IB Mathematics Standard Level (SL) – Course Information

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# Prerequisite: Successful completion of either the Junior Year of IB Math SL *or* of Precalculus.

# Course Content

The ultimate aim of this course is to prepare students for the IB exam during their senior year in the Mathematics SL area.

**Topic 1—Algebra** The aim of this topic is to introduce students to basic algebraic concepts and applications. Topics include arithmetic and geometric sequences and series, exponents and logarithms, and the binomial theorem.

**Topic 2—Functions and Equations** We will explore the notion of function as a unifying theme in mathematics and apply functional methods to a variety of mathematical situations. Topics include definition of functions, composite and inverse functions, graphing of functions, transformations of graphs, reciprocal functions and quadratic, exponential and logarithmic functions.

**Topic 3—Circular Functions and Trigonometry** The aims of this section are to explore circular functions and to solve triangles using trigonometry. Topics include the unit circle, radian measure, defining sine, cosine and tangent, solving trigonometric equations, and solving triangles.

**Topic 4—Vectors** The aim of this section is to provide an elementary introduction to vectors. This includes both algebraic and geometric approaches. Topics included in this section are defining vectors, components of vectors, the sum and difference of 2 vectors, multiplication by a scalar, magnitude of a vector, unit vectors, position vectors the scalar product of 2 vectors, perpendicular and parallel vectors and distinguishing between coincident and parallel lines.

**Topic 5—Statistics and Probability** The aim of this topic is to introduce basic concepts of descriptive statistics, basic probability, modeling data, and correlations. We will use a graphing calculator to help us. The emphasis is on understanding and interpreting the results obtained.

**Topic 6—Calculus** The aim of this section is to introduce students to the basic concepts and techniques of differential and integral calculus and their application. Topics covered include limits, convergence, derivatives (1st and 2nd), integration (definite and indefinite integrals) and points of inflection.

**\*The Junior Year will cover topics 1-3, and 5.**

**\*The Senior Year will cover topics 4, and 6.**

**Textbook**

The textbook used in this class is *Mathematics Standard Level for the IB Diploma* by Paul Fannon, Vesna Kadelburg, Ben Woolley, and Stephen Ward published by Cambridge University Press. We will do parts of every section as well as extra projects and problems as needed to prepare for the IB exam.

# Calculators

A graphing calculator is **required** for this course. If you don’t have one, the ideal calculator would be a TI-84+ or TI84+ CE. TI83’s and TI-Nspires will also work.

**Assessments for IB (International Baccalaureate)**

There are 6 topics in this course which are assessed by IB. The IB assessment consists of 2 **external assessments** (the actual **IB Exam**) and an **internal assessment** called the Exploration.

The **IB Exam** is split into two parts – two days (Paper 1 and Paper 2). A calculator is not allowed on Paper 1 and is required on Paper 2. Both must be done in black or blue pen.

Together these 2 assessments contribute 80% of the final IB mark for the course. The exams are completed in May of the Senior year of the course.

The **Internal Assessment** is an individual exploration. This is a piece of written work that involves investigating an area of mathematics. The final product will be about 6-12 pages in length. The project is internally assessed by the teacher and externally moderated by IB using assessment criteria that relate to the objectives for IB mathematics. This exploration makes up the final 20% of the IB course mark and 20% of your grade here at Champlin Park.

# Champlin Park Assessment

Each of the 6 topics assessed by IB will also be assessed for a Champlin Park letter grade. Each topic will have several assessments including free-response tests, project work, and daily practice. The following grading scale and weighting will be used:

# Grading Scale

A 93 – 100%, A- 90 – 92%,

B+ 88 – 89%, B 83 – 87%, B- 80 – 82%

C+ 78 – 79%, C 73 – 77%, C- 70 – 72%

D+ 68 – 69%, D 63 – 67%, D- 60 – 62%

F Below 60%

# 80% of Grade – Tests (Boosts to 100% for 2nd tri)

20% of Grade – Exploration (1st tri only)

# Classroom Expectations and Procedures

**Assignments:** Practice problems will be assigned for each section. Even though these will not be part of the overall grade for this class, you are expected to practice these concepts in order to best prepare for the tests and IB exam.

**Tests and Retests:** Tests are intended to demonstrate mastery of your learning. If you miss a test day, you will take the test on the next day you return or as assigned by the teacher.

You will have the opportunity to retest once you have demonstrated sufficient evidence of relearning. Retesting must be completed within a reasonable timeframe. (Usually within 2 weeks.) You should be proactive about retesting. If you do retest, you will earn the second test score. The score on the retest is the new score, even if it is lower than the original test score.

**Truancy and Cheating:** If a student is found to have cheated on a test or skipped on the day of a test, a zero will be given for that test and parents/guardians will be contacted. The student will have the opportunity to take an alternate test to demonstrate understanding of the concepts. No additional retests will be allowed.