



Mathematics policy

Last updated by subject leader	September 2021
Last reviewed by Principal and Headteacher	September 2021
Next review due	September 2022

The Team

Mathematics is led by a qualified Senior School specialist in mathematics who is supported by seven members of staff, four of whom teach at the Senior School and are fully qualified with a degree in mathematics, while the remaining three teach at the Prep. School and have degrees in related subjects including Science and Computer Science. One member of the team is the main point of contact for the Prep. School.

At St. John's Prep. & Senior School, mathematics is taught as follows:

- At KS1 and KS2 Mathematics is taught for five periods of 50 minutes each week.
- In Year 7 x 3 hours per week.
- In Years 8 – 11 x 4 hours per week
- In Years 12 -13 x 6 hours per week.

Professional development is regularly undertaken by teachers, including whenever there is a change of syllabus. A variety of Mathematics workshops and seminars are attended in preparation for exams and post exams evaluation provided by Pearson. Mathematics teachers from the Prep. School observe senior teachers and vice versa. All teachers have been registered with the National College for Learning for continuous CPD.

At the Prep. School, we follow the National Curriculum programme of study and the requirements of the Common Entrance Exams at 11+. At the Senior School, we follow the National Curriculum via the Progress Programme from Pearson which feeds into the GCSE and A level syllabus.

At the Prep. School:

- Year 2 pupils take KS1 national assessments (known as SATs)
- Year 6 pupils take KS2 national assessments & Common Entrance Exams.

At the Senior School:

- Years 10–11 follow the GCSE Mathematics Pearson Syllabus
- Years 12 and 13 follow Pearson's A Level Mathematics and Further Mathematics specifications
- Depending on the University of choice and course our Year 13 students are also required to take the Cambridge Assessments, such as STEP and BMAT.

Teachers at both sites are in regular contact to ensure: the curriculum is seamlessly sequenced; transition from Year 6 to Year 7 is established and maintained throughout the year, and pupils at Senior are ready for the challenge of GCSE and A Level study.

Intent

- The mathematics curriculum intends to provide pupils with a foundation for understanding number, reasoning, thinking logically and problem solving with resilience so that they are fully prepared for the future.

- We sequence learning progressively, as seen in our schemes of work, so that there is increasing challenge for pupils as they progress through the key stages.
- Pupils who grasp concepts rapidly will be challenged by being offered extension problems before any acceleration through new content.
- Those who are not sufficiently fluent with earlier material will consolidate their understanding through additional practice at mandatory mathematics clubs, so that they are ready to move on to the next stage of their learning.
- At each stage of their mathematical education, the programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also be able to apply their mathematical knowledge to science and other subjects.
- Our learning journeys for each year group define what the pupils should know and be able to do at the end of each year or Key Stage.

Implementation

The implementation of this policy is achieved through teachers' secure understanding of the curriculum and pedagogy and revolves around the following:

- Lessons are planned and sequenced using a 'spiral' curriculum to ensure that all the necessary content has been constantly revisited, reinforced and extended so that new knowledge and skills build on what has been previously taught.
- Lessons are designed to be engaging and follow a cycle of planning, to ensure that we can evidence progress over short, medium and long periods of time.
- Our lessons are designed using either a concrete, pictorial or abstract approach (depending on age or ability), providing our pupils with the scaffolding required to access the learning at all levels.
- Target Your Mathematics and Head Start are used as the core resources for the teaching of Mathematics alongside weekly Arithmetic Tests at Key Stage 2. White Rose and Head Start Arithmetic are used as the core resources at Key Stage 1 alongside materials from Plan B if further reinforcement is needed.
- At the Senior School, the Scheme recommended by Pearson is used and has been adapted when necessary for each year group.
- We place a large emphasis on pupil engagement and design lessons which involve all pupils using a question and answer approach enabling them to make a positive contribution to their lessons.

