

Mathematics

Identifying gifted pupils.

Pupils show their special talents in mathematics in a range of ways and at varying points in their development. Pupils who are gifted in mathematics are likely to:

- learn and understand mathematical ideas quickly;
- work systematically and accurately;
- be more analytical;
- think logically and see mathematical relationships;
- make connections between the concepts they have learned;
- identify patterns easily;
- apply their knowledge to new or unfamiliar contexts;
- communicate their reasoning and justify their methods;
- ask questions that show clear understanding of, and curiosity about, mathematics;
- take a creative approach to solving mathematical problems;
- sustain their concentration throughout longer tasks and persist in seeking solutions;
- be more adept at posing their own questions and pursuing lines of enquiry.

Some pupils who are gifted in mathematics perform at levels that are unusually advanced for their age.

Sometimes gifted pupils reject obvious methods and answers as too easy, and opt for something more obscure. In these cases, formal testing alone is insufficient as a basis for identification. It is often helpful for teachers to provide enrichment and extension activities and to observe pupil responses to challenging activities.

When identifying pupils who are gifted in mathematics, it is important to judge whether they are likely to benefit from an enhanced or special programme. The pupils need to be able to keep up with their ordinary work.

Inclusion Issues.

Pupils who are gifted in mathematics should not be satisfied with being above average or with getting the right answer most of the time. Instead, they should be encouraged to strive for an in-depth understanding and mastery of mathematical topics and techniques. In particular, this school aims to ensure that, by the end of key stage 4, our gifted pupils acquire the understanding, skills and enthusiasm needed to support higher level studies in mathematics and related subjects.

Responding to pupils' diverse needs

Pupils bring different experiences, strengths and insights to mathematics, and cultural differences, language problems and peer pressures may influence their performance.

Pupils who are gifted in mathematics need opportunities

to:

- engage in sustained pieces of work;
- reflect on what they learn;
- make connections between mathematical ideas;
- apply their mathematics in new situations;
- ask questions;
- develop their ability to think logically;
- handle abstract mathematical ideas;
- deepen their interest in mathematics.

Enriching and extending pupils' experiences

In order to challenge pupils who are gifted in mathematics, our teachers will set activities that expect pupils to use a range of techniques accurately and efficiently, provide for a higher level of abstraction and lead to more advanced thinking.

At St. John Fisher, all pupils are taught in classes that are set by ability. These are decided using all prior attainment and teachers' judgements of ability and potential. Within each class expectations are very high and extension work is provided. It is the policy of the department to extend pupils within any topic at the level at which they are working rather than to accelerate learning for individuals. The only notable exception to this is the top set in Key Stage 4 which covers more than the GCSE Mathematics, going on to study either GCSE Statistics or Additional Mathematics (which carries up to 20 UCAS points). Pupils are provided with more investigation-centred and open-ended problems to solve as well as logic problems that are designed to stretch the brain mathematically and strategically. Gifted mathematicians will be expected to provide rigorous answers based around a valid proof and encouraged to fully explore and understand why a problem might be solved in a particular way. At Key Stage 5 students can opt for Further Mathematics and/or Advanced Extension Award, both of which stretch the most able mathematicians and provide a more solid foundation for university study. Peer group coaching is encouraged and used across the mathematics department; gifted pupils use this to reinforce their understanding of a topic while helping a fellow pupil.

·The department offers the UK Mathematics Challenges at all ages and competes in the Team Challenge. All gifted pupils are encouraged to participate. The department also offers a bridge club which is popular with gifted mathematicians amongst others.

·The department welcomes any enquiries from parents of children who they consider to have a flair for mathematics about the work that their child is studying.