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MARHAMCHURCH

Mathematics Policy

January 2020

Signed (Chair) ..... Date 13/1/2020

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Marhamchurch C of E Primary School

Mathematics Policy

Policy adopted by the FGB on: Monday 13th January 2020

Signed: Date:
Chair of School Monitoring Councillors

Signed: Date:
Head of School

To be reviewed: Spring Term 2022

Marhamchurch C of E Primary School
Mathematics Policy

Mission Statement: Together, we can achieve and succeed with God by our side.

Rationale

Marhamchurch C of E Primary School is a community that is committed to equality and diversity of opportunity so every individual can achieve their highest potential.

Our aim in 'Mathematics' is to develop the area for learning as a life skill, embedding and developing success.

Mathematics is integral to our daily life. We aim to develop fluency, reasoning and problems skills by deepening and broadening pupil's ability to apply these skills in a variety of real and purposeful opportunities. Within the School, lessons will provide opportunities for children to develop their mathematics alongside **BLP learning habits and learning reflections.**

Purpose

The purpose of this policy is to clearly identify how Mathematics is taught and learnt across Marhamchurch C of E Primary School. Through our maths teaching we aim to:

- Develop a positive learning attitude to maths; resilience, perseverance, motivating force.
- Equipping children with transferable knowledge and skills which will enable them to solve problems in a wide variety of contexts
- Promote enthusiasm for learning through practical activity, exploration, discussion and opportunity for challenge and struggle in order to develop resilience.
- Equip our children with the breadth of knowledge, skills and understanding, fluency and reasoning.
- Enable our children to use and apply mathematics confidently in a range of situations including real life learning.
- Develop and foster an awareness and understanding of the uses of mathematics in the world beyond the classroom and in everyday life.
- Encourage our children to develop correct mathematical language and use it appropriately in all aspects of mathematical learning including cross-curricular learning opportunities.
- Enable each child to reach their full mathematical potential by providing opportunities for all children to access the Mathematics Curriculum. *(Please also see Equal Opportunities and Inclusion policies.)*

Objectives

Mathematics at our school is based on the new (2014) Mathematics Curriculum for year groups 1 to 6, which aims to ensure that all pupils:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly to problems.
- **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: identify the key parts in order to generate a series of simpler steps that build towards and enable them to find the solution.

The new (2014) Mathematics Curriculum programmes of study are used to give a balanced and broad curriculum to all our pupils, which have been used to create our mathematics skills progression. The skills progression lists objectives for every mathematical strand, progressing from foundation stage to stage seven (Year 7), which forms part of our planning and assessment process to ensure that our teaching is differentiated to suit the needs of our children. At all ages and the appropriate ability, the children are expected to master their learning before progressing on to learning new skills.

School Policy in Relation to the National Curriculum

Each child is entitled to a broad and balanced mathematics curriculum that addresses the new 2014 Mathematics Curriculum programme of study. However, pupil's experiences are not limited to the new 2014 Mathematics Curriculum demands and should encompass Mathematics arising form cross curricula topic work, events in school or community or by meeting the needs or interests of particular children.

Continuity and progression is ensured by using our mathematics skills progression to plan and assess as well as by adhering to our Calculation Policy and Problem Solving Policy.

Pupils' Mathematical Experiences

Mathematics will be delivered daily and is continually adapted to best suit individual learning needs and maximise learning. So, the structure of lessons will be flexible to suit the needs of the children, including pit stops as and when required. Broadly speaking we are looking for the equivalent of 60 minutes a day across the week, this can be as a daily maths session or combined to support an extended learning opportunity that could involve real-life problem solving or extended investigations and cross curricular opportunities to use and apply mathematical knowledge and skills. On top of this, we will plan daily afternoon 5 to 15 minutes maths to teach arithmetic and key number facts, including times tables in order to develop arithmetic and fluency. For example, Teachers will use our Mental Mathematics Alphabet speed-sheets or 99 club sheets at least twice weekly to encourage rapid recall of key number facts.

