

**Stockton Collegiate International Schools**  
**MYP Mathematics: Pre-Algebra**  
**Level 2, Grade 7**

**1. Course Description**

Mathematics is a universal language that is a central foundation for the pure sciences, engineering, technology, and social sciences. Inherently included in the study of mathematics is a development of mathematical reasoning and problem-solving skills that are necessary for calculations and decision-making skills. These skills are very important for all students, in and outside of school, as they pertain greatly to real world problems in everyday life.

This course will introduce and expand upon previously learned mathematical concepts in a comprehensible and clear manner. Students will develop a stronger grasp of fundamental math concepts as they form a foundation that will be needed for Algebra and Geometry. Students will be encouraged to use appropriate strategies and mathematical terms to interpret and solve various problems through critical and creative thinking. Students will also have the chance to appreciate the usefulness of mathematics as they solve realistic problems that could be applied to the outside world.

Each of the MYP fundamental concepts will be directly incorporated into the daily activities of this course. Communication, holistic learning, and international cultural awareness will be a big part of each lesson. Also embedded in this course are each of the attributes of the IB learner profile. Students will be encouraged to be inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced, and reflective.

**II. State Standards and MYP Objectives**

<b>MYP Objectives</b>	<b>California State Standards</b>
<i>Knowledge and understanding:</i> Students know and demonstrate understanding of the concepts.	Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program.
<i>Investigating patterns:</i> Students draw conclusions consistent with findings	Students make decisions about how to approach problems.
<i>Communication in mathematics:</i> Students use mathematical language in written explanations.	Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs.
<i>Reflection in mathematics:</i> Students explain why their results make sense.	Students determine a solution is complete and move beyond a particular problem by generalizing to other situations.

**III. Areas of Interaction**

The areas of interaction will broaden the academic experiences for all students as they will have the ability to exercise their critical thinking and communication skills. Students will experience multiple approaches to learning as they will work in various ways, including individual and group activities. Group activities will encourage students to communicate their ideas to their peers while maintaining a focus on their own individual learning. Students will connect the content to real-world applications, including ways to help and serve the community. Students will investigate health and social education, developing an ability to interact with others in a way that is cohesive for all. They will understand our role in the environment and how we can use what we have learned to improve our surroundings. Finally, students will develop an appreciation for the mathematics behind human ingenuity and analyze why these ideas were created and how they have helped our advancement.

#### IV. Texts and Resources

Students are expected to come to class prepared and ready to learn. They will be required to bring a composition notebook, a calculator, and writing utensils to every class. They will also need their Pre-Algebra textbook: University of Chicago School Mathematics Project: Transition Mathematics: Chicago, IL: McGraw Hill, 2008.

#### V. Methodology

Teaching strategies in the classroom will focus on student learning. Questions will always be encouraged as they are important in academics in general, but especially in mathematics. Students will learn the content through different kinds of interaction, including a heavy emphasis on group work as well as direct instruction. Doing so will help transition the class from activity to activity while giving students the opportunity to communicate and share their ideas with their peers. Student projects will allow exploration of mathematical concepts in greater detail. There will be an emphasis on students showing all their work and earning partial credit if they can demonstrate that they understand the content.

#### VI. Methods of Assessment

The single most important aim of assessment at Stockton Collegiate is to support and encourage student learning. Teachers will use formative assessments to guide their instruction day-by-day. These assessments are generally not included in the students' final grades. Summative assessments are the students' opportunity to demonstrate their level of achievement at the end of a unit and are included as part of a final grade. The MYP approach to assessment recognizes the importance of the processes of learning as well as the products of learning. The MYP assessment model is criterion-related, meaning that it is based upon pre-determined criteria to which all students (and parents) have access.

Students will be assessed continually and that assessment will be used to inform both student and teacher about student progress and to guide the teacher in instructional design for additional teaching, practice, and lesson design. Students will be assessed using the following criteria:

Criteria A – Knowledge and Understanding

Criteria B – Investigating Patterns

Criteria C – Communication in Mathematics

Criteria D – Reflection in Mathematics

Name of Unit	Unit Question	Assessment
Uno, Dos, Tres, Cuatro	How are numbers used in every day's life?	<ul style="list-style-type: none"><li>• Unit Project</li><li>• End-of-unit Objectives</li><li>• Unit Test</li><li>• Paper (Math History)</li></ul>
Using Variables	How do symbols and variables represent numbers?	<ul style="list-style-type: none"><li>• Unit Project</li><li>• Unit Test</li></ul>
Represent!	What forms can non-integers take?	<ul style="list-style-type: none"><li>• Real-World Applications (Sales tax, The Golden Ratio)</li><li>• End-of-unit objectives</li><li>• Unit Test</li></ul>
Unions and Intersections	How are sets of numbers and shapes represented?	<ul style="list-style-type: none"><li>• Sports Team Hierarchy</li><li>• Real World Applications (Maps/exploring Stockton)</li><li>• Unit Test</li></ul>
Applications of Basic Operations	What patters lead to addition and subtraction?	<ul style="list-style-type: none"><li>• Investigations (Stock Market, Probabilities, population Growth)</li><li>• End-of-unit objectives</li><li>• Unit Test</li><li>• Properties of Theorems</li></ul>
Gee-I'm-A-Tree!	What are some basic Geometry ideas?	<ul style="list-style-type: none"><li>• Projects of real-world applications (Tessellations in art, Sketchpad, symmetry in the world)</li><li>• Unit Test</li></ul>

Geo-multiply	How is multiplication applicable in Geometry?	<ul style="list-style-type: none"> <li>• Projects (Sir Cumference and The First Round Table, ancient civilizations and land ownership)</li> <li>• End-of-unit objectives</li> <li>• Unit Test</li> </ul>
Multiplying in Algebra	What are the rate-factor and the size-change models?	<ul style="list-style-type: none"> <li>• Self-test</li> <li>• Projects/Applications (Mark Twain's Life on the Mississippi River, sales increase/decrease, foods and calories)</li> <li>• Unit Test</li> </ul>
Division in Algebra	What are division and proportions?	<ul style="list-style-type: none"> <li>• Projects/Applications (Cat/dog person survey, ratios in paintings, how fast do you type, proportional measurement for heights)</li> <li>• End-of-unit objectives</li> <li>• Unit Test</li> </ul>
The Geo-Algebra Connection	How do we solve linear equations and inequalities?	<ul style="list-style-type: none"> <li>• Projects (Graphic art using inequalities, predicting population of countries for the future)</li> <li>• Unit Test</li> </ul>
2-D or not 2-D, That Is the Question	How do we compute areas and volumes?	<ul style="list-style-type: none"> <li>• Projects (Will it float? If it fits, it ships!)</li> <li>• Unit Test</li> </ul>

## VII. Grading Policy

Grades will be determined using a combination of MYP marks and more traditional assessments. These grades will be combined to produce a composite mark of A, B, C, D, or F at the end of each semester according to traditional percentage guidelines (90-100: A; 80-89: B; 70-79: C; 60-69: D). Heavy emphasis will be given to a student's level of competency at the end of the grading period.