the White Rose Maths Hub Mastery planning documents.

1.3 The policy is intended to be read in conjunction with the calculation policy which illustrates strategies and methods outlined in the national curriculum and that are taught from Reception to year 6. It is also important to read the Foundation Curriculum Framework which highlights the Early Learning Goals and the guide of progression in the Reception year.

1.4 Mathematics is a broad structure that provides a way of viewing and understanding the world. Through the use of Mathematics, information can be

- organised
- manipulated
- predicted
- described
- explained
- communicated
- questioned

1.5 Mathematics should be taught across the curriculum to develop pupils' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum, which we hope to achieve at Ox Close.

1.6 Through fully adopting the mastery approach of Maths hub, alongside meeting the three main aims of the new national curriculum for Mathematics, we want all children at Ox Close to develop into confident and competent mathematical thinkers, who are able to use maths in real life situations.

2. AUDIENCE

2.1 This policy document, having been presented to and agreed upon by the whole staff and the governing body, is available to all individual members of the teaching staff and for governors, parents or any other interested parties; e.g. the LA, support staff, visiting teachers; from the school office.

3. AIMS

3.1 Ox Close Primary School will endeavour to provide the highest possible quality of mathematical education. It will meet the requirements specified in the National Curriculum Orders and the will of the Headteacher, staff, parents and governors.

3.2 All children will be taught to develop their mathematical skills to the best of their ability. This school will aim to provide a high standard of mathematical education and will promote knowledge, skills and understanding at all levels. The target is for all children to reach their age related expectations in Mathematics to prepare them for the world around them.

3.3 The school will offer a caring, supportive environment to enable the children to reach their potential as mathematicians from the educational provision available. In order to achieve this, our aims as teachers are:

- to encourage an enthusiastic and inquisitive attitude to mathematics
- to foster high standards of achievement in mathematics
- to develop pupils' numeracy and mathematical fluency, reasoning and problem solving in all subjects so that they understand and appreciate the importance of mathematics.
- to teach children to apply arithmetic fluently to problems, understand and use measures, make estimates and sense check their work.
- to enable children to apply their geometric and algebraic understanding, and relate their understanding of probability to the notions of risk and uncertainty.
- to help children understand the cycle of collecting, presenting and analysing data.
- to teach children to apply their mathematics to both routine and non-routine problems, including breaking down more complex problems into a series of simpler steps.
- to equip children with strategies to enable them to apply mathematics to real and unfamiliar situations within and beyond the classroom
- to develop an appreciation of the intrinsic value and fascination of mathematics as well as its usefulness in life
- to be fluent mentally at basic 4 operation number sentences

3.4 Thus children will be able:

- to develop a positive and confident attitude to mathematics
- to make an active contribution to their own learning, by developing the skills of independence and enquiry
- to become confident and competent working with mathematics
- to develop an understanding of the ways in which information is gathered and presented
- to become thinkers and problem solvers
- to develop a clear understanding of the language of mathematics

- to develop logical thinking and reasoning, enabling them to record work clearly and in a variety of ways
- to develop the skills, knowledge and understanding needed in daily life

4. OBJECTIVES

4.1 The national curriculum identifies three main aims in the primary phase:

- 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.

4.2 The national curriculum states '*Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.*' Therefore, it is organised into distinct domains. However, pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

These domains for KS1 are:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measures
- Geometry: properties of shape
- Geometry: position and direction
- Statistics (Year 2)

These domains for KS2 are:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions (including decimals and percentages)
- Ratio and proportion (Year 6)
- Measures
- Geometry: properties of shape
- Geometry: position and direction
- Statistics
- Algebra (Year 6)

The distinct domains highlight the important areas of mathematics children need to learn to make effective progress.

