

*St Andrew's CE
Primary School*



Mathematics Policy

Updated : Summer Term 2020

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The Nature of Mathematics

Mathematics is one of the key tools of life that we can give to the children of St. Andrew's. There is much more to maths than a series of rules and formulae that they need to learn. We will endeavour to encourage children to appreciate form and pattern, and use mathematics as a tool to help them make sense of the world.

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (National Curriculum 2014)

Aims

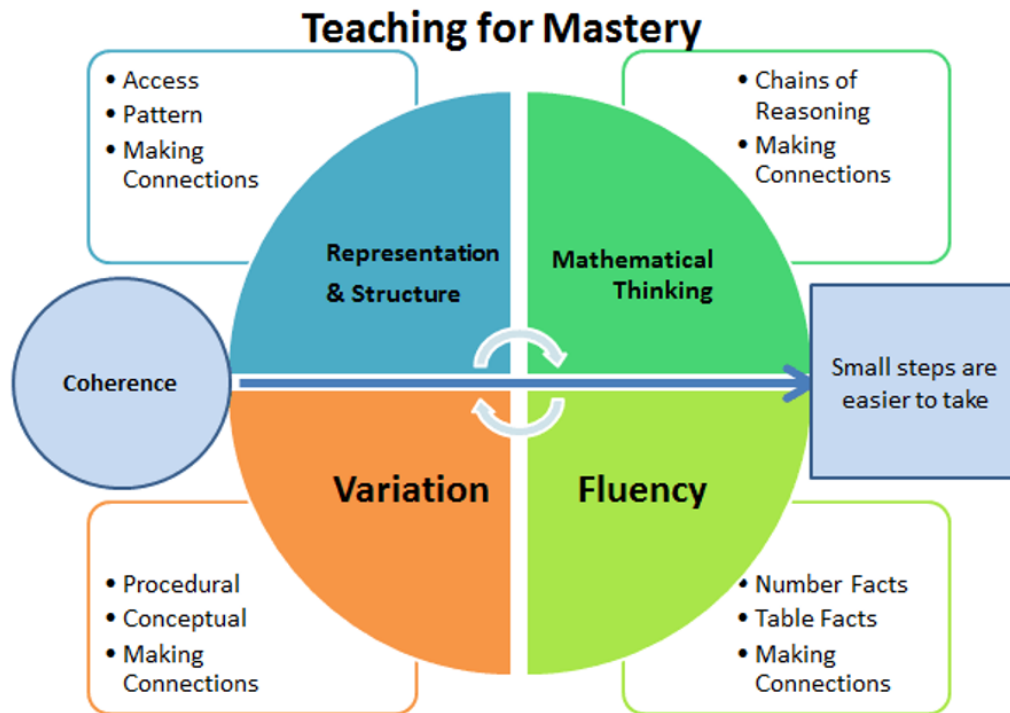
- To ensure that maths is accessible to all children from the Foundation Stage (nursery) through to Year 6, using the Foundation Stage Profile, P-Levels, the New Mathematics Framework and the programmes of study and levels of attainment in the NC document as a guide to help children achieve at the highest possible level for each individual.

The National Curriculum for Mathematics 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 develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- 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 into a series of simpler steps and persevering in seeking solutions .

FLUENCY – REASONING – PROBLEM SOLVING

These three key aims of the National Curriculum should be addressed in each sequence of learning.



Teaching for Mastery Principles

- It is achievable for all – we have high expectations and encourage a positive ‘can do’ mindset towards mathematics in all pupils, creating learning experiences which develop children’s resilience in the face of a challenge and carefully scaffolding learning so 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 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 ratio, 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 (so they are automatic) 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 develops 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.

Provision including Equal Opportunities

Equal Opportunities We believe that every child is entitled to a full range of activities designed to help their mathematical abilities, irrespective of their gender, age, ethnic background or disability. In Maths children are aware of Values and Relationships.

It is the policy of the school that maths should be apart of the child's rights and that the provision of maths should allow for the children to develop their skills in a variety of ways. Mathematics should be accessible to all.

Every Child Matters Policy Statement can be read as part of the Inclusion section.

