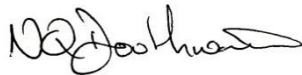




“I have come in order that you might have life – life in all its fullness.”
John 10:10

Mathematics Policy

Policy accepted by FGB on:	16/3/2016
Next review:	Spring 2019
Signed (Chair of Governors):	
Statutory policy: Yes/No On school website: Yes/No	

MATHEMATICS POLICY

1. Vision

Mathematics is about developing proficiency in the handling of mathematical knowledge and skills. It requires a confidence and understanding which will enable each individual to apply and use their skills. It entails the following:

- The skills to make sense of, and solve, problems.
- The ability to think for themselves.
- The ability to use mathematical language and explain their reasoning.
- An enthusiasm and awareness of mathematics in everyday life.
- An understanding of the number system.
- The ability to know by heart number skills such as bonds, tables, doubles and halves.
- A set of computational skills.
- Knowledge of measures.
- The ability to gather information.
- The ability to apply their skills in different contexts.

This policy should be read in conjunction with the school Calculation Policy.

2. Aims

- To develop an enthusiasm for the subject within ourselves and the children we teach.
- To develop in the children the awareness that mathematics is vital in everyday life and apply it in different contexts and within other areas of the curriculum.
- To develop in the children an inquiring mind.
- To provide the necessary skills for questioning and manipulating the knowledge acquired.
- To build for the children a set of problem-solving skills and strategies.
- To encourage the children to think for themselves and to be able to work independently.
- To provide opportunities for the children to work individually and within groups.
- To develop in our pupils the ability to explain their mathematics and reasoning using appropriate mathematical language.
- For the children to understand the number system as set out by the National Curriculum, developing a repertoire of mental and written calculations.

3. Teaching style and strategies

3.1 Programme of study

- All classes across the school follow the National Curriculum programme of study for Mathematics (Early Years Foundation Stage in Nursery/Reception).

- Teachers use medium-term planning which shows all objectives for their year groups and ensures that teaching and learning is based on a “mastery” approach, so children are not rushed through learning too rapidly before knowledge has been embedded.
- Resources from the White Rose Maths Hubs and the National Centre for Excellence in the Teaching of Mathematics (NCETM) are used to support planning at fluency, reasoning and problem-solving levels and teachers’ subject knowledge.
- Where children are taught in mixed age classes teachers plan using the objectives from both year groups.
- In the Foundation Stage, teachers will use the EYFS curriculum to set the objectives and outcomes for teaching and learning.

3.2 **Creative curriculum**

- Teachers look for opportunities for children to apply their Maths skills and understanding across all curriculum subjects. This allows children to experience Maths in context not as a discrete subject.

4. **Maths in Context**

All classes work using a “Maths in Context /Guided Maths” approach. This entails children working in rotated groups each day, with learning at an appropriate level and pace, and regular use of role play to enable children to apply previous learning. Maths lessons take place every day.

Each day every child will work in an adult-focused group with either the teacher or teaching assistant; they will also access a range of independent or ICT tasks throughout the week. The children will also apply the previous week’s learning through a “context” activity often using the class role play area. Children are grouped based on their understanding of the current topic to be taught and whether they require development of core skills or deepening and stretching of their understanding.

5. **Mental Maths**

At the start of each daily Maths lesson there will be a “warm up” session, which will include a daily counting activity, differentiated based on year group and an activity based on the “6 R’s” of Mental Maths. These are Read, Reason, Recall, Refresh, Refine, and Rehearse. In line with the “**Mastery**” approach, these will be more open-ended sessions allowing for children to explain and reason using correct mathematical language.

6. **Fundamentals and fact ladders**

To enhance the children’s knowledge of number facts, all classes undertake an additional Maths session each day based on the “Fundamentals” programme. Each child has a reward ladder of Maths facts which they earn stickers towards; they also take home cards of facts to learn.

7. **Methods**

Please also see the school Calculation Policy, which outlines the agreed methods for mental and written calculation throughout the school.

Teaching methods used will be in line with a Mastery approach: children will be taught a topic until they are not only fluent in understanding it but so many children are also able to reason and problem-solve with it too.

