



Maths at St Merryn School

1. Rationale for the curriculum, including the purpose and the key ideas

At St Merryn we deliver our Mathematics curriculum to ensure it follows the key aims of the National Curriculum. We aim to ensure that all pupils become fluent in the fundamentals of mathematics and in number so that they develop solid conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. Children at St Merryn are taught to reason mathematically by following a line of enquiry, finding connections and establishing relationships whilst using mathematical language. Our mathematics curriculum carefully sequences knowledge, concepts and procedures to build mathematical knowledge and skills systematically over time. Children are taught to 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.

2. Subject planning, delivery and assessment

Planning

- St Merryn uses the Power Maths scheme of work together with a rich variety of additional resources.
- Maths lessons are planned so that they build upon the prior learning of the children.
- There is planned progression built into the schemes of work at Foundation Stage, KS1 and KS2, so that the children are increasingly challenged as they move through the school.
- Wherever possible maths will have outdoor connections

The use of mathematical resources is integral to our approach and thus planned into teaching and learning. These resources are used by our teachers and children in a number of ways including:

Demonstrating or modelling an idea, an operation or method of calculation.

Resources for this purpose would include: double sided counters, a number line; place value cards; Dienes; place value counters and grids; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon; multi-link cubes; clocks; protractors; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things.

Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required.

Standard resources, such as number lines, multi-link cubes, Dienes, hundred squares and counters are located within individual classrooms. Resources within individual classes are accessible to all children who should be encouraged to be responsible for their use. An interactive teaching tool for the purpose of modelling strategies is available to all teachers as part of the Power Maths scheme. Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on the Power Maths 'Activelearn' platform. As well as overviews of learning, these include short videos which demonstrate new methods to ensure accuracy. The school is also a White Rose Maths Premium member, which provides access to additional related resources and reference materials that teachers can use in, as well as to inform, their lessons. The subject leader attends regular training through the KL Maths Hub and signposts new resources, including those published by the National Centre for Excellence in the Teaching of Mathematics (NCETM), for use in specific areas of maths. High quality Power Maths textbooks (as well as an online version) and the closely aligned White Rose resources (approved by the DfE, as part of the national approach to teaching for mastery) are used across the school.

Teachers are encouraged to use the school grounds as an outdoor classroom where this will provide more purpose and context to the learning, for example, when teaching length, area or perimeter.

The main maths lesson

A typical lesson using Power Maths lasts approximately 1 hour. Maths is taught daily during the morning. Children begin with a short 'Power Up' activity, which supports fluency in and recall of number facts. Following this, the main lesson begins with a 'Discover' and 'Share' task in which a contextual problem is shared for the children to discuss in partners. This helps promote discussion and ensures that mathematical ideas are introduced in a logical way to support conceptual understanding. In KS1, these problems are almost always presented with objects (concrete manipulatives) for children to use. Children are also encouraged to use manipulatives in KS2. Teachers use careful questions to draw out children's discussions and their

reasoning and the children learn from misconceptions through whole class reasoning.

Following this, the children are presented with varied similar problems, which they might discuss with a partner or within a small group. At this point, scaffolding is carefully reduced to prepare children for independent practice. This is the 'Think together' part of the lesson and the children might record some of their working out in their Maths books or on a mini whiteboard. The teacher uses this part of the lesson to address any initial errors and confirm the different methods and strategies that can be used. The children are then shown a 'challenge', which promotes a greater depth of thinking.

The class then progress to the 'Practice' part of the lesson, which is designed to be completed independently. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. In this part of the lesson, some children will be encouraged to use concrete resources alongside pictorial representations. Others might be supported through additional scaffolding provided by the teacher, which may include provided models of the calculation method that the children will need to use, or copies of the worded question, with key aspects and vocabulary highlighted. A challenge question and links to other areas of Maths encourages children to take their understanding to a greater level of depth. Children who complete this are provided with further 'rich and sophisticated' problems from the White Rose Maths Small Steps guidance (or similar) which they can complete in their own maths books.

