MERE BROW CE

PRIMARY SCHOOL

SCHOOL POLICY DOCUMENT FOR MATHEMATICS 2020-2021

Intent

Mathematical skills and knowledge should be delivered, explored and revisited through conscious decision making and awareness of learning and progress needs and abilities. Children should develop resilience and self-confidence in applying their learning skills. The collaboration between peers, and the relationship between learners and their class teacher should drive the learning and inform the content, strategies and real-world contextualisation to maximise on the progress and learning opportunities.

Implementation

A 'mastery' approach has been adapted and implemented at Mere Brow CE Primary School for the planning, delivery and engagement with mathematics. Review and feedback following the implementation of units as repeated blocks over the academic year, with little to no interlinking and relating of skills and knowledge, was highlighted as one of the main reasons for clear gaps in knowledge and one of the possible causes for slower progression.

We have therefore decided to use the White Rose Maths Scheme of Work to timetable mathematical units that are explored progressively, drawing on resources, data and suggestions from reliable sources such as NCETM and nrich.co.uk to link mathematical talk and knowledge across the various units (e.g. multiplication and area). When planning for objective coverage, teachers are expected to take the following mastery strategies into account:

- Small steps
- Ping pong style of delivery
- Implementing the Concrete, Pictorial and Abstract (CPA) approach to introducing, exploring and applying mathematical concepts
- Applying/using the Bar Model approach as a strategy to approach calculation/problems
- Considering key questions and mathematical vocabulary at the point of unit planning
- Multiple opportunities for verbal and written/drawn reasoning (explaining and using mathematical vocabulary to explain methods or reasoning) within unit exploration
- Inclusion of relevant problem-solving opportunities, where children are expected to draw on and apply multiple concepts to address or approach a challenge
- Modelling of all skills and approaches
- Modelling and sharing of efficient and accurate application of methods
- Opportunities to explore maths concepts/objectives at 'greater depth'
- Include all learners, providing relevant support for those with additional needs (educational, medical or otherwise)

Units of work will be assessed upon the completion of each one, with teachers asked to use those published by WRM in the first instance, and to look to other sources (or create their own) if the pitch is too high/low. The end-of-year assessment will be completed in May (Years 2 and 6 SATs) or June (rest of the school) to provide a snapshot of individual annual progress

Teachers are expected to audit their own subject knowledge of Maths; complete training for understanding and implementing the Bar Model strategy; research application of the CPA approach for the teaching concepts and consistently identify and address (with HT or peers) areas for development by creating a route to become confident in this particular subject area

Impact

The exploration of mathematics should be interactive and engaging, with content made relevant to children's real-world experiences and contextualised thus to support consolidation and retainment of knowledge and skill.

Children should approach mathematical study with confidence and enthusiasm, and view tasks and challenges that call for application of varied knowledge across units of work and the selection of multiple skills with self-assuredly and a willingness to collaborate.

Approach and response to reasoning activities should improve term on term, with the expectation that by the end of the year, children are happy to accurately define and use mathematical vocabulary introduced by their teacher, as well as complete stem sentences to complete mathematical statements or reasoning.

Teaching and support staff should also see this period of implementation as an opportunity to highlight and further improve concepts that are received well and have clear impact on progress and learning, while also analysing and evaluating practice that needs to be addressed, reviewed or replaced.

Review Date: September 2021

THE NATURE OF MATHEMATICS

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. It also provides the materials and means for creating new imaginative worlds to explore.

Using the Programmes of Study from the National Curriculum 2014 it is our aim to develop:

- a positive attitude towards mathematics and an awareness of the fascination of mathematics.
- competence and confidence in mathematical knowledge, concepts and skills.
- an ability to solve problems, to reason, to think logically and to work systematically and accurately.
- initiative and an ability to work both independently and in cooperation with others.
- an ability to communicate mathematics.
- an ability to use and apply mathematics across the curriculum and in real life.
- an understanding of mathematics through a process of enquiry and experiment.

