



Barack Obama Academy of International Studies

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IBDP Calculus - Mr. Miller

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Overview

This is the second year of a 2-year course to prepare students for the IB mathematics standard level exam. The following topics, as determined by the IB course syllabus, will be covered in this course:

- 1) The Derivative
- 2) Maximum and Minimum Applications
- 3) Related Rates
- 4) The Definite Integral
- 5) Area under a Curve
- 6) Volumes of Revolution
- 7) Modeling
- 8) Vectors
- 9) Review for IB examination

IB Assessment Criteria

A student's final grade for the IB Diploma in this course is determined by an External Assessment that is worth 80% of the final mark, and the Internal Assessment/Exploration is worth the remaining 20%. The **External Assessment** consists of two written examinations. Paper 1 does not permit access to any calculator and consists of section A, compulsory short response questions and section B compulsory extended response questions, based on the whole syllabus. Topics include algebra, functions and equations, circular functions and trigonometry, vectors, statistics and probability, and calculus. Paper 2 requires the use of a graphic display calculator, and consists of section A, compulsory short response questions and section B compulsory extended response questions, based on the whole syllabus. Each Paper is 40% of the final mark.

The **Internal Assessment or Mathematical Exploration** is a project that is an individual piece of written work that involves investigating an area of mathematics. The project is internally assessed by the teacher and then sent away to be externally moderated by the IBO. The student is expected to spend about 20 hours on the project. The project will be due near the end of the first semester in this course.

IBDP Aims and Assessment objectives:

Aims:

The aims of all mathematics courses in group 5 are to enable students to:

1. Enjoy mathematics, and develop an appreciation of the elegance and power of mathematics
2. Develop an understanding of the principles and nature of mathematics
3. Communicate clearly and confidently in a variety of contexts
4. Develop logical, critical and creative thinking, and patience and persistence in problem-solving
5. Employ and refine their powers of abstraction and generalization
6. Apply and transfer skills to alternative situations, to other areas of knowledge and to future developments
7. Appreciate how developments in technology and mathematics have influenced each other
8. Appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
9. Appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
10. Appreciate the contribution of mathematics to other disciplines, and as a particular "area of knowledge" in the TOK course.

Assessment objectives:

Problem-solving is central to learning mathematics and involves the acquisition of mathematical skills and concepts in a wide range of situations, including non-routine, open-ended and real-world problems. Having followed a DP mathematics SL course, students will be expected to demonstrate the following.

1. **Knowledge and understanding:** recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.
2. **Problem-solving:** recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.
3. **Communication and interpretation:** transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation.
4. **Technology:** use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.
5. **Reasoning:** construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.
6. **Inquiry approaches:** investigate unfamiliar situations, both abstract and real-world, involving organizing and analyzing information, making conjectures, drawing conclusions and testing their validity.





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Necessary Materials

- A five-subject spiral notebook or a three ring binder. It will be used for this class only.
- A good supply of pencils
- Graphing calculator TI – 84+ (if you need you may borrow one from the school)

Grading

The grade that you receive on your report card will be calculated in the following manner, using a weighted grading system:

Homework – 10%

Homework will be assigned every day, and is due the following school day. Students will receive a list of assignments and when the assessments will occur at the beginning of each unit, so there is no excuse for not knowing what the assignment was or when the next test or quiz may occur. Homework is checked daily. It will be assessed based on completeness and accuracy. The answers to all odd homework problems are in the back of the book. **It will be assumed that you have checked your answers before arriving to class.** Answers that are not supported by work will not be given credit. Mathematics is sequential. Most lessons are built on the previous lesson. Therefore, homework must be done on time. **Late homework will not be accepted.** In the case of absences, you will be given one extra day for a one-day absence, two extra days for a two-day absence, etc. Weekly homework scores are entered into the grade book every Tuesday. It is up to you to show me your missing homework. If you do not show it to me by the Tuesday of the following week, you may not receive credit!

Assessment – 50%

This section makes up the major portion of the students' grade. Included in this section are quizzes and tests. Students must prepare well for tests and quizzes, as there are **no re-tests**. The best way to prepare for tests or quizzes is to complete your homework daily and on time. If you do not understand something we discussed in class, it is imperative that you clear up any misconceptions prior to the test or quiz. Generally, we have a quiz after every 2-3 sections, and a test at the end of the chapter on the entire chapter. The tests and quizzes are made to prepare students for the type of questions that they will see on the IB external assessment.

Class participation – 15%

Class participation involves coming to class prepared, on time, and participating positively to the learning environment. **This includes attending QRT – QRT periods count as a regular class period and you are expected to attend.** This includes coming to QRT prepared for class, on time, and participating.

Classwork – 15%

This includes any work that is done and collected during the class period. For example - exit tickets, warm ups, and substitute assignments.

Writing – 10%

Writing will involve writing about processes, showing work and solving I.B. tasks as well as the Internal Assessment

Grading Scale:

90-100% A
 80-89.9% B
 70-79.9% C
 60-69.9% D
 Below 60% E

Semester Grades (using straight letter grade system):

Term 1 40%
 Term 2 40%
 Midterm/Final Exam 20%





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Expectations

- You will need to come to class prepared every day. You must bring your text book, a pencil, calculator, agenda book, and your own notebook.
- Complete homework assignments on a daily basis. **This is essential to understanding and performing well in a Calculus class.**
- Come to class on time and sit in your assigned seat. Do not miss class; attendance is essential to your success in Calculus.
- Absolutely no food or drink except water.
- Communication occurs best if **all others are listening while one person is talking**. Raise your hand and wait to be called on, do not shout out answers, and give everyone time to think about the question/problems raised in class. Extend the same courtesy to others that you would expect yourself.
- Cell Phones, iPods, etc. are all turned off and out of sight. They will be confiscated.
- Do your own work, cheating will not be tolerated. This includes copying homework. All parties involved in cheating will receive a '0' and a referral to the office.
- You are expected to participate in the learning environment. This includes taking notes, asking and answering questions, completing seatwork, and helping classmates.

When these rules are not followed, the following consequences will be applied

- Verbal warning and loss of class participation points
- Phone call home
- Conference with parent or guardian
- Referral to office

Extra credit

There will be no opportunities for extra credit. High quality work on a daily basis is the expectation.

Do not hesitate to contact me anytime throughout the year with any questions or concerns that you may have. The e-mail address above is the easiest way to reach me. I can also be contacted through Facebook or twitter.

I stay after school for extra help most Mondays, Tuesdays, and Thursdays. If you need assistance or are struggling do not wait, come and see me right away. Calculus like all mathematics is sequential, you will need to recall and use every topic we learn throughout the year, as well as topics that we review from previous math courses. I cannot stress enough, do not fall behind. Seek help immediately if you are struggling with anything in this course.

Thank you,

Mr. Miller

Approved: Valinda Colbert, Director

Please provide the following information by the end of the first week of September

Student Name: _____

Parent/Guardian Name: _____

Parent email address: _____

