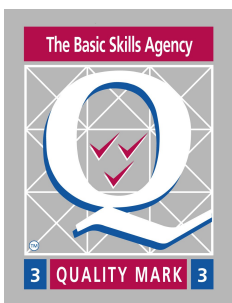




LIPSON VALE PRIMARY SCHOOL

Maths Policy



Lipson Vale Primary School - Maths Policy

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Introduction

The following policy provides guidance and support for the teaching of mathematics. The 'Aims of the School' provide the general philosophy on which this policy statement is based. As a school, we try to provide a broad and balanced approach to the teaching and learning of mathematics as well as to its application to the world around us. Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

As part of our philosophy, we aim to teach mathematics to both boys and girls in a way which promotes the individual learning of the child regardless of gender, ethnic origins or religious beliefs. It will be ensured that all pupils will have equal access to the full mathematics curriculum.

General Aims

- To enable pupils to be proficient, competent and confident with numbers and the number system, calculations, measures, shape and space and statistics.
- To enable pupils to acquire the ability to reason and solve problems across the areas above.
- To enable the children to master the curriculum, to broaden and deepen their knowledge and understanding.
- To foster positive attitudes towards mathematics by developing pupils' confidence, independence, persistence and co-operative skills.

Expectations

By the time the children leave our school, we expect them to be confident mathematicians who can apply their skills to new situations and to the solving of problems. We will make every effort to foster an enjoyment of this subject. By the end of Key Stage 1 and Key Stage 2 the majority of children will be working at age related expectations and the aim is for all children to reach their full potential. Aspirational targets will be set for the children from individual starting points, at the end of Foundation Stage and KS1.

Foundation Stage

The children within the foundation stage follow the Early Years Foundation Stage Curriculum (Development Matters 0-5). The children enjoy practical play based curricular experiences to develop their early numeracy skills and concepts. The assessment of the children starts with a baseline assessment and is then an on-going process and it is recorded on the school's Pupil Tracker as point scores and an e -profile is produced at the end of the year.

Lesson Organisation

From year 1 onwards, all children have a daily dedicated maths lesson. There will be a good balance between whole-class, group teaching and individual practice with an emphasis on closing the gaps, keeping children together in their learning as well as deepening their understanding of the concepts taught. This will involve the teacher gathering together children who have particular needs and addressing them within or soon after the lesson. It is expected that the sequence of lessons will cover fluency, reasoning, problem solving and arithmetic. Teachers will use their professional judgement to determine the activities, timing and organisation of the lesson to suit its objectives. This flexible approach may include: the use of the whole lesson to practically investigate a problem; a lesson with no formal recording; a lesson with all written recording and/or the approach which uses part teach talk part practising (the 'ping pong' approach) etc. All have a place in the maths lesson. There does need to be an emphasis on providing both *practical and visual* experiences to aid the children's understanding as they move from the concrete to the abstract methods. Within each lesson there should be an opportunity to further the children's ability to problem solve, reason and become fluent in the area of learning being taught. To aid the children with their problem solving, each classroom will display a 'Make a New Discovery' poster (Small desk top versions will be available) which the children can use to help them tackle a problem in a systematic way.

Resources to support the teaching and learning are stored in individual classrooms/team areas. (See appendix) These will be used to;

- Demonstrate or model an idea, an operation or method of calculation e.g. number line, larger arrow cards, counting stick, place value counters, dienes.
- Enable children to use a calculation strategy or method that they couldn't do without help; e.g. individual number grids or line, counters.
- Provide a context for the application and practise of mental calculations strategies and number skills e.g. dice, digit cards, number fans, coins and games.
- Ensure that all pupils join in with aspects of the lesson, e.g. use of flash cards, individual wipe boards.

The children are taught in class groups with provision made for all abilities and special needs. During the week there will be opportunities for additional mathematical activities to take place outside the dedicated maths lesson. These will include Maths Skills sessions, times table tests (Y4 Times Tables Rock Stars), access to Mathletics and cross curricular opportunities (see the sections below).

Maths Skills

During each week the children will practise their Maths skills through '4-a day' and 'Quick Maths' activities which will be recorded in a Maths Skills book.

