

Course Outline

MYP Mathematics: Pre-Algebra

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I. COURSE DESCRIPTION

The pre-algebra class is designed to teach the students to make transitions from arithmetic to algebraic thinking.

This course incorporates the three fundamental concepts of the International Baccalaureate (IB) Middle Years Programme (MYP): holistic learning, intercultural awareness and communication.

- **HOLISTIC LEARNING**
Throughout the curriculum, the focus is on the development of the whole child by using different strategies to address the learning styles of individual students. In addition, students will engage in problem solving of real world situations to gain insight of a variety of disciplines and how they relate to mathematics.
- **INTERCULTURAL AWARENESS**
Students are encouraged to consider mathematical issues from multiple perspectives. Students have opportunities to develop their mathematical knowledge, concepts and skills as they learn and understand how cultural, societal, and historical influences from a variety of cultures have influenced mathematical thought.
- **COMMUNICATION**
Emphasis will be on students communicating their understanding of mathematically concepts in a variety of ways. These include class discussions, written assessments, presentation of projects, and group collaboration.

THE LEARNER PROFILE

Students are encouraged to be IB Learners and strive to be:

Inquirers of mathematical issues and concepts and show independence in learning

Knowledgeable of mathematical concepts, ideas, and skills to develop a better understanding

Thinkers when reasoning through problem solving

Communicators of mathematical information when working and collaborating with others

Principled in dealing with others and taking responsibility for their own action

Open-minded to new and different views and methods in mathematical processes

Caring towards others and respecting the needs and feelings of others

Risk-takers when approaching new mathematical ideas and strategies

Balanced and able to maintain good academic performance while involved in others areas of interest

Reflective in thinking about their own learning experiences to understand their individual strengths.

II. AIMS AND OBJECTIVES

The aims of teaching and learning mathematics are to encourage and enable students to:

- enjoy mathematics, develop curiosity and begin to appreciate its elegance and power
- develop an understanding of the principles and nature of mathematics
- communicate clearly and confidently in a variety of contexts
- develop logical, critical and creative thinking
- develop confidence, perseverance, and independence in mathematical thinking and problem-solving
- develop powers of generalization and abstraction
- apply and transfer skills to a wide range of real-life situations, other areas of knowledge and future developments
- appreciate how developments in technology and mathematics have influenced each other
- appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics
- appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives
- appreciate the contribution of mathematics to other areas of knowledge
- develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics
- develop the ability to reflect critically upon their own work and the work of others.

The objectives state the specific targets set for learning in pre-algebra. They define what the student will be able to do, or do better, as a result of studying pre-algebra. Please refer to Merrill's website to view the MYP objectives.

We will work towards our aims and objectives by formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; grasping the concept of a function and using functions to describe quantitative relationships; analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

III. Global Contexts

Global contexts direct learning toward independent and shared inquiry into our common humanity and shared guardianship of the planet. Using the world as the broadest context for learning, MYP Mathematics develops explorations for:

- identities and relationships
- orientation in time and space
- personal and cultural expression
- scientific and technical innovation
- globalization and sustainability
- fairness and development

IV. TEXTS AND RESOURCES

The primary resources for this class are the Problem Based Instructional Tasks (PBIT) that have been created by the Math Leadership Team to match the Iowa Core. The Holt textbook will also be used.

V. METHODOLOGY

A variety of teaching methods will be used with the students including group work, modeling, and direct teaching.

VI. METHODS OF ASSESSMENT

Formative Assessments include homework, class work, group work, teacher observation, and quizzes. Students will typically have homework every Monday, Tuesday, and Thursday.

Summative Assessments will include an assessment at the end of each chapter. We will also have six projects throughout the year.

For IB assessment, student work is evaluated on the following IB assessment criteria:

Criterion A	Knowledge & Understanding	max 8
Criterion B	Investigating Patterns	max 8
Criterion C	Communication in Mathematics	max 8
Criterion D	Applying Mathematics in Real-Life Context	max 8

VII. GRADING POLICY, INCLUDING THE USE OF MYP CRITERIA

All summative tasks will be assessed using MYP rubrics, and students will receive a copy of the rubrics to take home. Further, teachers will post each student's level of achievement on Infinite Campus.