



IB Mathematics SL Y2/College in the Schools Calculus 2019-2020 Syllabus



Bronwyn Collins
Room 307
Bronwyn.collins@mpls.k12.mn.us

Email is the best way to communicate with me. I will do my best to reply to your email within 24 hours during the week. I sometimes check my email on weekends as well.

There will be a google classroom page for this class. You can join using the code **jnyhrov**.

Course Description: IB Math SL Year 2 develops a student’s understanding of the concepts of calculus and provides experience with its methods and application. The course emphasizes a multi-representational approach to calculus with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. The connections among these representations are important. Students will also study binomial expansion and vectors.

Course Objectives: The aims of the IB Mathematics SL course are that students will enjoy math, understand the nature of math, transfer skills to other areas and disciplines, appreciate technology, develop creative and logical thinking and improve their persistence and patience in problem solving. The objectives of the course are Knowledge and understanding, Problem-solving, Communication and interpretation, Technology, Reasoning and Inquiry Approaches.

Content Summary: The IB SL Mathematics course covers six Topics over two years. The course has an internal and external assessment.

Topic 1: Algebra	Topic 2: Functions and Equations
Topic 3: Circular Functions and Trigonometry	Topic 4: Vectors
Topic 5: Statistics and Probability	Topic 6: Calculus
Internal Assessment: Mathematical Exploration, this is an individual exploration that is a piece of written work that involves investigating an area of mathematics. 20% of IB score.	
External Assessment: This assessment takes place in May and is comprised of two exams (Paper 1 - no calculator and Paper 2 - calculator required) both of which are 90 minutes long. 40% each of IB score.	

In the year two course we will focus on Topics 1 (Algebra), 4 (Vectors), and 6 (Calculus). We will complete the Internal Assessment, due in March. We will also prepare for the External Assessments, which students will take in May. The other topics were covered in year one.

Schedule of Units/Topics:

IB DP courses are inquiry-based, so units are structured around “Essential Questions” that students will explore through the content to focus learning, develop curiosity and improve critical-thinking skills. The units we will study in class include:

Unit	Topic/Text	Essential Questions	Assessments
Binomial Expansion	Topic 1: Algebra	What patterns can help me expand a binomial? How are these patterns connected to other areas of mathematics?	Quiz
Limits and Continuity	Topic 6: Calculus	What is the difference between average and instantaneous change?	Exam 1
Derivatives	Topic 6: Calculus	How can I represent the instantaneous rate of change?	Gateway Exam
Applications of Derivatives	Topic 6: Calculus	How can the derivative help me solve problems?	Exam 2
Integrals	Topic 6: Calculus	How are the area under a curve and total distance travelled related? How are these topics related to derivatives?	Exam 3
Applications of Integration	Topic 6: Calculus	How can I use integrals to find the area between two curves or the volume of solid?	Exam 4
Vectors	Topic 4: Vectors	How can I represent movement through 3-dimensions?	Quiz
IB Exam Review	All syllabus topics	How do the topics of the last two years fit together? How can I best approach a novel problem? How can I use a GDC to solve problems correctly and efficiently?	External Assessment: Paper 1 and Paper 2
Mathematical exploration (10 days, incorporated into 3rd quarter)	Student choice of syllabus topic	What do I want to know more about? How can I apply the topics of the course to my real life? How can I best communicate my knowledge? What mathematical representation will help my reader understand?	Internal Assessment: Paper ~ 6-10 pages

Texts/Resources:

- Single Variable Calculus, 7th Ed. by Stewart (check out from Roosevelt High School media center. Replacement cost \$140).
- Mathematics Standard Level. Oxford University Press (check out from Roosevelt High School media center).
- Graphing Calculator (TI-83 or similar). Android phone users can use the Wabbit app.
- Dedicated math notebook (grid paper). You can continue in your notebook from Year 1.
- Folder
- Pencil/pen (you will take your IB exams in ink—some people like to get used to it ahead of time!)

Grading/Assessment:

Your overall grade will be awarded according to the scale on the right. Your overall grade will be based on practice work and assessments.

Formative (20% of overall grade)

Practice is the foundation of studying mathematics. In this category, you will earn credit for your participation in classwork and homework. Work in this category is graded based on effort and completeness, not correctness. This is a place to make mistakes and learn from them!

