



St Andrew's Maths Policy

Purpose of subject and objectives:

At St. Andrew's, we encourage children to be inquisitive throughout their time at school and beyond. The Maths curriculum fosters a healthy curiosity in children about the processes and understanding needed to achieve in Maths. We believe Maths encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of key skills. We ensure that the depth through reasoning skills are built-on and developed throughout children's time at school so that they can apply their knowledge of Maths in a range of situations.

Our Aims in teaching Maths:

- Preparing our children for life in an increasingly mathematical and technological world.
- Developing a love for learning
- Developing independent, resilient learners
- Helping develop and extend our children's mathematical concept of their world
- Helping children understand how mathematical skills work in a variety of ways

Teaching and Learning

A typical maths lesson lasts approximately 1 hour. Maths is taught daily during the morning. Children begin with a short 'Arithmetic' activity which supports fluency in and recall of number facts and the four operations. The children then all take part in times-tables activities daily using written and online methods (TT Rockstars). Following this, the main lesson begins with a 'Problem of the Day' (POD) 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 may also 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. 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 using the White Rose Maths workbooks. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts.

Challenge questions and links to other areas of Maths encourages children to take their understanding to a greater level of depth. These activities Children who complete this are provided with further 'rich and sophisticated' problems from the White Rose Maths Small Steps guidance which they complete in their own maths book.

Planning and Resources

The use of Mathematical resources is integral to the concrete – pictorial – abstract approach and thus planned into teaching and learning. The school has a wide variety of high quality equipment and resources, both tangible and ICT based, to support our learning and teaching.

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: base ten equipment, a number line; place value cards; place value counters and grids; money or coins; measuring equipment for capacity, mass and length; 5 bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; 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, base ten equipment , 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. Further resources (often larger items shared by the whole school) are also available as part of a central supply. An interactive teaching tool for the purpose of modelling strategies is available to all teachers as part of the White Rose Maths premium resources subscription. Resources to support teachers' own professional development and understanding of new approaches as part of a mastery approach are available on the White Rose Maths platform. As well as overviews of learning, these include short videos which demonstrate new methods to ensure accuracy. High quality workbooks, approved by the DfE, as part of the national approach to teaching for mastery are used in each year group and a digital version of the White Rose Maths teaching resources allows these to be shared with the class, during the main teaching. Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

Organisation

The school has implemented a blocked curriculum approach to the teaching of Mathematics. This ensures that children are able to focus for longer on each specific area of Maths and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding. Subsequent blocks and arithmetic/POD sessions continue to consolidate previous learning so that the children continually practise key skills and are able to recognise how different aspects of Maths are linked. For example, when children have completed a block which has enabled them to master the multiplication of two-digit numbers, a subsequent block

on area and shape might provide opportunities to use this understanding when calculating the area of shapes with 2 digit length and width dimensions.

EYFS

Children in Nursery have a short daily Maths teaching session, during which time they begin to develop their understanding of simple mathematical concepts such as counting to 20, maintaining 1 to 1 correspondence, simple addition and subtraction facts, to recognise and describe simple 2d and 3d shapes. Children are taught these concepts using physical resources, pictorial resources, songs, games and role-play. There is no focus activity linked to these sessions.

In Reception, children have a three part lesson from Autumn 1. This consists of:

1. Whole class oral and mental starter - 5 minutes
2. Whole class main teaching - 10 minutes
3. Focus activity for 8 children, grouped according to current attainment and taught in a ratio of 2 or 3 children to 1 adult

Throughout the week a child will work with an adult - either a teacher or a supporting adult - on a differentiated task. This activity is completed in 10 - 15 minutes.

This structure to the lesson enables teachers to secure a good balance between whole class work, group teaching and individual practice. It also enables teachers to establish regular routines thereby maximising teaching time. It supports assessment on a daily basis, as well as individual feedback to children, ensuring that children receive immediate intervention as required during the supported focus activity. In both Nursery and Reception, the independent activities at the Maths table link to the focus for the week. For example, if the focus for the week is addition, then activities on the Maths will often link to this. In addition to these planned independent activities, children also have the opportunity to 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 by appropriate interventions.