4.5 Through combining the national curriculum aims and the Math hub principles our objectives are:

- A dedicated daily mathematics lesson is planned in each class, which will last for an hour KS1 and KS2. In the Foundation Stage there will be a daily lesson which will last for at least 20 minutes, alongside opportunities for mathematical activities daily through continuous provision.
- Lessons are well structured, lively and delivered at a good pace.
- Lessons are structured to embed mathematical understanding through concrete, pictorial and abstract representation.
- Variation will be used to broaden the children's exposure to the learning objectives in a wide range of context to ensure deeper understanding of concepts.
- The foundations of mental calculation and recall of number facts are established thoroughly through daily starters which consolidate mental recall and informal/written calculations.
- Teaching, questioning and level of support is differentiated so that the children are all working towards the same learning objective appropriate to their age group.
- All children will be exposed to challenge through tasks and questioning including further mastery standard problem solving activities for more able pupils.
- Time is given in other subjects for pupils to develop and apply their mathematical skills.
- Children will actively take part and are enthusiastic during their maths lessons and will develop an appropriate mathematical vocabulary as modelled by the teachers using guidance from the vocabulary specified in the national curriculum.

5. TEACHING AND LEARNING STRATEGIES

- The children are taught in sets, which encompass some pure year groups and other mixed year groups.
- Children's individual needs are supported through the following:
 - mixed ability paired work
 - focused questioning
 - targeted intervention based on the formative assessments and achievements of children in their lessons each day.
 - Dive Deeper tasks for children who have successfully completed independent tasks and require further challenge.
 - Use of concrete materials to support children who require more practical work to consolidate their understanding.
- Work is carried out using a balance of individual, paired and group work.
- A high proportion of lesson time is devoted to direct teaching of methods and vocabulary through modelled examples to ensure that the children are fully confident to tackle independent tasks.
- Teachers demonstrate, explain and illustrate mathematical ideas to fully involve pupils and maintain their interest through appropriately demanding work.
- Teachers use and expect pupils to use correct mathematical notation and vocabulary.
- Mathematical errors and misconceptions are dealt with as they are identified in a positive and supportive way, teaching what is right and what is not right.
- The emphasis on pupil's learning begins with practical examples leading onto informal jottings and mental strategies, and finally to formal representations as laid out for year groups in the calculation policy

- Children are given a variety of mathematical approaches to solving problems. They are encouraged to develop their own mathematical strategies as well as learning standard methods.
- We recognise and help to develop the children's abilities to select methods for problem solving mentally, recognising that these may differ from those used to solve pencil and paper problems.
- Teaching Assistants are trained in supporting children.
- Pupils are expected to present work carefully. Work in maths books is headed with the date and the learning challenge, which is highlighted when achieved.
- The children are expected to gain a wide range of experiences with a variety of materials including IT.
- A high priority will be placed on children reasoning and explaining their strategies.
- Homework for all pupils is set in accordance with the Homework Policy. It includes revision of times tables.

6 CURRICULUM AND PLANNING

6.1 The LTP is taken from the White Rose maths hub overviews and their lesson overviews are used to inform MTP. The LTP is used as a guidance tool in order to pace out coverage of the curriculum throughout the year. Teachers are encouraged to use professional discretion when deciding on how long is needed on particular curriculum area whilst ensuring all objectives are covered by the end of the academic year.

6.3 Short term planning (STP) is recorded each week on standard planning sheets. These plans outline the topic area /focus with specific learning objectives to be taught that week.

6.4 Books are scrutinised by SLT throughout the term with a health check completed termly and feedback is provided.

7 DIFFERENTIATION AND ACCESS.

7.1 Differentiated activities across the school will take account of the children's differing needs and abilities (working toward national standard, at national standard and at greater depth standard) ensuring all children have access to the mathematics curriculum at the appropriate standard. Children with special educational needs in mathematics are supported to enable them to achieve the learning objective. (see the Special Educational Needs Policy and the Equal Opportunities Policy for details)

8 ASSESSMENT AND RECORD KEEPING.

1 Assessment is a vital tool in the teaching of Mathematics, designed to monitor children's progress and measure attainment. It is also used to inform future planning by staff at this school or the child's next school.

