

Policy title	:	Mathematics Curriculum Policy
Date approved	:	September 2021
Review date*	:	September 2024

*Please note that should any further national guidance be issued by external agencies that are relevant to this policy, it will be updated accordingly prior to the review date shown above and re-circulated.

Intent

At Shaftesbury, we believe that children should leave primary education as confident, resilient mathematicians with a deep conceptual understanding of the skills required to approach any mathematical problem. We understand that a deep grasp of mathematics is essential to enabling greater social equity and mobility.

We want our pupils to be successful not only in their schooling career, but throughout their adult lives. Through a carefully designed curriculum and lessons, our teachers are able to make meaningful connections between content with a high emphasis placed on enquiry. As a result of this, our pupils are encouraged to use critical thinking to find solutions to problems, therefore encountering greater depth within their maths sessions, enabling an easier transition to mastery.

We have a duty to ensure compliance with the revised National Curriculum and with the application of the new programmes of study and attainment targets. We understand that 'the National Curriculum provides pupils with an introduction to the core knowledge that they need to be educated citizens.'

Implementation

Mathematics at Shaftesbury is planned and sequenced using the foundation of the national curriculum and various pedagogy (Bruner CPA approach, Blooms Taxonomy – reasoning, White Rose- mastery). This ensures careful cumulative coverage – we have a spiral curriculum with every year group starting with number, the different units of maths is repeated every term to ensure all pupils have the opportunity to 'master maths'; by building on previous learning throughout the school year, they are able to develop conceptual understanding.

We believe that our daily re-calls of times tables and number facts promote confident mathematical fluency. We place a large emphasis on reasoning and vocabulary, these skills are built up from EYFS, where interactions are carefully planned to elicit verbal responses all the way up to year 6, where children are expected to provide a written response alongside a diagram or model to explain their reasoning. There is a reasoning element in every lesson, with a focus on verbal reasoning every Friday- this provides opportunity for all children to show their understanding through using key vocabulary in context.

Impact

It is imperative that the children have a secure understanding of each mathematical concept before moving on. At Shaftesbury, we ensure that the children have mastered the maths in every lesson, by ensuring that teachers are expertly using assessment for learning, identifying and addressing any misconceptions as and when they arise. Teachers and teaching assistants deliver targeted maths interventions and boosters based on assessment of the work produced to ensure that all children are ready to move on.

Every half term, pupils self-assess against the target cards, which is then assessed by the teachers- this informs planning and pitching of the lessons. These lessons are designed to give teachers the opportunity to deliver the content with a different approach, to enable the children to secure their subject knowledge. We also use NFER tests as a summative assessment to monitor overall progress in mathematics.

Enrichment

At Shaftesbury, we take every opportunity to exploit mathematical learning across our curriculum offer. We practise and embed mathematical learning through our computing curriculum, where discrete coding is taught with explicit links to mathematics. Science, Geography, PE and History lessons are also closely planned with maths in mind to ensure children have the opportunity to explore maths through our alternative and creative approach to topics.

All children are exposed to open-ended investigations which are presented through a real-life context. In their approach to these tasks, the children learn the invaluable skills of collaborative planning and systematic working, we ensure that mathematics has a particular relevance for our students, and is not just a subject that is taught at school. We explore maths in relation to our locality and conduct our own investigations. We research noteworthy mathematicians and ensure that there are visits out of school by the students or visits to the school by outside speakers.

Provision

We use the national curriculum and Maths Mastery, through which teachers work to support and guide their children through the crucial stages of mathematical development. Our children learn to talk mathematically, developing their vocabulary through their lessons and talk tasks. Throughout the school children learn to use technology confidently to support and enhance their mathematics, broadening their skillset and understanding of the subject's fascinating diversity.

Our well-balanced curriculum promotes the spiritual, moral, cultural, mental and physical development of pupils and prepares them for the opportunities, responsibilities and experiences of later life. We will develop pupils' spoken language, reading and writing in all subjects and will develop pupils' mathematical fluency.

We wish to work closely with the School Council and to hear their views and opinions as we acknowledge and support Article 12 of the United Nations Convention on the Rights of the Child that children should be encouraged to form and to express their views.

We as a school community have a commitment to promote equality. Therefore, an equality impact assessment has been undertaken and we believe this policy is in line with the Equality Act 2010.

We believe it is essential that this policy clearly identifies and outlines the roles and responsibilities of all those involved in the procedures and arrangements that are connected with this policy.