Provision The New Maths Framework will be used as a base for the structure and continuity of maths throughout the school. Along with this, a scheme of learning developed by the staff of St. Andrew's, and a wide variety of maths resources, both teacher's and pupil's are used for support and guidance in the teaching of mathematics and to supplement our teaching.

“No Mathematics scheme alone can meet the needs of pupils and an adherence to any scheme may prove detrimental to their mathematics. The mathematical development of pupils can only be encouraged, sustained, evaluated and assessed by the personal involvement of their teachers’ Better Mathematics HMSO 1987

At St. Andrew's the children will be given the opportunity to explore and experiment with mathematics through a variety of approaches aimed at trying to bring mathematics alive and promoting a sense of curiosity and a sense that maths can be fun. These will include open ended and closed investigations, maths games, mental maths tasks and problem solving matched to the children's needs and abilities.

As part of the Rainbow Curriculum we promote Active Learning through the Early Learning Principles. (see separate section on the Rainbow Curriculum).

Provision including Resources

Resources We have a wide range of mathematics resources available for Foundation Stage, and both Key Stages 1 and 2, that are being used to provide children with the means to undertake practical activities related to both fundamental maths skills and mathematical investigation. This will be constantly reviewed and evaluated with regard to making sure that we can offer the children the widest and richest experiences in their learning.

In terms of resources we consider items that need replacing through wear and tear when spending money on the maths curriculum as well as looking to identify areas that will benefit from increasing the variety of resources available, including those that can be used as part of our outdoor curriculum.

All resources can be found in the classrooms and in the Maths Resource cupboards on the upstairs back landing as well as within each year group.

Inclusion

Special Educational Needs

We ensure that our objectives, materials, resources and organisation enable all children to participate fully in mathematics, taking into account their specific needs where possible.

Learning support through Learning Support Assistants and technical aids for producing written work are available for children who need specific help in small groups. When considered appropriate, individual programmes (SNIPs) are designed, implemented and followed through in the classroom, for both less able and more able children, by the class teacher with assistance from the Mathematics co-ordinator and the Special Educational Needs co-ordinator.

Gifted and Talented

We will identify pupils who are gifted and talented in mathematics and provide them with an appropriately extended range of challenges within the classroom. The five key dimensions for planning for these children are breadth, depth, acceleration, independence and reflection. We will promote the development of higher-order thinking skills and problem solving to make them masters of maths we will not simply give them 'more of the same' to keep them occupied. Excellence in mathematics is celebrated in Sharing Assemblies and on displays within and outside classrooms.

As with Special Educational needs, the constant monitoring of children's progress throughout the school will highlight children who are particularly able in Maths and who will be aiming for Gold (exceeding expectation for their year group). Class Teachers will address the needs of these children in their classroom by careful grouping of children and setting open-ended investigational work which a child can develop as far as their abilities allow. We will ensure that they are given the opportunity to develop and extend their abilities to their full potential.

Safeguarding

St Andrew's Primary School recognises that it has a duty to ensure arrangements are in place for safeguarding and promoting the welfare of children and we will carry out this duty through our teaching and learning, pastoral care and extra-curricular activities.

Health and Safety

The safety of our pupils is of paramount importance and to this end all staff will ensure that health and safety regulations, rules, routines and procedures are being applied effectively by both staff and pupils. Pupils will be taught to use the correct tools, equipment and materials appropriate for the task to be undertaken. Appropriate risk assessments will be made, to identify and minimise possible risks and ensure a safe working environment.

When staff are planning Maths within their curriculum, as with any other lesson, they must ensure they cover all risk assessments within that lesson. Staff must ensure that this is documented on the school's Risk Assessment weekly sheet that accompanies planning and that support staff are given a copy with their planning. This should also be available to supply teachers or for any other teacher that is covering your class. The risk assessment should include: ☐ Using resources such as scissors, sand, water; ☐ Movement around the school premises; ☐ Using the outdoor environment; ☐ Checking equipment is safe to use; ☐ Include parent helpers/visitors (working within classroom).

Staff must ensure that should there be any visitors or parent helpers who come and work with the children that they have signed in at the office, wear a visitors badge and be supervised at all times by a member of staff. Children should never be left alone with visitors.

