

# Mathematics Guidelines

## July 2022

“We aim for all our children to develop a love of learning that will last them a lifetime, caring for and respecting the world around them, valuing differences and broadening moral values”

*The Solent Schools, Vision, Values and Aims*

<b>Date reviewed</b>	July 2022
<b>Review cycle</b>	Three years unless significant changes. Next review: Summer 2025
<b>Linked Guidelines/Policies</b>	

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## **Rationale**

At the Solent Schools, our teaching and learning of mathematics is embedded through Mathematics Mastery. We aim to develop children's understanding of number, shape, space and measure. We teach the children problem solving skills and strategies that they can use and apply confidently and competently in their learning and in a range of everyday contexts. Children will be given opportunities to develop, consolidate and reinforce taught mathematical skills through all areas of the curriculum. They will use a number of resources to support their learning and will be able to apply and embed their understanding.

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**

- ✓ a positive attitude towards mathematics and an awareness of relevance of maths in the real world
- ✓ an ability to solve problems, to reason, to think logically and to work systematically and accurately
- ✓ initiative and motivation to work both independently and in cooperation with others
- ✓ confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes
- ✓ an ability to use and apply mathematics across the curriculum and in real life contexts
- ✓ an understanding of mathematics through a process of enquiry and experiment

All children will be taught in accordance to:

- Early Learning Goals as set out in the Early Years Foundation Stage Curriculum 2021.
- Aims and objectives set out in the National Curriculum 2014.
- Their own ability and understanding.

It will provide equal opportunities for all children. Whatever their age, gender, ethnicity, attainment and background (in accordance to the Equality Act 2010).

## **Early Years Foundation Stage**

Children in the Early Years will follow the Early Years Foundation Stage 2021 working towards Early Learning Goals which they will be assessed against during the Summer Term of the Reception Year. Through careful planning, ensuring the recommended amount of child led and child initiated exploration children will be given opportunities to:





- ✓ Engage in practical activities that promote mathematical discussion.
- ✓ Develop their use and understanding of mathematical language.
- ✓ Build on and develop basic skills, ensuring breadth and depth.
- ✓ Be surrounded by an enabling environment that encompasses mathematics in all areas of the curriculum.
- ✓ Develop their use of problem solving skills.
- ✓ Develop a love of mathematical challenges.
- ✓ Engage in mathematical problem solving through both adult directed and child led activities.
- ✓ Access a wide range of mathematical resources to support their skills and develop depth and breadth of learning.
- ✓ Engage with discrete 'fluency' sessions to build upon and embed knowledge.

### **Key Stage One**

Mathematics is taught following the National Curriculum (2014) and against the objectives set out for each year group. During the year the children will experience mathematics learning through a combination of: group work; paired work; independent work; and whole class teaching. Through this, the children will be given the opportunity to:

- ✓ Engage in practical activities that promote mathematical discussion.
- ✓ Continue to develop their use and understanding of mathematical language.
- ✓ Develop their use of problem solving skills.
- ✓ Develop a love of mathematical challenges.
- ✓ Engage in mathematical problem solving.
- ✓ Access a wide range of mathematical resources to support their skills and develop depth and breadth of learning.
- ✓ Engage with discrete 'fluency' sessions to build upon and embed knowledge.

All of which take place both inside and outside of the classroom. The children are provided with opportunities to engage in practical activities and challenges that enable them to develop their problem solving skills, their use of mathematical language and their ability to reason effectively within the subject. A focus on Maths Mastery in our approach to the teaching and learning of mathematics is at the core of this.

### **Key Stage Two**

Careful planning and preparation ensures that throughout the school children engage in:

- ✓ practical activities and games using a variety of resources
- ✓ problem solving to challenge thinking
- ✓ individual, paired, group and whole class learning and discussions
- ✓ purposeful practise where time is given to apply their learning
- ✓ open and closed tasks
- ✓ a range of methods of calculating e.g. mental, pencil & paper





- ✓ working with computers as a mathematical tool
- ✓ discrete 'fluency' sessions to build upon and embed knowledge.

Through our creative approach to teaching and learning we also seek to explore and utilise further opportunities to use and apply mathematics across all subject areas.

### **Approaches to the teaching of Mathematics**

At The Solent Schools we carefully consider the aims of the National Curriculum 2014 in ensuring that all of the children become fluent in the fundamentals of mathematics and are therefore provided with key opportunities to; develop their conceptual understanding, their ability to recall key mathematical facts and apply knowledge to a range of situations accurately. We provide children with opportunities to develop their mathematical reasoning, ensuring that they are able to confidently justify their problem solving and support this with the use of mathematical language. We have developed a rich mathematical curriculum in which children can engage in challenges that encourage them to develop their problem solving skills. Such challenges encompass a combination of both routine and non-routine problems that encourage children to develop an understanding of mathematics that readily equips them for later life.

### **Maths Mastery**

In 2019, we began our Maths Mastery journey across the Solent Schools. This ensures that our mathematics teaching and learning is embedded through The Five Big Ideas as set out by the NCETM in 2017.