This policy is to be read in conjunction with the following documents:
National curriculum in England: Mathematics programmes of study

Roles and Responsibility for the Policy

The Local Governing Body has:

- Appointed a member of staff to be responsible for the curriculum leadership of Mathematics
- Delegated powers and responsibilities to the Headteacher to ensure all school personnel and stakeholders are aware of and comply with this policy
- Responsibility for ensuring compliance with the legal requirements of the National Curriculum
- Responsibility for ensuring that the school complies with all equalities legislation
- Responsibility for ensuring funding is in place to support this policy
- Responsibility for ensuring this policy and all linked policies are maintained and updated regularly
- Responsibility for ensuring all policies are made available to parents
- Nominated a link governor to visit the school regularly, to liaise with the Headteacher and the coordinator and to report back to the Governing Body

Responsibility for the effective implementation, monitoring and evaluation of this policy The Headteacher and the Senior Leadership Team will:

- Ensure all school personnel are aware of and comply with this policy
- Work closely with the subject leader and the link governor
- Ensure compliance with the legal requirements of the National Curriculum
- Encourage parents to take an active role in curriculum development;
- Provide leadership and vision in respect of equality
- Provide guidance, support and training to all staff
- Monitor the effectiveness of this policy by
- Observing teaching and learning
- Monitor planning and provide support where required
- Discussions with pupils and members of the school council
- Annually report to the Governing Body on the success and development of this policy

The Link Governor will:

- Work closely with the Headteacher and the subject leader
- Ensure this policy and other linked policies are up to date
- Ensure that everyone connected with the school is aware of this policy
- Attend training related to this policy.

The Subject Leader will:

- Lead the development of this policy throughout the school;
- Work closely with the Headteacher, the nominated governor and SENCO
- Be accountable for standards in this subject area;
- Monitor standards by;
- Auditing the subject area
- Review of the curriculum and Medium term Plans (MTPs)
- Monitoring teachers planning
- Conduct lesson observations and learning walks
- Monitor books looking at children's work
- Ensure continuity and progression throughout the school
- Devise a subject improvement plan
- Provide guidance and support to all staff
- Provide training for all staff on induction and when the need arises regarding

- Attend appropriate and relevant INSET
- Keep up to date with new developments
- Undertake an annual audit and stock take of resources
- Purchase new resources when required and in preparation for the new academic year
- Manage the subject budget effectively
- Undertake risk assessments when required
- Review and monitor continuously.

Teachers will:

- Comply with all aspects of this policy
- Work closely with the subject leader to develop this policy
- Devise short term planning
- Develop mathematical fluency, numeracy and mathematical understanding in all subjects
- Develop pupils' spoken language, reading, writing and vocabulary in all subjects
- Plan and deliver good to outstanding lessons
- Plan varied lessons which are interactive, engaging, of a good pace and have a three-part structure
- Have high expectations for all children and will provide work that will extend them
- Assess, record and report on the development, progress and attainment of pupils
- Achieve high standards
- Celebrate the success of pupils in lessons
- Implement the school's equalities policy and schemes
- Report and deal with all incidents of discrimination
- Attend appropriate training sessions on equality
- Report any concerns they have on any aspect of the school community

Pupils will:

- Be aware of and comply with this policy
- Be encouraged to work in partnership with the school by making decisions and exercising choice in relation to their educational programme
- Listen carefully to all instructions given by the teacher
- Ask for further help if they do not understand
- Participate fully in all lessons
- Participate in discussions concerning progress and attainment
- Treat others, their work and equipment with respect
- Support the school Code of Conduct and guidance necessary to ensure the smooth running of the school
- Liaise with the school council
- Take part in questionnaires and surveys.

The Junior Leadership Team will be involved in:

- Organising surveys to gauge the thoughts of all pupils

Parents/carers will:

- Be aware of and comply with this policy
- Be encouraged to take an active role in the life of the school by attending
- Parents and open evenings
- Curriculum development workshops
- Be encouraged to respond to curriculum information newsletter
- Be informed via termly newsletters of their child's topics

- Asked to provide suggestions and ideas for improving this subject
- Be asked to take part periodic surveys conducted by the school on curriculum development. Be invited to make presentations to pupils on aspects of this subject area
 - Encourage effort and achievement
- Encourage completion of homework and return it to school
- Provide the right conditions for homework to take place
- Expect their child to hand in homework on time
- Join the school in celebrating success of their child's learning;

Policy Procedure

Teaching and Learning Style

We have daily Maths lessons which are approximately 1 hour.

