

Mathematics

Our school uses a blocked approach to the teaching and learning of mathematics. This is an effective way to ensure that learning is embedded and then later applied to other mathematical topics. For example, place value is taught for all year groups in the Autumn 1 half term. This deep focus on the number system forms the foundation for other topics taught later in the year. At Portway Junior School, we use White Rose as a driver to shape our curriculum. Pupils start each unit of work with a knowledge organiser, which includes key vocabulary and suggested methods. This document is referenced and used by teachers and learners across lessons. Over the course of each learning journey, children work through a series of small steps, which are directly taken as objectives from the National Curriculum. Learning is built upon layer by layer, whilst key skills are revisited and misconceptions are addressed along the way.

At Portway Junior School, we aim to facilitate an exciting and purposeful curriculum. Children will be taught key skills and strategies so that they are better able to use mental and written methods to solve a wide range of arithmetic, reasoning and problem solving calculations and questions. We believe the teaching and learning of times tables is crucial as it is a fundamental life-long skill. Mathematics lessons include working on strategies and proficiency and this is supplemented through our subscription and use of Times Table Rockstars, which further helps to fuel pupil's interest and engagement. Our core aim is for pupils to become more independent and confident mathematicians to ensure that they are secondary ready. All children are encouraged to use concrete resources and pictorial representations to support jottings when trying to find solutions in their class work. The emphasis is on the "how" and the "why", not just the "what" when discussing strategies and answers. This is essential as the subject centers around the ability to demonstrate logic and problem solve.

Our ambition is for all pupils at Portway Junior School to be confident and resilient mathematicians. We intend for all of our children to be reflective learners, who embrace challenges and aspire to succeed. We believe that all pupils should be enthusiastic about mathematics so that they have a positive attitude towards the subject. All learners should understand the importance and relevance of mathematics in the working world (finance, engineering and statistics to name a few) so that knowledge and skills can be applied in later life. Furthermore, we believe that all pupils should be given the opportunity to be creative through the use of purposeful outdoor learning (such as through orienteering), rich investigations and, more typically, varied tasks which take place everyday in the classroom.

Lessons start with appropriate starters/ daily fluency sessions based on gaps from previous assessments or curriculum objectives, better-suited to mental arithmetic or efficient strategies. In each and every lesson, we employ the use of an "I do, we do, you do" style input, which prepares pupils to solve independent tasks with less reliance on the teacher for support. This entails a combination of concrete, pictorial and abstract representations. Much evidence indicates that this highly practical and visual method of teaching is highly beneficial in ensuring that children better understand the concepts taught. Independent tasks are then completed by pupils which involve a rich balance of fluency, reasoning and problem solving. The emphasis on the latter two strands of the lesson have become more important in demonstrating pupil progress and understanding. Questions and tasks are appropriately pitched with the right level of challenge. Differentiation is evident through the planning of mild, spicy and hot tasks. Children who are working significantly below year group expectations work on the appropriate year group expectations for their learning needs. We, as a school, use self-marking stations and a flexible teaching approach with guided groups, cutback and cutaway groups to ensure that children get the "right stuff at the right time" in order to make good progress within and across lessons and whole topics.

Assessment (Formative and Summative)

Finally, Portway Junior School uses end of block White Rose assessments alongside day-to-day/ week-to-week teacher assessment to formatively track the progress of pupils. End of term/year formal assessments are administered as the chief form of summative assessment to support the formative assessments that have already been made.

Impact

Attainment and Progress

The impact of using an “I do, we do, you do” approach has had an extremely positive effect on the children. Children have shown increased understanding and confidence at the application stage of lessons as a result of this more thorough, explicit input. What is more, pupils at Portway Junior School have become more proficient in reasoning and problem solving. They are better able to read and interpret a range of problems and solve them with a higher degree of accuracy. Pupils have demonstrated that they are better able to explain the “why” and the “how” through the use of concrete and pictorial representations. Work books present like live journals showcasing rich mathematical thinking and workings, highlighting strong understanding of the learning outcomes.

Knowledge and Skills

At Portway Junior School, we strongly value and recognise the importance of both knowledge and skills in equal measure. Pupils develop their use and understanding of mathematical terminology as they progress up the school so that they are more aware of what is going on underneath the surface of the learning. Greater exposure and experience of mathematical language only enhances their ability to interpret and solve worded problems with increased success. Key skills are practised and re-visited on a regular basis so that children have time and experience building on prior knowledge, and using this, to make rich connections to apply this to new learning. What is more, work books show evidence of children thinking and working mathematically, especially at the reasoning and problem solving stages of the lesson. Children are encouraged to show all workings and jottings so that they can explain how and why they have arrived at particular answers.

Readiness for Next Stage of Education

At the end of Year 6, pupils are able to understand the value of numbers up to and beyond one million and decimals up to three decimal places. Children are also able to demonstrate their calculation skills by using efficient mental and written methods to add, subtract, multiply and divide. They can additionally use key number facts such as times tables to work out related facts and solve problems across different areas of mathematics. Learners at Portway Junior School leave primary school as more accomplished problem solvers, who are able to ask questions, think critically and make connections based on patterns they have observed. What is more, they have rich opportunities to apply their mathematical understanding in shape, geometry, measure and data handling. Cross-curricular links are made where relevant and appropriate so that learning is purposeful and in context. This is carefully considered so that children have a greater awareness of using and applying mathematics in the working world beyond education.