These are:

- ✓ coherence
- ✓ representation and structure
- ✓ mathematical thinking
- ✓ fluency
- ✓ variation

We ensure that mathematics learning is delivered through the Concrete, Pictorial and Abstract (CPA) approach. This ensures that the children have the opportunity to apply their mathematics knowledge in a variety of representations.

### **Practical Approaches**

At The Solent Schools we endeavour to provide children with a mathematics curriculum that is rich and engaging. Through practical activities that enable children to explore and independently develop as mathematical learners we understand the importance of engaging with the use of a wide range of mathematical resources. These resources are accessible to children on a daily basis and provide a key foundation to the development of the basic mathematics skills.





Our practical resources include:

- ✓ Numicon
- ✓ Multilink
- ✓ Compare Bears
- ✓ Clocks
- ✓ Number Lines
- ✓ 2d and 3d Shapes
- ✓ Pegs and Boards
- ✓ Scales
- ✓ Counters
- ✓ Protractors
- ✓ Dienes
- ✓ Place value counters
- ✓ 20 bead strings
- ✓ 50 bead strings
- ✓ 10s frames
- ✓ 20s frames

In using these practical resources children are able to adapt their understanding of basic mathematical skills and apply them in a range of situations ensuring depth and breadth.

### **Written Approaches**

At The Solent Schools we use mathematics books to record our strategies, problem solving and reasoning. The work produced in these books is marked in accordance to our marking and assessment policy and time is given to ensure that children are able to reflect on their previous learning and identify their next steps. Strategies used and developed in our mathematical problem solving can be found in our Solent Infant School and Solent Junior School Progression of Skills Booklets.

The strategies covered in the Progression of Skills Booklet are:

- ✓ Addition
- ✓ Subtraction
- ✓ Multiplication
- ✓ Division

### **Reasoning**

At The Solent Schools we aim to provide children with a deeper understanding of mathematics, enabling them to adapt and apply their knowledge and skills to a range of situations competently and confidently. In our learning of the mathematics curriculum the teachers endeavour to provide children with the opportunity to engage in rich mathematical discussions in which the reasoning behind their problem solving can be identified and shared. It is through this shared thinking that children can build





on their basic skills and develop a deeper appreciation of mathematics and the wide range of situations that it can be applied to.

Provision for mathematics at The Solent Schools includes:

- At least four weekly adult directed mathematics sessions. This is different in the Early Years;
- Mental maths sessions;
- Opportunities to engage independently in mathematics through the use of classroom resources;
- The use of technology to engage in mathematical programs;
- Opportunities to engage in mathematics outside through the use of the enabling environment; and
- Discrete sessions for fluency, building upon quick and efficient recall.

Provision for mathematics at Key Stage Two includes:

- Instruction – giving information and structuring it well;
- Demonstrating – showing, describing and modelling mathematics using appropriate resources and visual displays;
- Explaining and illustrating – giving accurate and well-paced explanations;
- Questioning and discussing;
- Consolidating;
- Reflecting and evaluating responses – identifying mistakes and using them as positive teaching points; and
- Summarising – reviewing mathematics that has been taught enabling children to focus on next steps.

### **The Mathematics Curriculum at The Solent Schools**

The mathematics curriculum at The Solent Schools is planned for in accordance to the skills that the Key Stage is developing. These skills are then developed and delivered through our exciting project based curriculum. The skills taught are adapted and delivered on a differentiated level to ensure that each child is embracing a depth and breadth of the mathematics curriculum.

### **Cross Curriculum Mathematics opportunities**

Teachers will seek to take advantage of opportunities to make cross curriculum links. They will plan for pupils to practise and apply skills, knowledge and understanding acquired through mathematics lessons to other areas of the curriculum.

Opportunities for ICT to support teaching and learning in mathematics will be planned for and used as appropriate.

### **Assessment and Marking**

All aspects of mathematics will be marked and assessed against our marking and assessment policy. Through assessment for learning teachers are continually assessing the children's understanding which inform their day to day teaching and planning. Children's progress is closely monitored against the framework's objectives. Target groups are identified and implemented where necessary.





Some pieces of work in mathematics can be marked by children themselves, exercises involving routine practice with support and guidance from the teacher – particularly in years 5 and 6.

Parents are informed of their child's progress and next steps in learning are shared at parent's evening, throughout the year in our termly reports and in the end of year report.

### **Monitoring and Evaluation**

The Maths Subject Leaders and Maths Mastery leaders generate and follow an annual action plan for Solent Infant School and Solent Junior School. The Maths Subject Leaders monitor standards of planning and teaching and review children's work and teachers' planning. Support is given, if necessary, to ensure all staff are adhering to the agreed written calculations policy and planning format. Findings from any monitoring is discussed initially with the Senior Leadership Team and is also shared with teaching staff as appropriate.

### **Parental Involvement**

Parents can support their children by the following strategies:

- Practising the use of mental mathematics Strategies;
- Develop the use of number recognition and counting;
- Use the Learning Links on the Solent Infant School and Solent Junior School website to build on and develop the use of basic mathematical skills;
- Provide children with every day mathematical problems at home to engage with;
- Encourage and develop the use of mathematical language;
- Attend the Mathematical Workshops to gain more insight into the teaching of the mathematics curriculum at Solent Infant School; and
- Support mathematics home learning activities set by the school.