When using the outdoor environment within a lesson it is the responsibility of the teacher to ensure that the area is checked and that it is safe to use eg no broken glass, equipment is safe etc and that all main gates and doors are shut/locked at all times when leaving and entering school.

Should there be any problems when preparing a lesson, a member of the Leadership Team or the Head teacher must be informed.

Every Child Matters

This policy should be read in conjunction with the Every Child Matters Policy Statement.

Every Child Matters Policy Statement

At St Andrew's, an inclusive school, every child has an entitlement to fulfil his/her potential. This is achieved by ensuring the wellbeing of all pupils in relation to:

- Being healthy;
- Staying safe;
- Enjoying and achieving;
- Making a positive contribution;
- Achieving social and economic wellbeing.

At St Andrew's these outcomes are an integral part of school life and by embracing the following areas we aim to ensure they are realised:

- Personalised teaching and approaches to learning;
- Flexible learning based on Early Learning principles;
- Extra-curricular clubs and activities;
- Support for emotional wellbeing;
- Flexible timetables;
- Assessment for Learning which encourages children to have a say about their progress;
- SEN provision;
- Partnerships with parents/carers, other schools, the local community and with 'wrap around' health and social service providers.

St Andrew's is an inclusive school and as such this policy should be read in conjunction with the school's Every Child Matters Policy Statement

Including British Values

All children are encouraged to achieve their full potential through Maths teaching and its importance within all aspects of everyday life. Children of all levels of attainment, are encouraged to believe they are able to achieve in order to build confidence and self esteem. Group work encourages the children to be a valued member of a team helping them to understand that different people solve problems in a range of ways. This promotes the British value of mutual respect and tolerance. Whilst investigating, applying reasoning skills and problem solving skills tolerance and resilience are promoted as the children are encouraged to show endurance and perseverance. Children will be taught that Maths is influenced by other cultures. Children to use democracy in having a say in planning and the use of pupil voice/pupil led maths sessions. All children have the right to a safe and secure learning environment. Children and staff have the right to be treated with respect in all learning sessions.

Classroom Organisation

In our school maths resources are displayed and easily accessible to children in the Foundation Stage and both key stages 1 and 2. They are used as aids to their work and to help promote independence and ability to choose suitable mathematical equipment for their tasks.

Within each class the children are organised into ability groups. The children will be taught in a variety of ways, which will include whole class lessons, differentiated group and individual work. This is done through the Rainbow Curriculum. Through these the emphasis will be on discussion between pupils and teachers, pupils and their peers, practical activities (at appropriate levels), investigative work, the relevance of maths to everyday situations and the opportunity to practice and consolidate the fundamental skills of mathematics.

The learning objectives and success criteria for each lesson are made clear at the beginning of the session and are referred to throughout the lesson as appropriate. At the end of the lesson the children have the opportunity to assess for themselves whether they feel they have met the success criteria in their work and if not what their next step target is (Assessment for Learning). Teaching methods will take account of different learning styles, and should include visual as well as auditory stimuli, plus the opportunity for kinaesthetic activity. (VAK)

Breadth and Balance

Every class participates in Mathematics every day through Basic skills lessons, Cross-curricular themes and through Rainbow. The time in they spend on Maths daily is flexible, but over the week, term and year the children will meet their allocated time on lessons.

- Reception & Key Stage 1 – 3 hours and 45 minutes
- Years 3 & 4 – 4 hours and 10 minutes
- Years 5 & 6 – 5 hours

During registration time each day the children will also have the opportunity to reinforce and consolidate their maths knowledge and understanding through Rainbow activities.

The Rainbow Curriculum / Cross Curricular

Mathematics is not a stand-alone subject; it permeates many curriculum areas and has an essential role to play in the way children's perceptions of their world develop. In addition to regular maths and English sessions teachers try to make as many cross curricular links as possible in order to utilise their skills in a range of contexts.

Our aim at this school is to develop an awareness and confidence both in staff and pupils in recognising opportunities when maths can be used to inform and enhance work. Crosscurricular maths can be identified and taught in general themes and topics, specific maths topics and through problem solving activities. Cross-curricular lessons will enrich the content and develop the interest of our children in mathematics and give them the opportunity to use their knowledge and skills in a variety of contexts. However, this is only part of the maths curriculum as it is also essential to develop the Basic skills of maths in separate lessons.

