## MULGRAVE UPPER SCHOOL MATHEMATICS PATHWAYS



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Students are placed in either Mathematics Standard or Mathematics Extended based on teacher recommendations, achievement in Criteria A-D assessments, strong AtL skills and personal desire to pursue mathematics either more deeply or broadly.



# **COURSE DESCRIPTIONS**

## **MYP MATHEMATICS:**

### Mathematics Grade 6 and 7:

Mathematics 6 and 7 is the first two years of the MYP curriculum. It is designed for all learners to further develop their foundational knowledge, numerical fluency and have a general introduction to a wide range of topics that will be further explored in subsequent grades. Learning is personalized to garner the abilities of all learners. There are opportunities for students to participate in math contests as well as be introduced to a range of assessment tasks that demand application to real life situations and promote critical thinking, communication and research skills.

#### The course will cover the following topics:

- Number and Algebra
- Geometry
- Statistics and Probability

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### **Mathematics Standard (Grades 8-10)**

Mathematics Standard is appropriate for students who are interested in developing their mathematics for describing our world and solving practical problems. This course aims to give all students a sound knowledge of basic mathematical principles while allowing them to develop the skills needed to meet the objectives of MYP mathematics. These courses focus on consolidating prior knowledge to then build in new topics. Having good AtL skills is an asset to fully engage with the material in this course. This course provides the foundations for students who wish to pursue pathways to mathematics standard level (SL) and mathematics applications and interpretations.

#### The course will cover the following topics:

- Number and Algebra
- Functions
- Geometry
- Statistics and Probability

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## Mathematics Extended (Grades 8-10)

Mathematics Extended is appropriate for students who have a passion for mathematics and have an interest in deepening their knowledge of a variety of topics. Based on the standard mathematics framework, the pace of this course is enhanced and supplemented by additional topics and skills, providing greater breadth and depth. There is less time consolidating prior knowledge as new topics are introduced more frequently. Having strong AtL skills is required to keep up with the expectations of this course. Extended students are expected to engage in math contests which offer enrichment and a broader depth of course understanding, which provides the foundation for students who wish to pursue further studies in mathematics, such as mathematics higher level (HL).

### The course will cover the following topics:

- Number and Algebra
- Functions
- Geometry and Trigonometry
- Statistics and Probability

# **DP MATHEMATICS:**

### **Mathematics: Applications and Interpretations SL**

Mathematics: Applications and interpretation SL and HL is appropriate for students who are interested in developing their mathematics for describing our world and solving practical problems. They will also be interested in harnessing the power of technology alongside exploring mathematical models. Students who take Mathematics: Applications and Interpretation will be those who enjoy mathematics best when seen in a practical context. This subject is aimed at students who will go on to study subjects such as arts, social sciences, natural sciences, statistics, business, some economics, psychology, and design. (IBO)

#### The course will cover the following topics over a two-year period:

- Number and Algebra
- Functions
- Geometry and Trigonometry
- Statistics and Probability
- Calculus

IB Mathematics: Applications and Interpretations is assessed externally through two written examination papers worth 80%. IB internal assessment is worth 20% and consists of a project. This must be an individual piece of work completed during Year 2 of the course, involving the collection and/or generation of data. Projects may take the form of mathematical modeling, investigations, applications, statistical surveys, etc. The project is internally assessed by the teacher and externally moderated by the IBO.

## Mathematics: Analysis and Approaches SL/HL

Mathematics: Analysis and approaches at SL/HL is appropriate for students who enjoy developing their mathematics to become fluent in the construction of mathematical arguments and develop strong skills in mathematical thinking. They will also be fascinated by exploring real and abstract applications of these ideas, with and without the use of technology. Students who take Mathematics: Analysis and Approaches will be those who enjoy the thrill of mathematical problem solving and generalization. This subject is aimed at students who will go on to study subjects with substantial mathematics content such as mathematics itself, engineering, physical sciences, or economics for example. (IBO)

#### The course will cover the following topics over a two-year period:

- Number and Algebra
- Functions
- Geometry and Trigonometry
- Statistics and Probability
- Calculus

IB Mathematics: Analysis and Approaches SL/HL is assessed externally through two (three for HL) written examination papers worth 80%. The internally assessed component, which is a mathematical exploration, is worth 20% and offers students the opportunity for developing independence in their mathematical learning. Students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas. The exploration also allows students to work without the time constraints of a written examination and to develop the skills they need for communicating mathematical ideas. The exploration, which is completed during Term 1 of Grade 12, is internally assessed by the teacher and externally moderated by the IBO.