



# celtic cross education



Bishop Bronescombe C of E School

Mathematics Policy

A handwritten signature in black ink, appearing to read 'Jim Mj'.

Signed (Chair):

Date: 16/3/21

Reviewed:	February 2021	Reviewed by:	Amy Mewton
Due for review:	February 2024	SMC or Governor responsible:	Simon Hill

## School Aims

At Bishop Bronescombe School we aim to give all children:

- ✚ Access to a rich curriculum which enthuses and equips them for life as citizens in the 21st century.
- ✚ Opportunities to explore their own developing Christian faith and to have respect for the faith of others.
- ✚ High self-esteem by feeling valued as a member of our school.
- ✚ A sense of fair play, treating others with dignity and respect.
- ✚ The chance to enjoy taking part in a vibrant, forward looking school, moving their learning forwards.

Bishop Bronescombe C of E School's motto is: '**Learning that lasts a lifetime**'.  
Celtic Cross Education's Mission Statement is: '**We nurture, we learn, we achieve together.**'

## General policy statement

All staff, governors, volunteer helpers, students and visitors need to give due regard to all of the policies and practices adopted by the school. Whilst it is acknowledged that people other than staff cannot be expected to read every policy before a visit to the school, it may be that further guidelines are necessary in addition to the Visitor Policy, which all visitors must acknowledge and accept upon arrival. All staff carry responsibility for the welfare and success of the pupils in our school. Staff will advise anyone who is working alongside us of the necessary protocols, procedures and policies we follow.

## Our vision for the teaching of mathematics

Our aim at Bishop Bronescombe is for all children to enjoy mathematics and have a secure and deep understanding of fundamental mathematical concepts and procedures when they leave us to go to secondary school. We want children to see the mathematics that surrounds them every day and enjoy developing vital life skills in this subject. We aim to inspire all of our pupils, irrespective of their ability, to reach their full academic potential in all subjects. We recognise that mathematics is a critical area of skill and knowledge that impacts on the quality and value of the lives we lead. Therefore, our objectives in the teaching of the maths curriculum include:

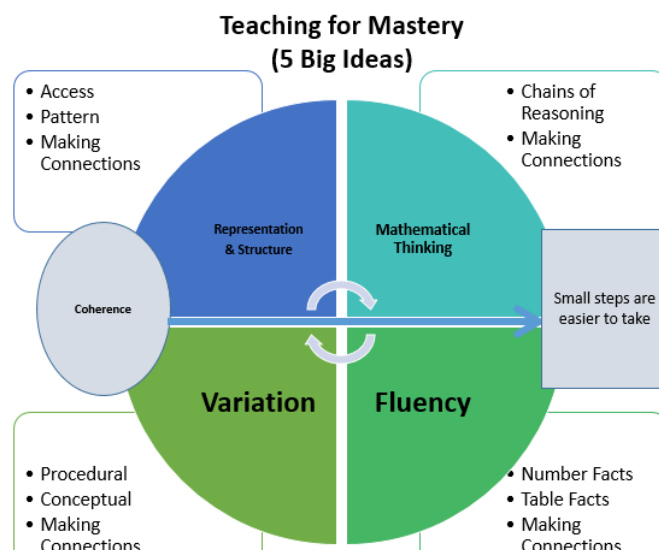
- To develop a growth mindset and positive attitude towards mathematics.
- To become confident and proficient with number, including fluency with mental calculation and look for connections between numbers.
- To become problem solvers, who can reason, think logically, work systematically and apply their knowledge of mathematics.
- To develop their use of mathematical language.
- To become independent learners and to work collaboratively and co-operatively with others.
- To appreciate real life contexts to learning in mathematics.