- On your work, you will see:
- 2** (completely done – 100%)
 - 1** (partially done – 50%)
 - 0** (not done)

RHS Mathematics Grade Scale	
Letter Grade	Minimum Percent of Credit Earned
A	80%
A-	74%
B+	68%
B	62%
B-	56%
C+	50%
C	44%
C-	38%
D+	32%
D	26%
D-	20%
F	19% and below

Summative Assessments (80% of overall grade)

Tests and quizzes will be graded using the RHS building rubric. Exams scored with U or M scoring guidelines or the IB mark scheme will be translated to the RHS rubric. You may retake a quiz or for two weeks after the test is returned and after you have worked to improve your understanding. A retake can improve your grade for that test/quiz by up to 10% (approximately one letter grade). You will only be allowed to take an exam that you miss if the absence is excused. Please try to arrange alternate testing times in advance.

Score	Descriptor
8	Perfect score. Produces high-quality work that frequently uses mathematics insightfully.
7	Produces high-quality work that frequently uses mathematics insightfully.
6	Produces high-quality, occasionally insightful mathematical work.
5	Produces generally high-quality mathematical work.
4	Produces good-quality mathematical work.
3	Produces mathematical work of an acceptable quality.
2	Produces mathematical work of limited quality.
1	Produces work of a very limited quality.
0	Produces work that does not meet any of the above criteria.

Homework: You can expect to have homework every night, due the next day. In order to do well in this class, you will need to do homework. No late homework will be accepted unless you stay after school or at lunch to work with me.

Classroom rules/expectations:

We will build community throughout the year by playing games, working in cooperative groups and learning from one another. We will work together as a community to create the expectations we hold for one another. Positive behavior will be recognized with a post card or phone call home, a smile or a thank you! If a student needs help meeting the behavior expectations, I may redirect privately, conference with students, ask the student to take a break, call home or refer to a dean or IB coordinator for a problem solving session.

Phones/electronics:

The Roosevelt Electronics Policy will be enforced. If you are using your phone, your dean will hold it until the end of the day.

Attendance and Tardy:

If you are absent, check the google classroom for notes/videos on the day's topic. When you return to class, check with your teacher for any assignments or handouts you might have missed. Make up work must be done outside of the class period. If you arrive in class after the bell rings, you will be marked tardy. The RHS tardy policy will be enforced.

Passes:

Passes will be given to a maximum of **2 people** at a time. These passes will be given at my discretion. All passes will follow the 10 minute rule: no passes the first and last 10 minutes of every class period. If a student is late or absent for 3 or more days in the previous week, a student is on a classroom no pass list for the current week. Failure to return to class in a timely manner on a pass will automatically result in no pass list.

Academic Honesty:

Students engaged in academic dishonesty will be penalized on the assignment, may be given the opportunity to resubmit the assignment for credit, and they will be reported to their dean for disciplinary action and Administration if applicable.

Academic Dishonesty includes, but is not limited to:

- cheating on assignments or tests
- plagiarizing (misrepresenting as one's own anything done by another)
- submitting the same or substantially similar papers or creative work for more than one course without consent of all instructors concerned.
- depriving another of necessary course materials or sabotaging another's work
- colluding to support malpractice by another student
- To avoid plagiarism, words and ideas used to support one's argument **MUST** be acknowledged in all journals, papers and presentations. In this course you may use any accepted citation style, as long as you are consistent within your document. Passages that are quoted verbatim must be enclosed within quotation marks and the author must be acknowledged. Electronic media (websites, etc.) must be treated the same way as books and journals, and the sources of all photographs, maps, illustrations, etc. must also be acknowledged if not your own work.

College in the Schools (CIS) Course Expectations: This course can be taken for University of Minnesota (U of M) credit.

- The U of M has a prerequisite of passing pre-calculus (IB Math SL Year 1) with A's.
- You will receive a separate grade for the U of M in June, based on six U of M exams (80%) and your other work in the class during all four quarters (20%).
- The U of M expects CIS students to get grades of B or better (if you are not earning a B or better, I may recommend that you withdraw from the CIS course.)
- This grade will appear on your U of M transcript permanently and affect your U of M GPA if you choose to attend a U of M school. If you withdraw, you will see a W on your transcript and will use one of a limited number of withdrawals at the U of M.
- The U of M does not allow retakes of exams.
- We will discuss more details of College in the Schools in the weeks to come. If you choose to register for college credit, I will provide a U of M syllabus. The CIS registration deadline is usually mid-September.

