



Bure Valley School

Our Approach to Mathematics

Purpose of study:

Mathematics teaches us how to make sense of the world around us through developing a child's ability to develop fluency with mathematical skills, 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 people to the development and application of mathematics.

Aims and objectives:

- To promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion
- To understand the importance of mathematical skills in everyday life.
- To develop logical thinking and reasoning skills through a natural curiosity and investigative approach, whilst showing resilience through the learning 'journey'.
- To promote confidence and competence so that children are 'proud to shine' about their achievements
- To develop a thorough knowledge and understanding of numbers and the number system
- To develop a thorough knowledge of, and be able to manipulate, number to show depth of understanding
- To develop the ability to solve problems through decision-making and reasoning in a range of contexts
- To develop a practical understanding of the ways in which information is gathered and presented
- To explore features of shape and space, and develop measuring skills in a range of contexts
- To provide children with a deep and meaningful understanding of mathematics
- To ensure that teaching allows mathematical understanding to be sustained

We support these aims and objectives by...

At BVS, our vision is for every child to enjoy and succeed in mathematics, regardless of the barriers they may face. We believe that our 'abilities', including mathematical abilities, are never fixed or innate, but can be developed through practice, support, dedication and hard work.

The school uses a variety of teaching and learning styles in mathematics lessons. Our principal aim is to develop deepen children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has a high proportion of whole class and group-direct teaching. Children are taught in their peer, mixed ability groups and teachers ensure that children are given the correct amount of support or extension to ensure that children are progressing. In addition to the daily maths lesson, a short session called a 'maths meeting' is carried out at least 3 times a week to consolidate some of the most basic facts children need to retain.

During maths lessons we encourage children to ask as well as answer mathematical questions developing their mathematical reasoning. They have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their fluent manipulation of mathematical concepts. Children and teachers use ICT in mathematics lessons where it will enhance learning, and to assist with modelling ideas and methods. We encourage the children to consider the flexibility of mathematics and discuss effective, fluent methods of problem solving.

In all classes there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by offering support and extension where appropriate. As a school, we have adopted a 'mastery' approach to teaching mathematics. This approach enables all children to access the same curriculum content and, rather than children being extended with new learning, they are given opportunities to deepen their conceptual understanding by tackling challenging and varied problems. Throughout lessons a range of strategies are used to ensure appropriate age related learning.

Children are asked to undertake independent work but other strategies are also utilized: In some lessons group work is undertaken, and in other lessons, children are organised to work in pairs on open-ended problems or games. We also use classroom assistants to employ questioning as a means of developing mathematical understanding.

Children are set a weekly homework task in order to strengthen their learning in mathematics.

Planning and schemes of work

To ensure implementation of the statutory requirements of the programme of study for mathematics from the 2014 National Curriculum we follow the 'Mathematics Mastery' programme. Having joined the programme in 2018, the current year 3s are the first year group to follow the programme and will continue to do so as they move through the school. Although the children in year 4, 5 and 6 do not follow the planning from the programme, they do follow the key mastery principles. Teachers in year 4, 5 and 6 then use online resources from the maths hubs and recognised websites for strong content (Nrich and NCETM) to inform their daily planning. Key training has been given around task design to develop depth.

Children's fluency and reasoning is further developed through the use of the attached 'sentence stems' which may differ in how these are used from teacher to teacher.

It is the class teacher who completes the weekly plans for the teaching of mathematics. There is no formal requirement for how these plans are formatted and teachers are free to make their own choice about how they will look. Although there is no formal requirement, teachers are encouraged to include the learning objective for the lesson, success criteria, clearly show the conceptual 'journey' and the crafted small steps (considering the 3 aims) and make note of the task for the lesson. The class teacher keeps these individual plans to inform future planning. However planning may be examined by the Mathematics Leader and Senior Leadership Team as part of the monitoring timeline.

Differentiation

We enjoy teaching mathematics to all children, whatever their ability. It is part of the school curriculum policy to provide a broad and balanced education to all children within mixed ability age specific classes. Class teachers identify children who may need support with mathematics at the earliest possible stage and this is further developed with senior leadership team members at pupil progress meetings. We ensure that children are supported or extended appropriately within lessons, whilst trying to move the majority of children on at broadly the same rate. Work in mathematics takes into account the targets set for individual children in their Individual Education Plans (IEPs) The class teacher and SEND co-ordinator work in close conjunction to ensure all children are able to develop their skills, this may take the form of small group of 1:1 group work outside the normal Mathematics lesson.

Bure Valley School maintains a Gifted and Talented register. Where appropriate, these children are specifically planned for within Mathematics lessons.

Our school also maintains an EAL register, and where there is need, this will be addressed within mainstream classroom environment.

Mathematics across the wider curriculum

Opportunities for Spiritual, Moral, Social and Cultural learning

The organisation of our Mathematics lesson regularly allows children to work together and gives them opportunity to discuss ideas and results. Furthermore the teaching of Mathematics develops children's understanding of wider cultures as we learn about specific theories in mathematics and develop an appreciation for the development of mathematical ideas from around the world. Mathematics also allows children to connect with their British heritage through contextualised lessons and specifically learning about our currency system. We also encourage enquiry and reasoning so children can develop skills to express their own opinion or answer to a problem in a socially acceptable way.