## Introduction

In September 2019, Bishop Bronescombe started its journey towards a mastery approach to the teaching and learning of mathematics. We understand that this will be a gradual process and may take time to fully embed. The rationale behind changing our approach to teaching mathematics lay within the NCETM Maths Hub Programme as well as the 2014 National Curriculum, which states:

- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
- *Pupils who grasp concepts rapidly should be challenged through offering rich and sophisticated problems before any acceleration through new content.*
- *Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.*

Our teaching of mastery is underpinned by the NCTEM's 5 Big Ideas:



Our teaching for mastery is underpinned by the NCTEM's 5 Big Ideas:

- Opportunities for **Mathematical Thinking** allow children to make chains of reasoning connected with the other areas of their mathematics.
- A focus on **Representation and Structure** ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns and generalize whilst problem solving.
- **Coherence** is achieved through the planning of small, connected steps to link every question and lesson within a topic.
- Teachers use both procedural and conceptual **Variation** within their lessons and there remains an emphasis on **Fluency** with a relentless focus on number and times table facts.

At Bishop Bronescombe, we use the Power Maths Calculation policies across the whole school. This policy shows how the consistent use of the CPA (concrete, pictorial, abstract) approach helps children develop mastery in both written and mental methods across the four operations in an efficient and reliable way. In addition to this, we use the White Rose

Calculation policies as a reference/ handbook for current and new members of staff, which provide support with the use of manipulatives to enhance teaching and learning.

### Teaching for Mastery Principles

- **It is achievable for all**- we have high expectations and encourage a positive 'can do' mindset towards mathematics for **all** pupils, learning experiences which develop children's resilience in the face of challenge and carefully scaffolding learning so that **everyone** can make progress.
- **Deep and sustainable learning**- lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.
- **The ability to build on something that has already been sufficiently mastered**- pupils' learning of concepts is seen as a continuum across the school.
- **The ability to reason about a concept and make connections**- pupils are encouraged to make connections and spot patterns between different concepts (e.g. the link between ration, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.
- **Conceptual and procedural fluency**- teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts and have a true sense of number. Pupils are also encouraged to think whether their method for tackling a given calculation or problem is Appropriate, Reliable and Efficient (A.R.E).
- **Problem-solving is central**- this deepens pupils' understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.
- **Challenge through greater depth**- rather than accelerated content, (moving onto next year's concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.

### Curriculum design and planning

- Staff use **White Rose Maths Schemes of Learning** as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics. The focus is on the **whole class progressing together**. Collaborative planning with year group colleagues is encouraged to ensure consistency within and across year groups especially those with mixed ages.
- Learning is broken down into **small, connected steps**, building from what pupils already know. The lesson journey should be detailed and evident on daily PowerPoint slides as there is no requirement for teachers to produce detailed paper plans.
- Difficult points and potential misconceptions are identified in advance and strategies to address them are planned e.g. verbal feedback, same day keep up, interventions.
- Key questions are planned (teachers are encouraged to watch the corresponding White Rose video before teaching each objective to support with this) to challenge thinking, develop learning and address potential misconceptions which may arise. These should be included on the daily PowerPoints.
- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.

- The use of high quality materials and tasks to support learning and provide access to the mathematics, is integrated into all lessons. These may include **White Rose Schemes of Learning and Assessment Materials**, **Power Maths** online resources (daily discovery questions/ strengthening and deepening activities), **NCETM Mastery** materials, **NRICH**, **Classroom Secrets**, **ISeeReasoning/ ISeeProblem-Solving**, visual images and concrete resources.
- Opportunities for extra fluency practice (instant recall of facts, such as number bonds, times tables, division facts, addition and subtraction facts) should be delivered daily. During the spring term, additional fluency practice is provided for all Year 6 pupils (3x per week) at the start of each afternoon and in addition to this, an incremental coaching style approach is offered to these pupils to work with an allocated adult for 1 lunchtime per week to further embed these fundamental skills.