Teachers will use their professional judgement to determine the activities, timing and organisation of lessons to suit objectives and maximise learning in order to ensure there is a wide range of creative opportunities.

Children will be given the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work. For example, Numicon multi-sensory materials may be used to ensure equal opportunities for all learners. Wherever possible, children and Teachers will use ICT in mathematics lessons to enhance learning. In addition, Teachers will provide opportunities for the children to engage in active mathematics. Opportunities for practice and consolidation of basic skills will be provided through weekly homework tasks.

In order to support creative learning opportunities, the broadening and deepening of children's' knowledge skills and understanding, will provide problem solving opportunities drawing from a range of resources including NRICH and NCETM reasoning links, Power Maths and Testbase. These resources link to our mathematics skills progression and the new 2014 mathematics curriculum program of study.

Information Communication Technology (ICT)

The use of ICT in the daily mathematics lesson aims to support pupil activities and consolidate their understanding of the concepts and processes taught. Software like Power Maths online, times tables games, Roma type resources, Logo type software and useful Internet sites will be incorporated into weekly planning and homework to enhance teaching and learning. Also, calculators will be used in the school as a teaching aid in all year groups, but will not be used as a calculating tool. Instead formal written calculation methods will be used (Please refer to our Calculation Policy).

Pupil's Recording of Work

We place an increased emphasis on mathematical talk, exploration and practical activity, where children are encouraged to record their own methods rather than formal recording. To show methods of working children are asked to demonstrate their thinking in their Power Maths Practice books and maths books.

Children are encouraged to record their work in a variety of ways, although clear presentation of work is still expected. Standard written methods are now introduced in stages to ensure that the processes are fully understood. *(Please refer to Calculation Policy.)*

Recording serves a number of purposes:

- Aiding and reinforcing understanding by clarifying thinking.
- Shifts the focus to the thinking process and ways they can find the solution.
- Allowing for practice of writing and using the correct symbols, notations or methods.
- It is a way of communicating ideas and thinking to others.
- Providing evidence of mathematical work.

As a school, we view marking as a vital learning tool, wherever possible enabling the learner to lead the process in order to identify areas of success and next steps in learning needed to address misconceptions. Marking of work preferably takes place in a range of different ways. The key to successful learning is learners being able to identify strengths and areas for development in order to modify and further develop their own work. We encourage the use of self and peer marking. Success will be achieved by ensuring the children have opportunity to respond to marking comments. (*Please also see our Marking policy*)

Cross Curricular Issues

Mathematics is seen as an important tool in *all* areas of the curriculum. Wherever possible and appropriate, links are made to other subjects. For example, data handling links with science and elements of History and Geography will provide opportunities to apply and use mathematics in real life contexts.

Equal Opportunities

It will be ensured that all pupils will have equal access to the full Mathematics curriculum. *(For further details please refer to the Equal Opportunities policy.)*

Special Educational Needs and More and Most Able

Through differentiation we provide learning opportunities that are matched to the needs of all children. The School, use Pupil Asset multi-ticks assessment to identify the SEND pupil's success in strands of learning, the achievement strips also inform the teachers where the greatest need is. Work in mathematics takes into account the targets set for individual SEND children.
(Please refer to our inclusion policy and more and most able policy.)

Planning

At each level of planning, assessment should inform the next steps planning.

Long/medium term planning for Mathematics is structured around the objectives in the new 2014 Mathematics Curriculum programme of study for each year group as well as for each stage on our mathematics skills progression and Power Maths online planning. Teachers use day to day formative assessment to plan and spend more time teaching the areas of learning children find most challenging to learn. More summative end of Power Maths units and end of term Teacher assessment informs future teaching too. In addition, teachers plan a range of problem solving investigative opportunities based on finding all possibilities, finding rules and describing patterns and logic problems.