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. The vocabulary of mathematical terms, and language for reasoning in mathematics is significantly influenced by our English curriculum. As well as verbally expressing their reasoning, children are given opportunities during class time to practise giving written explanations of their mathematical thinking. In addition to this, we encourage children to read and interpret problems in

order to identify the mathematics involved. The children also explain and present their work to others during plenary session, enjoy stories and rhyme that link mathematics to English.

Science

During science lessons, children are able to use and apply their data handling skills when creating tables and graphs of scientific measurements. Whole class discussion of data also highlights the importance of clear recording of information. Children are also able to use a wide range of measuring devices in a real-life context. Children are required to read the scales on Newton meters, measuring cylinders, weighing scales and a variety of other instruments.

Computing

Children use and apply mathematics in a variety of ways when solving problems using programming. Younger children use computers to communicate results with appropriate mathematical symbols. Children also use it to produce graphs and tables when explaining their results or when creating repeating patterns, such as tessellations. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships.

Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of personal, social and health education and citizenship. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations across many mathematical concepts and encourage children to enquire and investigate their own predictions-developing personal resilience and enquiry for life long mathematical learning.

Assessment, record keeping and target setting

Effective assessment involves careful observation, analysis and review by class teachers of each child's knowledge, skill and understanding, in order to track their progress and make informed decisions about planning for their next steps in learning.

Throughout the year teachers continually assess the children against their year group curriculum programme of study using the terminology 'WTS, EXS and GDS.' Data is submitted termly and teachers use a range of resources to inform their decision. This may include, a strong understanding of how the child's performs on a daily basis and the work they produce which is then verified for at standard through use of the Key Performance Indicators for each year group. As a school we use PUMA (Progression in Understanding Mathematics Assessments) tests which provide information about a child's mathematical understanding.

As a school, we understand that test data is not always reliable and sometimes children under or over achieve. For this reason, test data is used by teachers as a guidance and teachers are encouraged to use their own judgement to inform how they assess a child. Where a child under achieves in a test and is judged at a higher level than the test suggests, teachers are asked to provide evidence of work that shows that the child is working at a higher level.

Children's work is monitored by their class teacher, Head of School/Assistant Head Teachers and Mathematics leader to assist in planning for future work to meet the needs of the children. This scrutiny of the work of high attaining children, medium attaining children, low attaining children, SEND and G and T groups is carried out across the school and is regularly discussed at Senior Leadership meetings.

Resources

There is a range of resources to support the teaching of Mathematics across the school and the school recognises the imperative nature of mathematical conceptual development from concrete to pictorial, and pictorial to abstract, enabling all children to access the lesson objective.

All classrooms have wide range of appropriate small apparatus and pictorial representations, including calculators. Mathematical dictionaries are available in school and the library contains a range of books to support children's individual research. The Numicon mathematics scheme is used to support the cluster calculation policy, which is implemented across all cluster schools. We have a wider range of intervention

resources which class teachers may use in conjunction with the SEND co-ordinator to support the learning of Mathematics. These resources include: Math Catch-up, Numicon, Cuisinare, Spring board and Wave 3 materials.

Homework

Homework is set weekly for children (See Homework policy) Mathematics homework reflects the learning taking place in class and children are also expected to regularly practise their quick recall of number facts, IE Timestables.

Role of the Mathematics Leader

The Mathematics Leader carries out the following tasks in addition to his/her role as a class teacher:

- *is a good role model as a class teacher for all members of staff
- *ensures a coherent Mathematics strategy for Bure Valley School
- *helps, where appropriate, with planning lessons and may support teachers with the teaching of the curriculum
- *works with the SLT to create an annual action plan and termly monitoring timeline in a consultation with the English Leader and other curriculum leaders
- *writes an annual report for the Head of School and Governing Body, highlighting the areas of strength as well as the areas of development in Mathematics
- * attends the termly pupil progress meetings for Mathematics with a member of the SLT
- *leads Mathematics moderation sessions and maintains a file of evidence. This file is freely available to all members of staff or interested outside agencies
- *works with the Teaching Assistant with focus on Mathematics to ensure resources are maintained and available
- *works with SLT and the English Leader to gather the views of children
- *attends termly Cluster Group Mathematics meetings and gives feedback to staff as necessary
- * attends the Norfolk Primary Mathematics Networking meetings termly and gives feedback to staff as necessary
- *attends other Professional Development opportunities, as agreed with SLT, and gives feedback to staff as necessary
- *monitors the impact of whole school actions and initiatives in the teaching of Mathematics
- *works with SLT to monitor standards of teaching and learning in Mathematics, by observing lessons, scrutinising planning and children's work
- *keeps up-to-date with both national and local initiatives; working, where necessary, with SLT to implement such initiatives in school
- *maintains a working relationship with our feeder schools, organising moderation across Y2&3
- *fosters effective links with the Mathematics Department of our Partnership school –Aylsham High School.

Role of the Governing Body and Senior Leaders

- To review, alongside the maths leader, the intent and design of our maths curriculum
- To ensure the implementation of the statutory National Curriculum
- To receive an annual written report on Mathematics at Bure Valley School
- To monitor and report on the implementation of our approach and its impact on outcomes for pupils