## EYFS

Children in EYFS explore mathematical concepts through active exploration and their everyday play-based learning. Children are taught key concepts and develop number sense using a hands-on practical approach. EYFS practitioners provide opportunities for children to manipulate a variety of objects which support their understanding of quantity and number. Pupils explore the 'story' of numbers to twenty through the use of models and images, following White Rose maths.

Pupils explore the five counting principles; the one to one principle, the stable order principle, the cardinal principle, the abstraction principle and the order-irrelevance principle. Teachers use a mastery approach to build a solid foundation for further progress. The CPA approach is used when teaching children key mathematical skills. Practitioners allow children time for exploration and the use of concrete objects help to support children's mathematical understanding. Mathematics in the early years provides children with a solid foundation that will enable them to develop skills as they progress through their schooling and ensures children are ready for the National Curriculum.

## Lesson structure

Lessons may vary in length but will usually last for about 45-60 minutes in Key Stage 1, 60 minutes in LKS2 and 75 minutes in UKS2. The learning will focus on one key conceptual idea and connections are made across mathematical topics. A typical lesson in Year 1 to 6 will have the following common components:

- Fluency ( 5-10 mins): This may focus on practising number facts ( e.g. number bonds or times tables) or arithmetic skills.
- 'Get Ready' Task (5 mins): consolidation of previous learning. During this time, the teacher and teaching assistant will spend time observing and questioning the children to check for understanding/ misconception from the previous days learning.
- 'Let's Learn' (15 mins): This 'ping- pong' session encourages children to move from concrete to pictorial and pupils will 'do and show'. Pupils have opportunities to talk to their partners and explain/ clarify their thinking. Pupils are expected to respond in full sentences (using given stem sentences), using precise mathematical vocabulary.

- Independent Practice (25-30 mins): Here the expectation is learners complete carefully crafted questions focused on the one key piece of learning. The questions are progressive and are ordered in terms of difficulty. Most worksheets include a range of the following questions:
  - **GG (Getting Going)** - simple examples linked to key learning of the lesson. Focus on procedural fluency with lots of pictorial representations.
  - **RR (Ready to Rock)** - additional questions built in around promoting reasoning skills (yes/no, true/false, focus on misconceptions/ mistakes).
  - **JS (Jet-Setters)** - focus on solving a range of problems: empty box; find the symbol; here's the answer, generate the question. Probing questions how do you know? Can you prove it? Can you represent it in another way? What's the value? What's the same/ different about? Can you explain that?
- Let's Reflect ( 5-10 mins-): An opportunity to consolidate learning and address misconceptions. Reflection can take many forms, and is often dependent on the age and abilities of the pupils and could be verbal or written.

### 99 club

At Bishop Bronescombe, we use 99 Club to continually develop the children's arithmetic and fluency skills. Each week the children are given a set time to complete a set of questions and when they pass each club they receive a certificate of recognition. Once children have obtained access into the 99 club, they are challenged further with more questions, in less time through the Bronze, Silver, Gold and Platinum Clubs!

### Resources

When introduced to a key new concept, pupils should have the opportunity to build competency in this topic by taking the following approach:

**Concrete-** pupils should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

**Pictorial-** pupils should then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.

**Abstract-** with the foundations firmly laid, learners should be able to move to an abstract approach using numbers and key concepts with confidence and accuracy.

Each classroom will have a designated maths area which is labelled with resources accessible for children to independently select to support their learning. A bank of essential mathematics resources such as Numicon, multilink cubes and counters, is kept in each classroom. An additional set of resources is available for each phase such as Cuisenaire rods, bead strings and base ten as well as topic specific resources (geometry, measures etc) which is encouraged to be accessed when needed.