A heavy emphasis is placed on the **Concrete-Pictorial-Abstract** (C-P-A) approach. Research in Learning from key theorists* in education is heavily referred to in promoting students' positive attributes to learning. The following are fundamental in ensuring that such key aspects are being delivered daily in the classroom:

Opportunities for students to interact with their peers (Vygotsky)

Concrete activities

Exploration (Piaget)

Safety of learning environment (Promoting 'productive failure' – learning from mistakes)

(**Dienes, Bruner, Vygotsky, Skemp, Piaget*)

We want pupils at Shaftesbury Primary School to become independent mathematical learners who are encouraged to reason and explain their learning. Such skills can be reinforced, embedded and developed further in order to be used and applied in different contexts.

Teaching and learning style

Thinking skills:

Thinking skills and heuristics are essential for mathematical problem solving. Thinking skills are skills that can be used in a thinking process such as classifying, comparing, analysing parts and whole identifying patterns and relationships induction, deduction generalising and spatial visualisation.

Heuristics are general rules of thumb of what students can do to tackle a problem when the solution to the problem is not obvious. These include using a representation (e.g. drawing a diagram, tabulating) making a guess (e.g. trial and improvement/guess and check making a supposition), walking through the process (e.g. acting it out, working backwards) and changing the problem (e.g. simplifying the problem, considering special cases).

Key approaches to learning:

Learning is about making connections:

The spiral curriculum (curriculum approach) – connecting to extend existing knowledge and skills;
The **Concrete-Pictorial-Abstract** (C-P-A) development of concepts (pedagogical approach) that connect to make sense of learning;

Learning experiences (Learning approach) – connections to realise the curriculum the following principles as key fundamentals that should be included in every Maths lesson:

Exploration: making connections (re-cap of prior learning)

Structure: to be taken place after exploration has taken place – Times tables and number fact practise daily. ABC approach- skill, application and reasoning taking place in every lesson. Reflection and AFL.

In order for pupils to make those all-important connections that are pivotal to learning, the following elements are included in lessons:

- Real – world model
- Visual model
- Oral explanation
- Written explanation
- Mental Maths

Why mental mathematics and visualisation?

Mental mathematics is part of any mathematical activity and is the quickest way to raise standards in school. As children become more confident at seeing mathematics and working things out in their heads they become better at problem solving and reasoning as well as calculating or working with shape and measure.

Mental activity needs teaching and practice to develop efficient and effective ways of thinking and organising thoughts and ideas. We need to help children to:

- Carry and manipulate information in their heads.
- Visualise images and to interpret and analyse what they see.
- Select and organise information in a systematic and logical way identifying patterns and applying logical reasoning.

Visualisation

To use visualisation successfully, children need practical experience, along with opportunities to talk about the equipment they are using and the images they are forming in their head. They also need to learn and use the related mathematical language. Visualisation could also involve the children making some notes or jottings to help them. These should not replace the visualisation but provide support when children can no longer hold everything in their minds. Being able to listen to description, interpret the context or task and manipulate the image can be challenging for some children, so making jottings of this kind might be an important step in the development of their visualisation.

Practical Learning in mathematics

Practical learning in mathematics is essential because it helps bring together both abstract and practical everyday learning to mathematical concepts. Practical maths puts learning into a real-life context and makes it relevant. A child's learning and development in mathematics will be deeper and they will become more competent mathematicians.

Practical learning at Shaftesbury Primary School

The teaching of mathematics at Shaftesbury Primary School should give opportunities for children to develop their mathematics skills through practical activities. Children must have the opportunity to complete a short practical task followed by time for them to record their findings.

Areas of the mathematics curriculum where practical learning is necessary are weight, length,

capacity, money and sometimes fractions. In KS1 practical learning is also needed when the children are beginning to understand multiplication and division. All children at Shaftesbury should experience some practical learning each term. Practical learning could form the basis of the problem-solving lesson on a Friday. The practical task could be used as a means of solving the problem followed by the children recording what they have found out. This should only be the case when the whole school topic being covered is measure.

Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum, and we use the following key documents when planning:

- Guidance from the National Curriculum to write the Maths Curriculum
- Maths Overviews
- Medium-term plans
- Shaftesbury Primary School calculation policy
- White Rose
- Maths on Target
- Test Base

The curriculum overview is organised within the four operations of number (Numerical reasoning; Additive reasoning; Multiplicative reasoning and Geometric reasoning). These skills are to be taught over a 3 to 4-week block with frequent opportunities to use and apply within varying contexts such as measure and statistics.