When teaching specific parts of Maths (which are not done in a cross-curricular way), teachers use a variety of methods and activities to connect the children their mathematical learning. This involves a lot of group and paired work, practical games and activities, movement, music, song, ICT, use of the outdoors, ecotherapy etc which we aim to deliver in short chunks/bursts. These parts of the lesson make it 'fun' and 'real' for the children which then leads to the recording of the Maths they have learnt in the lesson. The focus in lessons is on what the children are learning through their activities and not just on the doing of the activity.

The Schemes of Learning at St. Andrew's, have been developed with cross-curricular issues incorporated. Each subject has taken the objectives and linked these to areas of maths, where maths skills can also be used and developed. The Maths Scheme of Learning incorporates all the links to all the subjects and focuses on which key objectives can be developed for each term, for each year group.

Maths and ICT

Calculators – These play an important role in our society but at St. Andrew's we believe in developing the child's own mental arithmetic skills. Once these are developed, children will be taught how to use calculators to support their own maths work. Calculator confidence will be developed through practical mathematics activities where the objective is the application of mathematics rather than the practice of number skills. The use of calculators can also help to develop children's understanding of mathematical concepts eg place value and negative numbers.

Computers/Laptops/iPads/Chrombooks – We are very fortunate in the number of chromebooks and laptops available within our school. The computers in the classroom are used for children to work individually, in pairs or in small groups on mathematical related tasks. The children are given the opportunity to investigate, develop awareness of shape and space, use data handling and increase skills through this.

Interactive Whiteboards -These can be found in all classrooms. These are used by the teacher as a tool to enhance the teaching and learning in all parts of the lesson but also by the children within lessons. The school has a wide variety of ICT software for the teaching and learning of maths, as well as using many internet websites.

The school are continuing to develop the ICT resources available to use in all lessons. Other resources that are available are PIXIE, web cam animations plus much more technological equipment (see ICT policy).

Planning including Pupil Voice

We use the New Mathematics Framework and the National Curriculum (NC) along with the White Rose Maths Scheme as our key tools for planning. We also access to a large number of teacher resource books and various on-line resources from the Internet. These resources complement each other.

Pupil Voice

At St. Andrew's we encourage children to give their ideas on what they want to learn within lessons. This is done in a variety of ways including the use of assessment for learning, Pupil Questionnaires and individual class systems where children get the opportunity to say/ write what they want to learn and this is then used by the class teacher in the planning stage.

Our planning will ensure appropriate coverage of the requirements of the NC, but we will adapt materials and teaching to meet the learning needs of the pupils. Our Maths scheme of learning includes the objectives to be taught termly, a wide range of activities staff can use as well as a grid showing cross curricular links with all other subjects.

Objectives from year groups should be differentiated through Bronze, Silver, Gold objectives that gives all pupils the ability to master maths at their level. On this basis, medium term planning is an ongoing process since regular assessment is used to inform the planning process. Teachers also plan specific lessons in the short term, usually on a weekly basis/2 weekly basis, using a standard format which gives details of classroom organisation and differentiation. Teachers annotate their planning on an ongoing basis with notes on pupil progress and attainment, and any amendments which have been made.

In keeping with the general format of the Mathematics Framework (2015), we revisit mathematical topics at various points throughout each year, thus giving opportunities for children to revise, reinforce and extend their skills and knowledge.

Assessment and Recording

At St. Andrew's this will be an integral part of our planning as it is in other curriculum areas. When planning specific mathematical activities we will identify what it is we are looking to assess, with reference to the New Maths Framework and to the N.C documents. We will be looking to ensure continuity and standardisation in the way we assess and record the children's progress. This will take a variety of forms and will include teacher observations and discussions with pupils to help determine children's understanding of what they have been taught, formal assessment using N.C materials and assessment sheets. Moderation of children's work in maths will also take place.

The following will be used to determine a child's attainment:

Bronze : Working below the expected standards required for that year group.