The 'Quick Maths' sessions will concentrate on the mental strategies that the children need in order to access the more formal calculation methods, as well as an opportunity to improve their fluency of the number facts required for each year group. (See below)

During the '4 a day' session the children will practise the written calculation methods taught so far (including fraction work). Initially this will be as a pure calculation (eg. the start of the new method) and then set in a problem once the method is secure. In this way the children will deepen their understanding of the methods taught and will therefore be more equipped to remember the process required in the calculation, as well as being able to apply this to an unfamiliar problem.

Mental mathematics

Mental methods will be emphasised from an early age. Children will be directly taught and provided with regular opportunities to develop the different skills involved in:

- Remembering number facts - through a range of rewards the children are encouraged to learn a range of facts
- Using known facts to work out new facts- The children are encouraged to learn essential number facts including multiplication and division facts through the use of Mathletics and Rock Stars.
- Developing a repertoire of mental strategies
- Solving problems (including interpreting written problems into the correct mathematical functions).

Mathematical language

Children will be taught, and then provided with opportunities to use the correct mathematical language and notation. Children will be expected to discuss their mathematics and explain their thinking (Stem sentences will be provided to aid children). Teachers will plan, display and use vocabulary which is appropriate in terms of age and ability.

The approach to Calculation

The approach to calculation adopted is that set out in the ***calculation policy and the progression maps*** which can be found on the school website. Some important aspects of calculation need pointing out. Here are some key points which need to be considered.

- When faced with any calculation our first thought should be "**Can I do it in my head?**"

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- Pupils should be encouraged to **explain** how they arrived at their answer.
- Pupils should make an **approximation** of the answers to a calculation first.
- Pupils should **check** their answer.
- Pupils should be aiming to use the most **efficient strategy** for the calculation they are working on.

Written work

Written recordings will be used to:

- Informally support a mental calculation (e.g. jottings)
- Develop the skill of explaining the method used
- Help someone else follow the method or assess the work
- Practise writing and using the correct symbols and notation
- Help remember or practise the recall of number facts
- Carry out the workings of a problem, through the use of either an informal method or a standard written method of which is appropriate to the task, age and the ability of the pupil.

Cross Curricular and ICT

The application of mathematics to the real world and to other areas of the curriculum is an essential part of the mathematical development of the child. Opportunities will be used to relate the skills and concepts taught to the real world and to problem solving. During the teaching of other subjects opportunities to use mathematics will be sought. Science and DT provide the easiest links but maths in History (past cultural number systems) and Geography (weather data, population and current world number systems etc) can also provide exciting and interesting topics of study.

The use of ICT should enhance good mathematical teaching. The use of the Interactive White Board should be used in all lessons. For most concepts this is an ideal way of promoting good learning; however the use of actual objects or practical experiences must not be forgotten. This is particularly important when children are developing the early stages of a concept or skill. For example, the IWB ruler does not show cm (very much enlarged) and are the shapes on the board really 3D?

The children need to be given opportunities to develop their ICT skills in the maths lesson, and where maths appears in other lessons, which can be accomplished in many ways. This can be achieved by using data bases, internet searches for information, using the camera to record practical work and voice recorder to record explanations etc. There is also a place for the game type activities which support the quick recall of facts as well as those which practise and consolidate key concepts.

Mathletics

The children have access both at school and at home to Mathletics. This is an on-line resource for both teachers and pupils. It covers all areas of the curriculum in a fun, stimulating and competitive way comprising of aspects of explaining, practising (improving fluency), reasoning and problem solving. Each teacher provides the children in their class with set activities, from the national curriculum at the appropriate level, which once completed gain points for the children. The children receive rewards in the form of points which translate into certificates and credits, which they spend in the on-line store. The children can then play various 'games' against their class peers or children from around the world during which time they practise appropriate skills thus increasing their fluency in these skills. There is an opportunity for the children to self learn through a 'step by step' guide to how to solve the problem as well as a maths concept guide to explain further any unknown vocabulary.

Each teacher has full access to the results of the activities set which can inform planning as well as feed into the assessment progress. Furthermore Mathletics provides e-books and demonstrations which can be used in lessons.