SCHOOL POLICY AND THE NATIONAL CURRICULUM

<u>Knowledge Skills and Understanding</u>

At KS1 and KS2 teachers use Curriculum 2014 and White Rose materials to ensure that all parts of the National Curriculum Programme of Study are taught.

Breadth of Study

Opportunities are offered to children to develop their mathematical knowledge and skills through tackling problems and through purely mathematical activities

Activities are balanced between those which are short in duration and those which can be developed over a longer period.

Children are involved in both individual and group work.

Children experience open ended tasks as well as closed tasks.

Children develop a range of methods of calculating eg. mental, pencil and paper (using a calculator in Juniors, if appropriate).

Children develop skills in using a wide range of mathematical tools through practical work (including computers).

Children are enabled to develop their personal qualities and a positive attitude to mathematics through the experiences offered to them.

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for:

- practical activities and mathematical games.
- problem solving.
- individual, group and whole class discussions and activities.
- open and closed tasks.
- a range of methods of calculating eg. mental, pencil and paper and using a calculator.
- working with computers as a mathematical tool.

SCHEME OF WORK

Our school scheme of work is a working document and as such is composed of ongoing plans produced on a week by week basis. This is developed from the National Curriculum and takes into consideration the needs of our children.

CROSS-CURRICULAR ISSUES

Throughout the whole curriculum opportunities exist to extend and promote mathematics. Teachers seek to take advantage of all opportunities.

Computing/ Remote learning

Teachers seek to take advantage of all opportunities and annotate planning when a computing opportunity occurs. We use Learning by Questions in KS2 which follows White Rose Mastery approach and Times Table Rockstars. Teachers set weekly/ daily Maths tasks on Seesaw so that if a child cannot come to school for any reason they can access they day's learning easily.

TEACHERS' PLANNING AND ORGANISATION

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics coordinator.

The approach to the teaching of mathematics within the school is based on three key principles:

- **a mathematics activity every day**
- **a clear focus on direct, instructional teaching and interactive oral work with the whole class and group**
- **an emphasis on mental calculation**

Each class organises a daily lesson of between 45 and 60 minutes for mathematics

Lessons are planned using a common planning format and are monitored by the mathematics coordinator

Reception teaching is based on objectives in the Framework for Reception; this ensures that they are working towards the Primary National Strategy Problem Solving. Towards the end of Reception the class teacher aims to draw the elements of a daily mathematics lesson together so that by the time children move into Year 1 they are familiar with a formal lesson.

INCLUSION

Effective Learning opportunities for all pupils are achieved by:

Setting suitable learning challenges
Responding to pupils diverse learning needs
Overcoming potential barriers to learning and assessment for individuals and groups of pupils.

SPECIAL EDUCATIONAL NEEDS

Children with SEN are taught within the daily mathematics lesson and are encouraged to take part when and where possible (please see the section on differentiation).

Where applicable children's SEND plans incorporate suitable objectives from the Primary National Strategy and teachers keep these objectives in mind when planning work.

When additional support staff are available to support groups or individual children they work collaboratively with the class teacher. A feedback sheet (see Appendix) or notebook is completed by the support staff and returned to the class teacher at the end of each lesson.

Within the daily mathematics lesson teachers not only provide activities to support children who find mathematics difficult but also activities that provide appropriate challenges for children who are high achievers gifted/talented in mathematics.

Teacher assistants are also used to raise standards in achievement in Mathematics.

EQUAL OPPORTUNITIES

We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics.

We also have regard for ability when providing opportunities for all and work is differentiated for high and low achievers as part of the daily maths lesson. With pre teaching , consolidation and challenge.

In the daily mathematics lesson we support children with special needs in a variety of ways. eg. repeating instructions, speaking clearly, emphasing key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games, rhymes etc.

PUPILS' RECORDS OF THEIR WORK

There are occasions when it is both quick and convenient to carry out written calculations. It is also important to record aspects of mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording.

Children are encouraged to use mental strategies before resorting to a written algorithm.