Short term planning will be on a weekly basis, using the school's weekly Power Maths top tips, Power Maths planning overview and Power Maths online planning guidance for each lesson. Teachers are expected to plan opportunities that will meet the specific learning needs of all pupils with the growth mindset that all learners can master maths learning. Where teachers are planning for five days there needs to be enough flexibility to adapt plans and opportunities to meet the needs of learners. The plans should incorporate strategies and methods outlined in the Calculation Policy and Problem Solving Policy to ensure consistency and a natural progression from year to year/class to class throughout the school. Finally, weekly plans are shared and discussed with TAs at the beginning of each day so they know exactly what is expected of them within the lesson, enabling them to feel confident in their role.

Assessment and Record Keeping

Assessment takes place continually, using assessment for learning techniques (observing, discussing with the children, self assessment and looking at outcomes of work or tests etc). Teachers will record these day-to-day assessments on short term planning, which enables the teachers to identify next steps learning. In addition, wherever possible, children are involved in self or peer assessing their own learning, encouraging them to set next step targets. This might take place informally during the plenary with thumbs up or down in the Foundation Stage and KS1, but more often than not, formally in KS2 with the child self or peer marking, correcting mistakes and recording reflections on learning. Teacher written comments might set next step targets or additional work to support the child to close the gap (CTG) and correct key mistakes. (For further details please refer to our Marking and Feedback Policy.)

These day-to-day assessments alongside periodic 'At a distance' (AAD) tests, will be used by Teachers to regularly assess pupil progress. Teachers will use 'Pupil Asset' to track the progress of groups and individuals against age-related expectations by making at least termly point in time assessments. Whereby, identifying which objectives each child has mastered in a range of contexts and what each child can and cannot do, which will then be used to inform future planning.

Resources

The main resource for our planning is Power Maths. However, Teachers are encouraged to be flexible when planning, drawing from a wide range of resources to maximise and effectively differentiate learning. For example, other resources available to us include NRICH, NCETM reasoning links and Testbase.

The basic kit of practical, everyday apparatus is available in each classroom. Every attempt is made to keep the apparatus up to date and relevant to needs, as new equipment is ordered or made according to identified needs.

Monitoring and Evaluating

Monitoring of the standards of children's work and the quality of mathematics teaching is the responsibility of the Mathematics Leader but takes place across schools locally to moderate, ensure consistency and secure age appropriate learning. The work of the Mathematics Leader also involves supporting colleagues in the teaching of mathematics, having a clear understanding on the current developments in the subject, and providing a strategic lead and direction for the subject in the school.

Review

This policy of Spring Term 2020 will be reviewed in line with the School Improvement Plan.

Marhamchurch C of E Primary School Power Maths Top Tips

Remember to:

- Read the lesson's teacher planning guidance before teaching it.
- Adhere to our school's calculation policy written calculation methods rather than those in the Power Maths textbooks and practice books to ensure continuity and progression across our school.
- Encourage the children to collaboratively do the thinking, reasoning and explaining rather than the adult to develop their independence as well as their Building Learning Power (BLP) learning habits and getting unstuck strategies (book, board, buddy and boss).
- Use visual aids as well as practical resources to support learning wherever possible.
- Have a growth mindset (that they have not learnt it yet) to believe that all learners can learn and remember that mistakes are positive because they are learning opportunities.
- Avoid pages full of ticks (which suggests that the work was too easy) or pages full of mistakes (which suggests that the work was too challenging). Instead, we want to see the odd mistake that needs to be corrected through close the gap marking follow up work the next morning.
- Remember that the children do not need to answer all the questions because this will slow progress. Instead, we want the children to pitch in on the question just above what they already know in order to appropriately challenge them so that they grapple with their learning, stretch their thinking and develop a learning sweat. This appropriate challenge is part of the fun of Power Maths and will give our children a sense of pride and accomplishment.