Reasoning and Problem-Solving are embedded in all sessions and children's fluency is developed through widening their task rather than pushing forward to new topics.

The use of **talk and language** in every group session is an important aspect of the Mastery approach and teachers make sure children are taught and use correct and precise language.

8. **Mathematical language**

There are practical reasons why children need to acquire appropriate vocabulary so that they can participate in the activities, lessons and tests that are part of classroom life. There is, however, an even more important reason: mathematical language is crucial to children's development of thinking. If children don't have the vocabulary to talk about division, or perimeters, or numerical difference, they cannot make progress in understanding these areas of mathematical knowledge. Children will be encouraged to explain their methods and reasoning as frequently as possible to deepen their understanding. Children will also be encouraged to do this in complete sentences to ensure their understanding is embedded.

9. **Intervention**

Children who are not making sufficient progress will receive targeted interventions. These will be arranged by the class teacher in the first instance. If a child continues to need additional support following intervention, the child will be discussed with the school SENCO.

10. **Marking and assessment**

Children's work is marked in line with the school's Response to Learning (Marking) Policy. Children are assessed against their progress towards the Age-Related Expectations throughout each lesson, and the Maths in Context approach allows teachers to spend group time with all children and use their questioning and assessments to target support.

11. **Out of class work/homework**

Differentiated homework based on Maths covered in class is set weekly in Key Stages 1 and 2 and relevant feedback given.

12. Resources and environment

Please see Maths Learning Environment overview, which details the resources on display in each year group and support materials available in support packs for children to access independently.

13. ICT

As part of the Maths in Context approach, ICT activities linked to the week's learning objectives will be provided weekly. These will include the use of the Virtual Learning Environment, DB Primary and ActiveLearn. ActiveLearn allows individuals to be allocated Maths games which can be accessed at home and at school.

14. Governors

The school has an identified governor for Maths. It has been agreed that the Maths Governor will liaise with the Subject Leader regarding progress and attainment in Maths, will attend relevant learning walks and will be invited to attend relevant school INSET. The Maths Governor may attend Maths-related meetings involving school improvement partners in Frome Learning Partnership, Somerset LA and the Diocese of Bath and Wells. The Maths Governor will report back to the Standards Committee on a regular basis.

15. The learning environment

See Appendix 2.

Appendix 1: The six Rs of oral and mental work

These are not independent: oral and mental work may address more than one feature of learning and have more than one purpose. What is important is that the activity is purposeful and children understand what they are engaged in and required to learn during the oral and mental activity. The six Rs provide a vocabulary and guide to use when identifying the purposes of oral and mental work: they are not meant to provide a coverage checklist. Mental and oral work should cover all areas of Mathematics.