Exercise Books for Recording

It is school policy that the following pattern is used:

- KS1: plain exercise books/sheets/cm square paper /books
- KS2: cm square book/0.5cm squared books/sheets

All children are encouraged to work tidily and neatly when recording their work. When using squares one square should be used for each digit. When involved in routine practice of calculations the children are encouraged to fold a page in half creating two columns for answers.

MARKING

Work in mathematics can generate a great deal of marking and it is recognised that it is not always desirable to mark every piece of work. The children themselves can mark exercises which involve routine practice with support and guidance from the teacher. This can foster independence in the children, who can seek help if they are unable to locate and correct their errors.

The quality of marking is crucial. A simple 'X' is of little assistance to a child unless accompanied by an indication of where the error occurred, together with an explanation of what went wrong. **Please use a dot and ask a child to correct it with green for growth marking.**

Marking should be both diagnostic and summative and school policy believes that it is best done through conversation (for more details see the School Marking Policy).

ASSESSMENT AND RECORD KEEPING

Teachers are expected to make regular assessment of each child's progress formally and informally, and to record these systematically to be used for diagnostic purposes. The following is the school policy for assessment in mathematics:

Informal Tests of Mental Arithmetic

Teachers use the supplement of examples in the framework to plan assessment activities and written tasks for one or two days towards the end of each half term.

The work set, combined with a scrutiny of children's recorded work over the previous six weeks, helps to review how well children have taken in the topics taught and identifies any remaining misconceptions. A record of each child's attainment against key objectives is recorded.

Termly Evaluation

The evaluation of termly plans shows what has been taught and what has yet to be learned. This serves as a class record of progress. The teacher may wish to make notes on individual children whose progress differs markedly from the rest of the class, and the reasons for it. Records are passed from KS1 to KS2.

Formal Assessment

In the summer term the children are formally assessed as part of the School's Assessment Policy.

REPORTING TO PARENTS

Parents receive two reports each year. The first progress report is in the Spring term and parents are then given the opportunity to discuss their child's progress at the parent open afternoon/evening. The second full curriculum report is sent home in July and parents are encouraged to speak to the class teacher at a mutually convenient time if there are items to discuss or concerns to be raised.

RECORDS OF ACHIEVEMENT/COLLECTING EVIDENCE

During the year, 3 to 4 pieces of mathematical work are kept for each child to reflect the breadth of mathematics covered. This forms part of individual children's Record of Achievement.

A portfolio of work is kept on Seesaw. It includes some mathematics samples of work as evidence of the levels to which children are working at in the school. These samples are updated and discussed .

PARENTAL INVOLVEMENT

School provides clear guidelines for parents on helping in school and at home, and has provided workshops on the Numeracy hour.

- Parents are invited into school to look at their children's work.
- An open afternoon/ evening is held twice a year.
- When significant changes have been/are made to the mathematics curriculum parents are invited to a meeting or sent information via the newsletter.

DIFFERENTIATION

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

- Stepped Activities e.g. our Success stars which become more difficult and demanding but cater for the less able in the early sections.
- 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, cubes, 100 squares, number lines, mirrors.
- Grouping according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme and usually at no more than three levels.

MONITORING AND EVALUATION

The mathematics coordinator is released regularly from the classroom in order to monitor and evaluate the quality and standards of mathematics throughout the school.

Opportunities for teachers to review the scheme, policy and published materials are given on a regular basis during staff meetings.

STAFFING AND RESOURCES

Practical Resources

All teachers should organise an area within the classroom dedicated to mathematics resources. This area is easily accessible to all children and allows them to become familiar with all resources.

THE GOVERNING BODY

We have an identified standards and improvements Governor who is encouraged to visit the school to talk with teachers and when possible, observe some daily mathematics lessons.
The governor is encouraged to report back to the Standards and Improvement committee.

HOMEWORK

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics.

Activities are sent home on a regular basis (see the separate school Homework Policy) and take the form of number games and tasks with some formal exercises for older children.

Teachers ensure that too much homework time is not spent "finishing off" written work carried out in class.

Reviewed and adopted by the FGB

Review Date: Autumn 2021

Signed: Sj Livesey.