Discover and share activity:

- Keep it pacey by allowing 10 minutes maximum for the children to quickly tell their story of the picture, attempt at least the first question and then collaboratively share the correct answers and methods.
- All children are expected to attempt to at least answer the first question, but only the children with a secure understanding will have time to attempt the second question as well.
- ***DANGER WARNING: The answers are in the Textbook within the share activity on the next page to the discover picture. Therefore, ensure that the children cannot see the answers before they attempting to answer them independently as this will obviously hinder their thinking, independence and learning.***

Think Together:

- Keep it pacey by allowing 15 minutes maximum.
- We want the children to attempt a minimum of 1 question and a maximum of 2 questions.
- The children who displayed a secure understanding of the discover and/or share activity are expected to skip the easier question 1 and start on question 2 or even occasionally question 3 only.
- Together, share the correct answers and methods to questions 2 and 3 before question 1 so that the children with a secure understanding can start the main activity earlier to maximise their progress.

Workbook Practice Questions and Teacher Extensions (like a Testbase question):

- Keep it pacey by allowing 35 minutes minimum for all children.
- We want the children to attempt to answer three parts of the questions minimum and eight parts of the questions maximum.
- The children who displayed a secure understanding of the think together activity are expected to skip the easier questions and start on question 3, question 4, question 5 or even occasionally question 6.
- To fully master their maths learning, as many children as possible need to be encouraged to reach the challenge, reflect and/or Teacher extension questions by the end of the lesson.

Marhamchurch C of E Primary School Mathematics Essentials
Plan daily opportunities for children in *ALL GROUPS* to reason and master learning. After 3 to 5 correct, move children on to deeper learning like the Power Maths final challenge/reflect questions and/or a Testbase question.
Evidence children mastering learning daily.
At least administer age appropriate termly AAD tests under test conditions. Also, Year 2 (termly) and 6 (half-termly) administer end of Key Stage Mock SATs. After, teach the children to unpick questions and develop the skills needed to understand and answer each question to the best of their ability. Use these AAD assessments to help update Pupil Asset objectives and to inform future planning.
At least weekly administer a MMA practice and test (lasting 6 minutes). If children are struggling on a specific sheet, use professional judgement to decide when to move them on to then next sheet to maintain rate of progress.
Daily afternoon maths to practice recalling number bonds to 20 or times tables facts (using chanting etc) as well as MMA, 99 club and unpicking weekly arithmetic/maths H/W.
At least weekly evidence children reflecting on their learning and how they worked out the answer or solved the problem. For example, explain how they would teach it to someone else.
Pitch lesson WALT at age-related expectation.
Use Power Maths planning and resources.
Adhere to calculation policy and problem solving policy.
Set weekly mathematics arithmetic and MMA homework and encourage all children to complete it.
Evidence mathematics cross-curricular links on curriculum map/long term planning.
Interactive working wall for mathematics, to include four operations and current focus.
Use marking policy to mark mathematics work (e.g. CTG, NS, PL, PS, marking ladders, toolkits, self-assessment and peer assessment).
Use and review half termly additional intervention planning sheet for children with slowed progress and ensure that vulnerable interventions (within lessons) are shown on planning.

Marhamchurch C of E Primary School
Presentation essentials

Maths Books - expectations for presentation

WALT and optional success criteria, top right-hand corner.

Top of page - short date, underlined using a ruler on left-hand side of page.

Miss a line after date.

Digits should be neat, clear with one digit in each square (with the exception of number lines) if squared books are used.

No margins but each calculation should be 1 or 2 squares in from left-hand side of page.

One line should be left between questions.

All lines, tables, shapes etc should be drawn neatly, using squares with a ruler.

Maintain high expectations for written methods and number lines etc.

If next day's work does not start a new page a line should be drawn with a ruler under the previous day's work (this should be done by the child after any CtG/NS have been completed).

Clear and high expectations over quality and quantity of work for each year group. Expectations for each child should be appropriate, and with a suitable level of challenge for that child's level of ability.

Daily marking (this includes marking by teacher, TA, self and peer marking) following marking policy, including number reversals - to be corrected by Teacher and set as personalised learning for child to rehearse.

FS2 – Differentiated Numeracy activities (1 x T, 1x TA, 1 x ind)
At least two pieces of maths each week in workbooks from adult-led activities, these include photos of practical work undertaken by the children.
Opportunities to apply learning within child-initiated environment evidenced through Tapestry.