

IB Math Studies 2

Sturgis Charter Public School
Aaron Dunigan AtLee
aduniganatlee@sturgischarterschool.org
<http://sturgis.duniganatlee.com>

Course Goals

The purpose of IB Math Studies is to convince you, the student, that mathematics is both useful and interesting, while developing your ability to solve problems creatively and flexibly, solidifying your sense of numerical literacy, and honing your critical and logical thinking skills.

In order to accomplish the purpose of Math Studies, one must believe that mathematics is a way of making sense of the world, that it involves precision and rules but also creativity and exploration. One must believe that interesting and challenging puzzles are worth the effort spent in solving them.

The essential questions that will drive this course are as follows:

- What is the relationship between mathematical symbols and real-world situations?
- How do I ask good mathematical questions, and how can I pursue their answers?
- How are the areas of mathematics interconnected?

Some “Areas of Knowledge” questions that we will consider are

- What assumptions underlie our use of mathematical procedures?
- What are the limitations of conclusions drawn from mathematics?
- What is “elegant” mathematics?

Objectives

Upon successful completion of Math Studies year 2, you will be able to

- identify linear, quadratic, exponential, and trigonometric relationships in everyday situations,
- express such relationships symbolically, graphically, numerically, and verbally, and describe the properties of these relationships;
- describe relationships among sets of objects using Venn diagrams and set notation;
- use graphs and measures to describe and analyze two-variable data, and discuss the limitations of these descriptions of data;
- use calculus to describe and calculate rates of change;
- use symbolic logic to represent and verify propositions;
- apply your knowledge of mathematics to various disciplines, including finance, science, social studies, and the arts;
- select and use appropriate technology for mathematical problem solving;
- ask powerful mathematical questions and pursue their answers.

Teaching Strategies and Resources

This course will be taught with a focus on student inquiry. You will spend time generating mathematical questions and pursuing their answers. Class time will be spent in the following activities:

- guided investigation (usually in groups),
- group and class discussion,
- teacher presentations and examples,
- student presentations and examples,
- practice of skills.

Textbook

Mathematics for the International Student by Coad, Whiffen, Owen, Haese, Haese and Bruce, is the primary text for the course. Other sources may also be used.

Assessment

Grades are based *approximately* on the following. During the first two quarters, more weight may be given to projects as you work on the IB Internal Assessment project.

- 65% Tests and quizzes
- 10% Homework
- 25% Projects, DTE's, and other written work

Tests and quizzes: Tests evaluate material studied over the course of two or more weeks and are normally announced at least a week in advance. Quizzes evaluate material covered over the course of four or fewer days and are normally announced at least a day in advance.

Homework: About 20-30 minutes of homework is assigned daily. It is essential that homework be done every day. Your understanding of the homework will be assessed by a daily "Skills Check" (a short quiz) covering the skills from the previous night's homework. If you are struggling with a homework assignment, please come see me before the next day's class.

Deeper Thought Exercises (DTE's): You will be assigned deeper exercises that ask you to extend, evaluate, analyze, apply, and communicate your understanding of the topics covered in class. These are similar to questions given on the IB Math Studies exam.

Projects: The primary project will be the IB Math Studies Internal Assessment. Portions of this project will be due throughout the first two quarters of the year. Other smaller projects may also be assigned on occasion.

Required materials

You are required to bring the following materials to class each day:

- A 3-holed binder, with 5 dividers, devoted only to math
- Graph paper and lined paper – all graphing work must be done on graph paper
- Pens, pencils and a straight edge
- A graphing calculator – a TI-83 or TI-84 is strongly recommended
- Your textbook

If a student encounters difficulties, s/he may get extra help after school or during lunch.