Six Rs	Learning focus	Possible activities
Rehearse	<ul style="list-style-type: none"> ◆ To practise and consolidate existing skills, (usually mental calculation skills, set in a context to involve children in problem-solving); ◆ use of vocabulary and language of number; ◆ properties of shapes or describing and reasoning. 	<ul style="list-style-type: none"> ◆ Interpret words such as more, less, sum, altogether, difference, subtract; ◆ find missing numbers or missing angles on a straight line; ◆ say how many days in four weeks or the number of 5p coins that make up 35p; ◆ describe part-revealed shapes, hidden solids; ◆ describe patterns or relationships; ◆ explain decisions or why something meets criteria.
Recall	<ul style="list-style-type: none"> ◆ To secure knowledge of facts, usually number facts (building up speed and accuracy); ◆ recall quickly names and properties of shapes; ◆ recall quickly units of measure or types of charts/graphs to represent data. 	<ul style="list-style-type: none"> ◆ Count on and back in steps of constant size; ◆ recite the 6-times table and derive associated division facts; ◆ name a shape with five sides or a solid with five flat faces; ◆ list properties of cuboids; ◆ state units of time and their relationships.
Refresh	<ul style="list-style-type: none"> ◆ To draw on and revisit previous learning; ◆ to assess, review and strengthen children's previously acquired knowledge and skills; ◆ return to aspects of mathematics with which the children have had difficulty; ◆ draw out key points from learning. 	<ul style="list-style-type: none"> ◆ Refresh multiplication facts or properties of shapes and associated vocabulary; ◆ find factor pairs for given multiples; ◆ return to earlier work on identifying fractional parts of given shapes; ◆ locate shapes in a grid as preparation for lesson on coordinates; ◆ refer to general cases and identify new cases.
Refine	<ul style="list-style-type: none"> ◆ To sharpen methods and procedures; ◆ explain strategies and solutions; ◆ extend ideas and develop and deepen the children's knowledge; ◆ reinforce their understanding of key concepts; ◆ build on earlier learning so that strategies and techniques become more efficient and precise. 	<ul style="list-style-type: none"> ◆ Find differences between two two-digit numbers, extend to three-digit numbers to develop skill; ◆ find 10% of quantities, then 5% and 20% by halving and doubling; ◆ use audible and quiet counting techniques to extend skills; ◆ give coordinates of shapes in different orientations to hone concept; ◆ review informal calculation strategies.
Read	<ul style="list-style-type: none"> ◆ To use mathematical vocabulary and interpret images, diagrams and symbols correctly; ◆ read number sentences and provide equivalents; ◆ describe and explain diagrams and features involving scales, tables or graphs; ◆ identify shapes from a list of their properties; ◆ read and interpret word problems and puzzles; ◆ create their own problems and lines of enquiry. 	<ul style="list-style-type: none"> ◆ Tell a story using an interactive bar chart, alter the chart for children to retell the story; ◆ start with a number sentence (e.g. $2 + 11 = 13$) children generate and read equivalent statements for 13; ◆ read values on scales with different intervals; ◆ read information about a shape and eliminate possible shapes; ◆ set number sentences in given contexts; ◆ read others' results and offer new questions and ideas for enquiry.
Reason	<ul style="list-style-type: none"> ◆ To use and apply acquired knowledge, skills and understanding; ◆ make informed choices and decisions, 	<ul style="list-style-type: none"> ◆ Sort shapes into groups and give reasons for selection; ◆ discuss why alternative methods of calculation work

Six Rs	Learning focus	Possible activities
	<p>predict and hypothesise;</p> <ul style="list-style-type: none"> ◆ use deductive reasoning to eliminate or conclude; ◆ provide examples that satisfy a condition always, sometimes or never and say why. 	<p>and when to use them;</p> <ul style="list-style-type: none"> ◆ decide what calculation to do in a problem and explain the choice; ◆ deduce a solid from a 2D picture; ◆ use fractions to express proportions; ◆ draw conclusions from given statements to solve puzzles.

Appendix 2: Maths learning environments

Nursery	Reception	KS1	KS2
	100 Square	100 Square	100 Square
	Vocabulary and symbols for 4 operations	Vocabulary and symbols for 4 operations	Vocabulary and symbols for 4 operations
	100 Bead Bar	100 Bead Bar	100 Bead Bar
0 to 20 Number Line	0 to 50 Number Line	0 to 100 Number Line	-50 to 50 Number Line
Photographic Number Track to 10	Photographic Number Track to 10		Tables Square
	Number Bonds to 10		Number Line 0 to 5 (in 0.1 increments)
Outside Number Track/ Number Line	Outside Number Track/ Number Line	Outside Number Track/ Number Line	Place Value Chart
		Labelled Clock	Labelled Clock
		Current calculation method, where appropriate (from Calculation Policy)	Current calculation method (from Calculation Policy)
	Support packs for children to access: <ul style="list-style-type: none"> • Individual Bead Strings • 100 Square • Number Lines • Halves and Addition Mats 	Support packs for children to access: <ul style="list-style-type: none"> • Individual Bead Strings • 100 Square • Number Lines 	Support packs for children to access: <ul style="list-style-type: none"> • Individual Bead Strings • 100 Square • Number Lines • Times Table Square
	Fundamental reward system	Fundamental/ Times Table reward system	Times table reward system
<p>Role play Maths opportunities: Variety of clocks, keyboard, calculators, remote controls, till, money, phone, raffle tickets, measuring tools, etc.</p>			