Silver: Working at the expected standards for that year group.

Gold: Working above expectations within that year group (Working at greater depth).

Platinum may be awarded for those achieving extremely high within the greater depth.

Assessment will be used to identify any difficulties or areas of concern related to children's work. At St. Andrew's we have an assessment system called the 'Bus Stop'. During each year at school the children will be assessed half- termly to determine whether the children are at gold, silver or bronze, to set targets for the term ahead and to see what weaknesses the children have to focus upon. The targets will be sent home to inform parents what the children need to be able to do next to progress and a copy will be stuck in the children's books or placed on tables and discussed with the child.

After each assessment the children will have their level placed on their 'Bus Stop' board to show and track progress through the year and through the school. It will be also indicated on the board how the child is progressing towards their individual end of year target. Green - excellent progress and met target, orange - sufficient progress and red to show sufficient progress is not being made. Again this will be sent home to parents after each assessment so they are aware of the children's progress. This traffic light system will highlight those children, whatever ability, that are not making sufficient progress and then the class teacher can adopt strategies to make sure all children are making progress. (Value added).

All data is placed onto the O-Track system to calculate individuals/ classes/Year Groups/SEN/ G&T/Gender, value added, term by term and year by year.

AM - the teachers at St. Andrew's are using AM (Assertive Mentoring) guidelines which fit in with the New Maths Framework. This will allow teachers to give a more accurate teacher judgement of levels (with sufficient evidence) when it comes to the half-termly Bus Stop assessments.

White Rose Maths: In addition to AM at the end of every term an arithmetic and Reasoning +Problem solving test will be given to see how secure each child is in their learning and knowledge.

Assessment for Learning - this process is used by the children at any point within a lesson. The children from the start of a lesson know what they are learning (WALT) and what the teacher is looking for in their work (WILF). Children assess what they have learnt and then set their own targets or with peers on their next steps.

During periods of non-attendance at school such as school closures all efforts will be made to reduce gaps in learning by providing home learning of the agreed non negotiables , basic skills and essential key objectives—see home-learning section in Homework.

Monitoring Standards

Throughout the Year the Maths Co-ordinator and Leadership team monitor the standards of Maths in all year groups. This is done in a variety of ways which are listed below.

- Classroom observations
- Book/work scrutinies
- Moderation sessions
- Phase meetings
- Planning scrutinies
- Moderation sessions during Bus Stop weeks
- Analysis of Bus Stop
- Year group meetings with Maths Co-ordinator/ member of Bus Stop team

Through this monitoring we identify the strength and weakness areas specific ability areas, in specific children, in classes, in year groups and in phases. All staff after every Bus Stop, get a copy of the analysis so they are aware of these areas. Any weakness area is then action planned and strategies are put in place to develop the standards. Staff use documents called 'Red Bus Stop Strategies' and 'Year group Action Plans' to record how they are going to raise standards in specific areas.

Homework

The school sets a homework rota. On set times during the term, children in every year group will have a piece of maths homework. Homework activities are provided to consolidate children's learning from the week and to involve parents in their child's progress. The learning of basic facts such as addition and subtraction for Phases 1 and 2 and times tables for Phase 3 may also be sent home time to time.

The homework will be monitored closely by the Maths co-ordinator and Phase Leaders to ensure quality, differentiated activities for each year group and ensure there is progression and continuity throughout the school. Homework results will also be collated by a member of the leadership team.

Home School Learning:

The Home Learning Policy supports the Teaching and Learning Policy. It is a positive enhancement to learning and should be seen as such by pupils, teachers and parents. In order to promote this: All Home Learning tasks are set on Insight so pupils can access the tasks easily and parents can monitor the completion of the tasks and support their children effectively. In the case of children not being present in school (such as during an epidemic resulting in school closures), the use of home learning through email and access to Google Classroom will be used to reduce gaps in learning and will focus on differentiated non-negotiable and basic skills tasks as well as other key areas and objectives essential to the Maths curriculum. In the case of a pupil being unable to access technology to view and complete work arrangements will be made for paper learning packs to be collected or posted to individuals. Marking and feedback must be completed as soon as possible.