The final part of the sequence is a 'reflect' task. This is an opportunity for children to review, reason and reflect on learning and enables the teacher to gauge their depth of understanding.

Each lesson will provide the children with an opportunity for self-assessment against the lesson objectives.

KS1 & 2

As acknowledged by the National Centre for Excellence in the Teaching of Mathematics (NCETM) and the Maths Hub programme – 'The use of well-designed and tested textbooks is critical for the successful implementation of teaching for mastery. A good textbook is both an aid for the teacher in planning lessons and for the children during lessons and working on their own.' Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge alongside developing procedural fluency. Our KS1 and KS2 teachers use textbooks from the DfE approved Power Maths series. This scheme is aligned with the 2014 National Curriculum. The Power Maths textbooks are arranged in chapters and, over the course of the academic year, all units of the 2014 National Curriculum are covered. There is no requirement for any formal planning due to the nature of this approach, however teachers are free to plan and source activities and additional tasks which offer support and also

provide further challenge for children who are able to progress further in their learning. Lessons in both key stages follow the same sequence (see the previous section on Teaching & Learning). In KS1 -and possibly KS2- the teacher might use 'mini-plenaries' to explain each question during the children's completion of the practice book and also to check children's understanding before they complete the next question. This ensures that all children are able to complete the task with confidence.

EYFS

In Nursery, Mathematics is delivered through adult led group sessions, adult lead focus tasks, weekly challenges in the maths area, though continuous provision and implemented throughout the daily routine. In Nursery the children begin to develop their understanding of simple mathematical concepts such as counting to 5 (then 10 and then 20), maintaining 1 to 1 correspondence, simple addition and subtraction, to recognise and describe simple 2d shapes etc. Children are taught these concepts using physical and pictorial resources, songs, games and role-play activities.

In Reception, Mathematics is delivered through whole class teaching, adult led focus activities, weekly challenges in the maths area, though continuous provision and implemented throughout the daily routine. In Reception, Mathematic lessons are split into three parts, which broadly follows the Power Maths program. This consists of: 1. Whole class oral and mental starter – 5 minutes 2. Whole class main teaching – 10 minutes 3. Adult led focus activity. The Oral and mental starters focus on a broad range of topics such as shape, measure, time, patterns etc. to help develop an understanding of these concepts. Whole class main teaching follows Reception Power Maths planning. We teach a short whole-class lesson following the teaching sequence set out in Power Maths; starter stimulus, discover & share, think together, challenge and practical activities.

Children enjoy sharing their understanding, talking about maths and the practical elements of these maths activities. The clarity and focus of the Power Maths resources allow teachers to focus on developing and strengthening fundamental maths concepts and skills and also to address any misconceptions that may arise. The structure of the lesson enables teachers to secure a good balance between whole class work, group teaching and individual practice. It also allows teachers to establish regular routines thereby maximising teaching time. It supports assessment, as well as providing individual verbal feedback to children, ensuring that children have a clear understanding of the task they have completed, as well as any next steps.

In both Nursery and Reception, through continuous provision, children can self-select Maths resources to consolidate their learning during child-initiated activities. We recognise the importance of play-based learning and therefore encourage children to develop their understanding during their play. Such opportunities are

provided in both the inside and outside environment. Regular observations and assessments help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported appropriately.

3. Inclusion & Equal Opportunity

Staff at St Merryn are committed to ensuring the active participation and progress of all children in their learning. All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

With a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states: 'Children who grasp concepts rapidly should be challenged through being offered 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.' There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content before acceleration onto new content. Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day.

Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: 'Decisions about when to progress should always be based on the security of children's understanding and their readiness to progress to the next stage.' In exceptional circumstances, if a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be detailed on the child's provision map and any specific arrangements for the provision of children with SEND will be shared with relevant staff and communicated to parents at SEND reviews and parent meetings.