Teachers collaborate on the planning of the subject to ensure parity in provision and to share expertise. Curriculum planning is managed in three phases namely:

Long term planning: is based on the Shaftesbury Whole School overview in Mathematics. The concepts to be taught and covered are listed accordingly.

Medium term planning: are the objectives and concepts that are set out in the 'Securing Progression in Mathematics'. Maths Co-ordinators write the Medium-Term Plans for all year groups. Teachers select the objectives and concepts that fit with the topic that is outlined in the Shaftesbury overview and ensure that the targets are broken down into child friendly objects that are seen to be progressive in its learning journey over the week.

Short term planning: is carried out on a weekly basis. All planning includes a skill-based learning objective with succinct success criteria, **an anchor task**, a progressive teaching sequence, reasoning, Key AFL strategies, key questioning, relevant vocabulary and resources.

Short term planning is collected weekly and monitored by the maths co-ordinator and Curriculum Lead.

The class teacher keeps the weekly planning visible in the classroom and then is expected to highlight which targets are met or exceeded in order to inform the next week's planning. Each class teacher and teaching assistant then discusses the planning on a weekly basis.

Teachers should have high expectations of their pupils and must ensure that work is appropriately challenging and engaging. Teachers should make explicit to the pupils the objectives, steps to success and expectations for the lesson which must be displayed on the board and referred to before any lesson commences.

The Foundation Stage

In the Early Years, teachers and practitioners support children in developing their understanding of mathematics in a broad range of contexts in which they can explore, enjoy, learn, practise and talk about their developing understanding. This area of development includes seeking patterns, making connections, recognising relationships, working with numbers, shapes and measures, and counting, sorting and matching. Children use their knowledge and skills in these areas to solve problems and generate questions and make connections across other areas of learning and development.

Children in the EYFS learn by playing and exploring, being active, and through creative and critical thinking which takes place both indoors and outdoors. We recognise that children learn through routine, continuous provision and incidental learning opportunities, as well as planned sessions and activities. Mathematical understanding is developed through stories, songs, games, routine, questioning, imaginative play, child initiated learning and structured teaching.

In Nursery, group activities are timetabled and planned. In Reception, daily time is dedicated to mathematics. Overall, these lessons include a good balance between whole-class work, group teaching and individual practice.

Teaching mathematics to children with special educational needs

At Tollgate we teach mathematics to all children, whatever their ability. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning targets and responding to each child's different needs in consultation with the Inclusion Manager. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. If a child's needs are particularly severe they will work on an individualised programme written in consultation with the appropriate staff.

Teaching styles should be interactive allowing for pupil participation. A combination of open and closed questioning should also be used by teachers which allow all pupils to participate in the lessons. When planning, teachers will try to address the child's needs through simplified or modified tasks or the use of support staff.

The skills, experience and knowledge of all staff are valued and all contribute within the school. There is a range of resources to support the teaching of mathematics across the school. All classrooms have the basic resources and equipment within their classroom. Any extra resources needed are accessible to the entire school in the maths resources room which is used as the central storage area. A range of software is available to support work with the computers.

Links with ICT

The use of information and communication technology will promote, enhance and support the teaching of this subject area. We use Times Tables Rockstars which is primarily a times tables tool which is monitored by our Maths Leads. This is also part of our timetable in Year 3 & 4 in the lead up to the multiplication tables check.

At Shaftesbury we also use the online forums of google classroom and Purple Mash where children will be set tasks to further their learning, homework as well as being directed to other websites that can aid their learning.

Inclusion

We believe that we are an educationally inclusive school as we are concerned about the teaching and learning, achievements, attitudes and well-being of all our pupils. We aim to provide places for all pupils who express a preference to join this school.

We work hard to offer equality of opportunity and diversity to all groups of pupils within school such as children:

- From both sexes
- Who have Special Educational Needs
- Who are looked after
- From minority faiths, ethnicities, travellers, asylum seekers, refugees;
- Who are gifted and talented
- Who are at risk of disaffection
- Who are young carers
- Who are sick
- Who have behavioural, emotional and social needs
- From families who are under stress

We believe we have a duty to ensure that all children have equal rights to the opportunities offered by education and that all children will be encouraged to fulfil their potential in their academic, physical and creative achievements.

We want to give all children the right to access high quality educational experiences, to take part in a broad and balanced curriculum and to be part of the social life of the school.

We recognise that within the school we have more able, gifted and talented children. We believe that:

More able children demonstrate a higher ability to exceed age related expectations than average for the class and often require opportunities to learn through reasoning.