Ofsted

Areas for improvement, as outlined by our last Ofsted (2013) will be addressed through Maths, whenever possible. The highest possible quality of handwriting / presentation / accuracy in spelling will be demanded from all children, with a particular focus on boys. Through the monitoring of music and any subsequent mentoring by SLT / Co-ordinator, teaching will be expected to be at least good. Through Maths we will provide opportunities for all children, particularly in KS1, to take part in problem solving activities. Staff will challenge all children, particularly boys, to reach the highest standards in any writing completed in this subject. The Co-ordinator will use school data to improve and maintain standards of teaching, learning and achievement in Maths.

School and Wider Community

The school is committed to staff development and as such actively encourages staff to take part in INSET courses both daytime and twilight courses in areas of mathematics that staff have expressed a desire to develop.

The Maths co-ordinator will attend any groups where Maths co-ordinators meet to discuss mathematics issues.

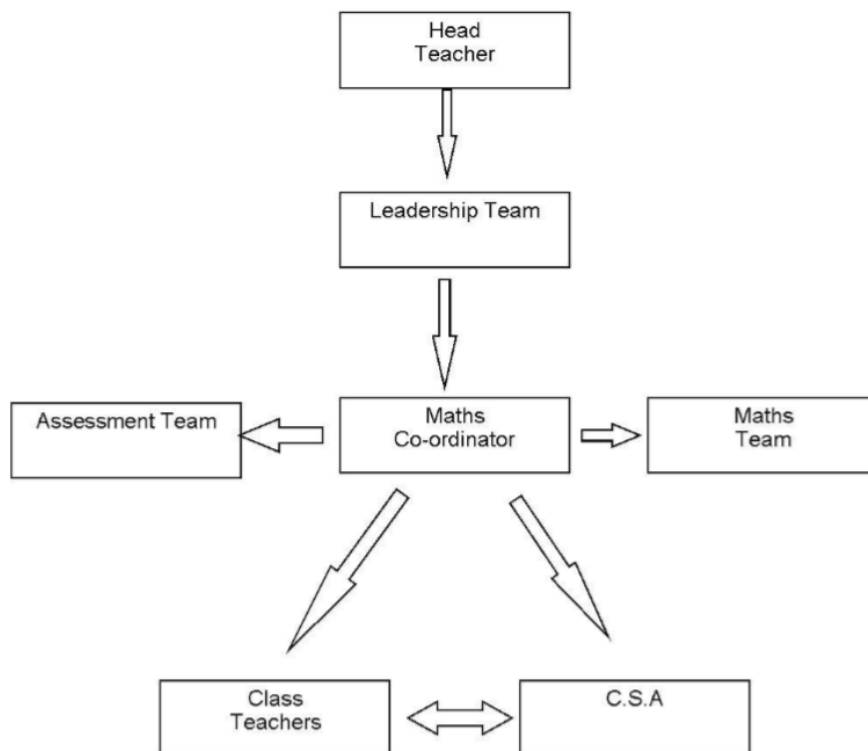
It is one of the school aims to make links with local industry and steps towards this have already been taken. As these links are developed we need to be aware of the possibilities these links offer in terms of the Maths curriculum.

Staff are becoming more aware of the possibilities for mathematics in 'out of school' visits and in most cases provision is made for some mathematical activity in both the day work and follow up work to a visit.

The school actively encourages parents to take an interest in their child's work in and out of school. Parents are encouraged to come into school at any time, but there are specific parent evenings when parents can discuss their children's work in all areas including maths.

Parent workshops and/or Curriculum Awareness weeks have been organised for parents to come and see what maths is about. Leaflets of activities have been sent home to parents with ideas of activities they can play with the children at home, and at present a strategy booklet has been put together to highlight the ways in which we teach the four number operations. At present, some year groups have also sent home a child and parent awareness booklet for children to complete and parents to discuss with their children.

Maths Structure



Personnel

Maths Co-ordinator - Chris Curtis

Maths Co-ordinator partner - Julie Forster

Maths Team - Sophie Jackson, Katie Elliot, C Ball & Carol Horsfield

Link Governor - J Porter/D Catherall

Policy to be reviewed in the Summer term of 2021