4. Assessment

Assessment for Learning:

- Children receive effective feedback through teacher assessment, both orally and through our green marking.
- The structure of the teaching sequence ensures that children know how to be successful in their independent work. Guided practice, which takes place

within the 'Think Together' part of the lesson, provides further preparation for children to be able to apply the skills, knowledge and strategies taught during the 'Discover and Share' phase. Common misconceptions are addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and the children before progression to further depth.

- Opportunities for additional practice and correction are provided by the teacher as appropriate, during marking, with a focus on promoting and achieving a growth mind set within the subject using the 6Rs and learning line to communicate this.

Assessment:

- Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class if necessary. The lesson structure of Power Maths is designed to support this process and the reflect task at the end of each lesson also allows for misconceptions to be addressed.
- At the end of each blocked unit of work, the children may also complete the carefully aligned White Rose Maths 'End of Unit Assessment' should teachers require further evidence of learning. The outcome of this can then be used to ensure that any identified gaps in understanding can be addressed.

5. Monitoring and evaluation of intent, implementation and impact of lessons

Monitoring and evaluation of intent

Subject leadership time is allocated to allow for the subject leader to carry out learning walks and planning scrutiny to ensure that the above curriculum delivery is followed as per this document and the subject policy.

Impact of lessons will be monitored by teachers formatively throughout a unit of work. Teachers can be supported by the subject leader in order to aid the impact of lessons (where required). Teachers and the subject lead will assess the impact of teaching and make action plans as appropriate. This may include supporting teachers, evaluating lesson plans used or the resources of the school.

6. Action plans related to whole school SIP

See action plan

7. Connectivity: how Maths works alongside other subjects

Connectivity runs throughout each element of the curriculum at St Merryn.

Where possible and appropriate, connections can be made between other subject areas and Maths for example:

- Science recording
- Timelines in History
- Calculating the costs of a project
- Party planning
- Geography data e.g. weather

Maths through the curriculum is displayed on the working wall, in floor books and personal books. A (+/-) symbol indicates where maths has been used in a cross curricular way.

8. Parental Involvement/Home Links

At St Merryn we recognise that parents and carers have a valuable role to play in supporting their child's mathematical learning.

- An overview of the maths curriculum and our adopted calculation policy are readily available on the website.
- Children are encouraged to access Numbots (KS1) and TTRS (KS2) at home to practise and consolidate the learning they have done in school.
- Parents are informed of their child's progress at Parents Evenings and this is also communicated in written school reports. Information about their child's standards, achievements and future targets in Maths is shared during these meetings, as well as ways that parents/carers may be able to assist with their child's learning.
- The year group expectations are shared with parents in the form of a non-negotiables list so they are able to support them at home.
- Year 6 parents are invited to attend an informal End of Key Stage 2 SATs meeting during Spring Term during which they are given all relevant information and have the opportunity to ask any questions or raise any concerns they may have.

9. Role of the Maths Lead

The subject leader will:

- Work to raise the profile of maths at St Merryn Primary School through best practice. They will model lessons, as appropriate, to new staff, NQTs and peers to support continued professional development.
- Ensure classroom environments are conducive to learning, through effective use of displays and accessibility and availability of resources
- Involve the school in 'celebrations' of Maths, including participation in events such as 'World Maths Day'.
- Monitor progression and continuity of Maths throughout the school through lesson observations and regular monitoring of outcomes of work in Maths books.
- Ensure that all staff have access to year group plans and the relevant resources which accompany them.
- Monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan, which will detail how standards in the subject are to be maintained and developed further.

- Organise, audit and purchase central and class-based Maths resources.
- Keep up to date on current developments in Maths education and disseminate information to colleagues.
- Ensure that all staff have access to professional development including observations of outstanding practice in the subject.

10. Budget

St Merryn's Executive head, Head of School, Subject leaders and School governors oversee the budget. The spend is focused on enabling the success of all children.

11. Governance

At St Merryn governors work together and share time between subject areas. At reviews points set out across the year, governors will be consulted with regards to all aspects of the Maths curriculum using this documents, and subsequent updated versions, as an agenda to provide focus points for discussion.

During subject area discussions, the subject leader will compile a presentation to update the governors on the position and direction of the subject area.