- Classes are taught either as a whole class, this may be to introduce a new topic or to revise work already covered, or in groups which provides pupils with the opportunity to work together, share ideas and learn from each other.
- At the Senior School, Year 9 pupils are grouped into ability sets (Middle to Higher) depending on their ability and can be moved up or down a set if it is thought to be beneficial for a particular pupil.
- Teachers check their pupils' understanding of these key concepts routinely and regularly and use the information this provides to adapt their teaching pace and style.

The following methods are used to check pupils' understanding and identify and correct misunderstandings:-

- Feedback is given on each piece of pupils' work which informs the pupils how to make their work better.
- Formative assessment within every lesson helps teachers to identify the pupils who may need more support to achieve the intended outcome and who are ready for greater stretch and challenge through planned questioning or additional activities.

Teachers ensure that pupils embed key concepts in their long-term memory and can apply them fluently by using repetition of basic skills in order to cement this knowledge into the pupils' memories for future use in other areas of the mathematics curriculum. We also begin each lesson with a revision session of previous learning. In all Key Stages, homework is set twice a week to reinforce the work completed in class.

We use various forms of assessment to check pupils' understanding in order to inform our teaching and to help pupils embed and use knowledge fluently and develop their understanding, rather than simply memorising disconnected facts. The following forms of assessment are used:

- In order to support teacher judgments, pupils are assessed using current, reliable tests in line with the national curriculum for mathematics and/or qualification specifications for GCSE and A Level. Pupils who are not making the required progress are given support through extra sessions and support in class in order to meet our intent of developing all pupils in line with their full academic potential.
- Analysis of assessments that pupils complete is undertaken and fed into future planning.
- Summative assessments are completed at the end of the academic year and help influence the overall judgement reported to parents in the end of year report.

Impact

We know that pupils remember more and are able to do more as a result of learning what is intended in mathematics because:

- Pupils can demonstrate a quick recall of facts and procedures. This includes the recollection of times tables by younger pupils.
- Mathematical skills or concepts are mastered when a pupil can show it in multiple ways, using their mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations
- Pupils use acquired vocabulary in mathematics lessons. They have the skills to use methods independently and show resilience when tackling problems.
- Pupils have the flexibility and fluidity to move between different contexts and representations in mathematics.
- Pupils show a high level of pride in the presentation and understanding of their learning.
- End of Year exam results are monitored carefully to ensure outstanding progress has been made.

At the end of each year, we expect pupils to have achieved at least the Age Related Expectations for their year group. 50% of our pupils will have progressed further and will have achieved Greater Depth of Study (GDS). End of year exam results are kept at each school and pupils who have not made the expected progress are highlighted and this information is passed on to the next teacher so that they are aware that extra help may be required. Our Key Stages 1 & 2, GCSE and A Level results have always been, and remain, outstanding.

The mathematics team ensure that our School's curriculum intent and implementation are embedded securely and consistently. Monitoring in the form of lesson observations, book checks, learning walks, pupil voice conversations and data analysis meetings all ensure that our mathematics teachers have a firm and common understanding of the curriculum intent for this subject and what it means for their practice. Across all parts of our School, our series of lessons contribute well to delivering the curriculum intent.

We have a high academic ambition for all of our pupils and the School does not offer disadvantaged pupils or pupils with SEND a reduced or 'narrowed' curriculum. Instead, all our pupils are supported to access the entire curriculum through appropriate scaffolding and support, and/or through additional intervention lessons.

Cultural capital

The mathematics curriculum and teaching programme at St. John's Prep & Senior School helps pupils to become educated citizens who know how and why mathematics is used in the outside world and in the workplace. They also know about different ways mathematics can be used to support their future potential.

Annual 'Business into Education' workshops in mathematics are held at the Prep. School in which pupils are introduced to a variety of problem-solving activities to challenge their understanding in practical terms.

The Prep School has a tradition of participating in the annual Primary Mathematics Challenge and the Senior School participates in the annual intermediate and senior Mathematics Challenge from the UK Mathematics Trust.