### Display

We aim to provide a stimulating, number-rich environment with appropriate resources so that pupils can fully develop their mathematical skills. Each classroom should have specific resources that must be displayed in the classroom. These should include: display of appropriate number line; large 100 square; large multiplication grid; large part whole model and bar model. For consistency across the school, all classes have the following non-negotiables for their working walls:

- Key vocabulary and sentence stems;
- Shared/ modelled work: 'Show it', 'Draw it,' 'Explain it' and 'Prove it'.
- Pictorial representations pictures;
- Times tables focus;
- BLP characters displayed and referenced;
- Examples of children's work (WAGOLL). Any written and mental strategies should be clearly displayed in line with the calculation policy;
- References to real life (pictures, written examples).

### Marking and feedback

Marking of mathematics books should be completed in line with Bishop Bronescombe's marking policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all marking picks up and addresses any misconceptions/ mistakes and thorough questioning ensures children have clarified their thinking clearly.

### Assessment

- **Formative assessment for learning** should occur throughout the entire maths lesson, enabling teachers/ support staff to adjust their teaching/ input to address the needs of the children.
- After a unit of work has been taught, **White Rose end of block assessment** must be administered to check pupils' understanding. Scores to be used to inform next steps/ interventions.
- **NFER standardised tests** are to be administered termly to assess progress for year groups (Y1-6). Teachers need to complete NFER analysis grids to identify common errors/ misconceptions to inform planning of basic skills. In addition to this, **National Curriculum tests** are used at the end of KS1 and 2; teachers use past and sample papers to inform their assessments as they prepare pupils for these end of year assessments.
- Teachers should refer to the **NCETM Assessment Booklet** appropriate for their year for examples of mastery and mastery with greater depth.
- Using a range of these sources, pupils are assessed against their year group objectives every half term to inform PIT assessment which is logged using Pupil Asset.

### Homework

There is an expectation that all pupils will learn their times tables relevant to year group. Teachers should issue additional homework (normally fluency based) to practise and consolidate their understanding of the learning being taught within

school. Homework will be set on a Thursday and uploaded to the child's Class Dojo page by the following Tuesday. Feedback will be given and a record of the submission of homework will be kept by the class teacher. Times Tables Rockstars should be set as regular weekly homework. All pupils should be given their login details, which are to be pasted in their Reading Records. There are useful website listed on the school website where children can access number facts games at home. In addition to this, Year 6 class teachers to set additional arithmetic practice during the spring term.

### Parental involvement

At Bishop Bronescombe, we recognise that parents/ carers can make a significant difference to a child's progress in maths. We encourage parents to be actively involved by:

- Providing regular parent consultation evenings, which give them verbal and written information on their child's progress and their targets for the future.
- Providing an end of year report, which outlines progress and attainment.
- Holding workshops for parents focusing on areas of mathematics to support homework activities.
- Providing additional information, guidance and support via the school website.

### Role of the Subject Leader

- Ensures that all members of staff understand the requirements of the National Curriculum and supports them to plan lessons.
- Leads by example by setting high standards in their own teaching.
- Leads continuing professional development; facilitates joint professional development.
- Leads the whole-school monitoring and evaluation of teaching and learning in mathematics by observing teaching and learning regularly; analysing assessment data in order to plan whole school improvement in mathematics; conducting work scrutiny to inform evaluation of progress; conducting pupil conferencing.
- Takes responsibility for managing own professional development by participating in external training, independent private study, engaging in educational research and scholarly reading and keeping up-to-date with Teaching for Mastery developments.
- Keeps parents informed about mathematics issues.
- Ensures that the school's senior leaders and School Monitoring Council are kept informed about the quality of teaching and learning.
- Works in close partnership with the school's SLT to ensure that the learning needs of all pupils in maths are met effectively.
- Keeps the school's policy for mathematics under regular review.

### Equal opportunities

Bishop Bronescombe aims to meet the needs of all, taking into account gender, ethnicity, culture, religion, language, disability, age and social circumstances. The provision for children with special needs is detailed in the SEND Policy. SEN pupils



may be supported by additional adults, different resources, differentiated activities. They may also complete additional activities outside of the mathematics lesson or be taught in a smaller group setting rather than whole class. We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/ support.