KS1 and KS2

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 workbooks from DfE approved White Rose Maths series. This scheme is based on the principles of how Mathematics is taught in many high performing jurisdictions in East Asia and aligned with the 2014 National Curriculum. The online resources and workbooks are arranged in chapters and, over the course of the academic year, all units of the 2014 National Curriculum are covered. Short term planning is done on a weekly basis, and includes the preparation of success criteria which accompany the learning intentions for each lesson. Teachers also plan 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 'Teaching and Learning'). In KS1, 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.

Equal Opportunities

The school is 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.

Inclusion

Taking 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. A range of inclusion strategies are embedded in practice and teachers are aware of the special educational needs of the children in their Maths

class, as well as those who have English as an additional language. 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.’

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 overseen by the SENDCo, in collaboration with the class teacher and with the knowledge of SMT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews.

Assessment:

Children receive effective feedback through teacher assessment orally using the school ‘Feedback Book’ approach. In this way, AfL is integral to the design of each lesson;

- 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 ‘POD’ 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.
- At the end of the lesson, the children review their work and self and peer assessment are used consistently as outline by the school’s ‘Feedback Policy’.
- The feedback book is used during review of the children’s work to inform where consolidation or further intervention might be required. Opportunities for additional practice and correction are provided by the teacher, as appropriate, during marking, with a focus on promoting and achieving a growth mindset within the subject.

Formative 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 also complete the carefully aligned White Rose Maths ‘End of Unit Assessment’. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught. Each child’s scores are also input on a class spreadsheet, which provides an overview of achievement in each specific area within the programme of study. This also informs dialogue with parents and carers Parents Evenings, as well as the judgements made at the end of the term as to the extent that each child has demonstrated mastery of each ‘fundamental’ objective.

Summative Assessment:

Teachers administer a termly arithmetic paper and reasoning and problem-solving paper which specifically links to the coverage for that term. The results of these papers are used to identify children's ongoing target areas, which are communicated to the children, as well as to parents and carers at Parents Evening. They are also used alongside the end of unit assessments and outcomes of work, to inform the whole school tracking of attainment and progress for each child in line with each 'fundamental' objective. Assessment data in maths is reviewed throughout the year to inform interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year during transition.

Monitoring and Review

- The subject leader will raise the profile of Maths at St Andrew's Primary School through best practice. They will model lessons, as appropriate to new staff, NQTs and peers to support continued professional development. They will ensure the high quality of Maths displays around the school, present certificates of achievement during end of term assemblies and involve the school in 'celebrations' of Maths, including participation in events such as 'World Maths Day'. The subject leader will support staff in providing opportunities for learning outside the classroom in Maths and will identify and organise opportunities which enable this, as appropriate.
- The subject leader will monitor progression and continuity of Maths throughout the school through lesson observations and regular monitoring of outcomes of work in Maths exercise books.
- The subject leader will ensure that all staff have access to year group plans and the relevant resources which accompany them.
- The subject leader will 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.
- The subject leader will, on a regular basis, organise, audit and purchase central and class-based Maths resources.
- The subject leader will keep up to date on current developments in Maths education and disseminate information to colleagues.
- The subject leader will extend relationships and make contacts beyond the school.
- The subject leader will develop opportunities for parents/carers to become more involved in Maths education.
- The subject leader will ensure that all staff have access to professional development including observations of outstanding practice in the subject.

Parents

The school recognises that parents and carers have a valuable role to play in supporting their child's mathematical learning. An overview of the Maths curriculum is available on the school's website, as well as guidance in the progression in calculation methods used by the school. Paper copies of these

documents are also available on request and the curriculum letter, sent home by each year group, also outlines the Maths topics to be covered.

- Children are given Maths homework at least once a week from Reception to Year 6. Activities are to be set and accessed via Seesaw in KS2. Throughout the unit of work, maths homework task will focus on developing number fluency.
- Parents are informed of their child's progress at Parents Evenings and this is also communicated in written school reports.
- Parents and carers are encouraged to speak to their child's Maths teacher at any point during the year, either informally or by making a specific appointment. Information about their child's standards, achievements and future targets in Maths is shared during parent/carer meetings, as well as ways that parents/carers may be able to assist with their child's learning.
- The school also provides a number of opportunities for parents/carers to learn about what their child is learning and the way their child is being taught through parent workshops.