Personal Finance

Over both Key Stages the children will have the opportunity to develop an awareness of personal finance. There are many aspects to this which the children will experience through either blocked units of learning, 'dripped' teaching or through enterprise experiences which will be planned in along side other areas of the curriculum. Over the years the children will learn how to manage their money, how to become a critical consumer, how to manage risk and emotions and how finance plays an important part in people's lives.

Planning and Assessment

Teachers are using the National Curriculum 2014 for teaching mathematics. The use of the White Rose Hub Planning materials will ensure that complete coverage of the curriculum occurs and that lessons are well planned and include the elements of fluency, reasoning and problem solving central to the National Curriculum. In order to support the planning progress further various websites are available to provide guidance, teaching recourses as well as assessment tasks (NCETM, AET maths, Hamilton, Twinkl). The progression maps provided by NCETM allow for quick reference to the coverage of objectives at each year group. School Pupil Tracker has the ability to support planning via the planning tool.

At all stages of planning it is expected that plans are altered to reflect the ongoing assessments made of the pupils learning. When planning teachers will need to provide learning that is appropriate to the child. Activities are planned that promote a mastery of the strands being taught with the aim that children

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reach age related expectations. TAs can help to do this but the aim is to plan lesson that all pupils can be included in and in which all pupils learning is taken forward. Teachers need to take into account children with IEP's and Education Health Plans and ensure that their needs are met.

Assessment of mathematical learning is carried out and recorded in a number of ways;

- Daily Assessment for learning takes place.
- End of term White Rose Tests to assess reasoning, problem solving and arithmetic.
- Fortnightly Arithmetic Tests.
- Use of grids on pupil tracker to record assessments.
- Progress is recorded on the school tracker each term.

Further guidance on the assessment of maths can be found in the Assessment Policy.

The aim is to ensure that all pupils make progress and gain positively from each lesson through quality first teaching. All teachers aim to:

- Plan lessons so that all pupils can be included
- Use a range of resources effectively to allow access to whole class or groups work
- Organise the class and deploy staff to support group or individual needs

For children with special needs in mathematics, their targets will be included on their individual education plan.

If daily assessment shows that a child is falling behind or is not making good progress they can be considered for an intervention activity. This could be in the form of a 'precision instruction' type activity involving daily practise of basic calculation skills with the aim of improving the children's confidence and quickness. However the intervention could be of a 'pre learning' type where the child is exposed to the lesson content before hand thus allowing them to follow the next lesson. Furthermore intervention could take the form of the child's gaps in learning being filled or the misconceptions identified and corrected after the lesson.

Children will be involved in self-assessment in various ways. The learning outcomes for the block will be shared with the children. Each child is provided with a success ladder which outlines the learning clearly. At the end of the unit the children review their own learning. Each lesson the learning objective is shared and then the children review their learning against this by traffic lighting (KS2) and by thumbs up/down type self-assessment. As part of the marking policy the children are required to respond to the teacher's marking. The

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teacher's purposeful marking could include asking the children to correct a calculation, or take a task further to extend their thinking. (See Marking Policy)
The children are involved in both peer and self assessment of their mathematical learning as well as setting next steps as part of this process.

Home learning

We value parent involvement in children's development of mathematics. Opportunities will be provided for the children to practise and consolidate their skills and knowledge, and to develop and extend their techniques and strategies, and to prepare for their future learning through home learning. Activities on Mathematics will be set weekly to embed learning.

Parents are kept up to date with new information and developments in the teaching of Maths through newsletters and leaflets. At the beginning of the academic year, parents are invited into classrooms to find out about the year's learning, including the new maths skills and concept that their children will encounter. Workshops are run periodically, to support parents, to understand the maths concepts in the national curriculum. The new developments planned for the school website will, in the future, support parents by providing a quick reference of film clips explaining how a particular method works. On the website the parents can access the Calculation Policy and Progress Maps.

Monitoring and review

The monitoring of mathematics in our school takes the form of:

- Regular monitoring of planning.
- Regular monitoring of the children's books.
- Class observations.
- Analysis of data provided by the teachers.

Having identified priorities, the Mathematics subject leader constructs an action plan that feeds into the School Improvement Plan. This forms the basis for the focus of the monitoring activities.