We have an even greater obligation to plan and deliver well-structured lessons with appropriate assessment plus ambitious targets for pupils who have low levels of prior attainment or come from disadvantaged backgrounds.

Furthermore, we have a duty to cater for pupils whose first language is not English by planning teaching opportunities to help them develop their English and to gain full access to the National Curriculum.

Variation

The main purpose of variation is to challenge and raise standards of learning by ensuring that curriculum objectives are accessible to all our children despite their backgrounds or abilities. We see variation as all children succeeding in achieving the learning objective in different ways.

Variation must reflect the learning objective using the ABC the method (tool kit for staff). We want all children to achieve success, therefore we will ensure they are given support and the tool kit to make progress within a lesson.

Special Educational Needs

At Shaftesbury we teach mathematics to all children, whatever their ability. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning targets and responding to each child's different needs in consultation with the SENDCO. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. If a child's needs are particularly severe they will work on an individualised programme written in consultation with the appropriate staff.

Teaching styles should be interactive allowing for pupil participation. A combination of open and closed questioning should also be used by teachers which allow all pupils to participate in the lessons. When planning, teachers will try to address the child's needs through simplified or modified tasks or the use of support staff.

We want pupils with identified special educational needs to have full access to all subjects of the National Curriculum with teachers planning lessons that have no barriers to pupils achieving and with appropriate targets relating to the subject.

Assessment for Learning

As soon as pupils are inducted into the school they complete a baseline assessment. There is an on-going informal assessment carried out by the teachers every day which informs our weekly planning. These results are then tracked onto the Pupil Progress Tracker and the pupils' target card where the progress, strengths and weaknesses can be tracked and are informative for the next half term/term/academic year. All data is analysed by senior management and then discussed with the mathematics coordinator, teacher and all staff working with the children during pupil progress meetings.

All parents receive an annual written report on which there is a summary of their child's effort and progress in mathematics over the year. In addition to this, parents will also receive their child's target cards for maths to see what the children will be learning over the year. There are also 2 parents' evenings in autumn and spring.

At the end of Key Stage 1 and Key Stage 2 each pupil's level of achievement against national standards is included as part of their annual written report. Teacher assessment is provided for the other year groups.

Teachers will:

- Carry out continuous assessment using the maths target cards
- Use short-term assessments matched to the teaching objectives to adjust their planning
- Make comments in pupil's books related to the teaching objective
- Carry out medium-term assessments to measure progress against key objectives to adjust planning
- Carry out long-term assessment to assess progress against school and national targets
- Administer national tests and assessment in Year 2 and Year 6
- Use NFER tests in Year 3, 4 and 5.
- Use long-term assessments to help them plan for the next academic year
- Inform parents and carers of their child's progress and targets

Monitoring & Review of the Subject

Monitoring of standards of children's work and the quality of teaching is the responsibility of the subject coordinator supported by the Headteacher and the Senior Leadership Team.

Standards will be monitored by:

- Looking at pupil's work
- Subject observations
- Pupil discussions
- Scrutiny of planning
- General curriculum discussions

Contribution of the Subject to other Areas of the Curriculum

Mathematics contributes to many subjects within the primary curriculum and opportunities will be sought to draw mathematical experience out of a wide range of activities. This will allow children to begin to use and apply mathematics in real contexts.

Resources

The school has a full range of resources to support the teaching of this subject throughout all year groups. Resources are upgraded and replenished when the need arises. An annual stock takes and audit is undertaken by the subject coordinator in the summer term in preparation for the next academic year.

Raising Awareness of this Policy

We will raise awareness of this policy via:

- The school website
- The Staff Handbook
- Meetings with parents such as introductory, transition, parent-teacher consultations and periodic curriculum workshops
- School events
- Meetings with school personnel
- Communications with home such as weekly newsletters and of end of half term newsletter
- Reports such annual report to parents and Headteacher reports to the Governing Body
- Information displays in the main school entrance

Equality Impact Assessment

Under the Equality Act 2010 we have a duty not to discriminate against people on the basis of their age, disability, gender, gender identity, pregnancy or maternity, race, religion or belief and sexual

orientation. As such, we believe that it is in line with the Equality Act 2010 as it is fair, it does not prioritise or disadvantage any pupil and it helps to promote equality at this school.

Monitoring the Effectiveness of the Policy

The practical application of this policy will be reviewed annually or when the need arises by the coordinator and the Headteacher.