8.2 Teachers are responsible for assessing and recording children's progress in mathematics.

8.3 Assessment opportunities are built into the planning of lessons and a range of other methods are used as appropriate. Standards are checked both in-school and through external moderation opportunities. These include:

- children's work marked promptly and in accordance with the school marking policy and AfL policy
- completion of the Foundation Stage Profile on-entry and at the end of the school academic year
- summative standardised tests (SATs) from Y2 to Y6 with statutory tests at the end of Years 2 and 6
- listening to what children say and questioning them to ascertain their level of understanding

- projections are determined at the end of each school year
- Classroom Monitor is used to assess children against each objective and is updated on a regular basis.
- observations of individuals or groups, looking for particular skills or concepts to be demonstrated
- homework set that is appropriate and relevant to the mathematics curriculum being taught
- termly moderation of children's work to agree and check the standards of attainment termly
- agreement trialling of children's work takes place with staff from another local school on a termly basis to ensure that standards are agreed.

8.4 At the end of the academic year, children's assessments are passed on to the next teacher and to the maths coordinator to identifying areas for improvement.

8.6 Parents receive a termly report that indicates their children's progress in relation to age related expectations.

8.7 As a statutory requirement, the end of year report includes whether a child has reached end of year age related expectations in mathematics as in the other core subjects.

9. AGREED PRINCIPLES FOR MATHEMATICS.

- The date and learning challenge will be presented at the top of every piece of work. This may be written by the children or printed out and stuck in, depending on the child's age and ability.
- Children will work in squared books, the size of the square will be relevant to the child's age and fine motor skills.
- Children will be encouraged to present their work with one digit per square.
- Wherever possible, the checking or marking of work will be done with the child who will be given the opportunity to ask questions and self correct in red pen.
- Teacher intervention throughout the lesson will be annotated in blue pen.
- The learning challenge will be highlighted in green when the children have achieved it and pink if it is not achieved.
- Children will be asked to complete any corrections related to general calculation.
- Interventions will be implemented for the children who need it. These will be identified through ongoing teacher assessment and will be evidenced in books.
- Teacher or teaching assistant support will be marked on the top of the work to indicate more support given.
- Children's learning will be moved on throughout the lesson in accordance with their ability shown in that area of learning.
- Children will use yellow paper to show working out and for those areas of learning where children need to focus more heavily on the process they are using and it is therefore acknowledged that their presentation may not be of the usual standard eg: introducing column addition.
- Children's responses to their teacher's marking should be encouraged when it is appropriate. They will be encouraged to use different red pens for self correction.
- There will be gradual progression through the key stages, according to the child's needs, towards independence.
- The teaching staff will plan for and encourage mathematics to be utilised in other curriculum areas.
- Times Table Rockstars will be used three times week from Year 2 to Year 6 to support the learning of times tables.

- There will be a working maths wall in every classroom with key resources to support learning in evidence.

10 RESOURCES.

10.1 Each class is equipped with a range of mathematical resources and apparatus relevant to the year group of that class. These are stored in accessible and clearly labelled drawers / shelves / containers. All children have access to a range of numeracy aids such as place value cards, dice, time table squares and 100 squares.

10.2 General Mathematics equipment is stored in the KS1 and KS2 resource cupboards. These are stored in accessible and clearly labelled shelves / containers.

10.3 The resources are audited, checked and updated. Areas of need are monitored and equipment purchased in line with need and the School Improvement Plan (SIP).

11 MONITORING AND REVIEW

11.1 Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader, the Headteacher and the class teacher.

11.2 The main aspects of the mathematics subject leader involve:

- providing leadership and direction in Mathematics
- ensuring the national curriculum is implemented effectively
- working closely with staff, offering guidance, support, leadership and arranging in-service as appropriate
- scrutinising books frequently, completing half termly health checks and providing whole staff or individual feedback when necessary.
- scrutinising the results of termly / annual assessments throughout the school and providing feedback
- analysis of KS1 and KS2 SAT results, pupil response, teacher assessments and other standardised assessments
- managing, storing and updating resources, following a whole school audit
- monitoring and evaluating the quality of teaching and learning throughout the school in Mathematics
- monitoring pupil opinions and feedback yearly (pupil voice)
- liaising with the governor responsible for maths, other schools and the LA
- coordinating the review and updating of the policy when necessary
- ensuring the Mathematics Action Plan is implemented, monitored, evaluated and reviewed in line with the SIP and LA priorities
- providing a termly Subject Manager's Report in which areas for further development and the progress made towards the achievement of objectives are identified

This policy will be reviewed annually.