6th Grade Mathematics
MYP Year 1
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I. Course Description:
In sixth grade mathematics, year one, students will engage in academic discourse and investigation-based lessons to derive and justify arithmetic properties, geometric formulas, and numeric algorithms. Students will also investigate equivalence in numeric and algebraic expressions, equations, and inequalities. In correlation with the content specific curriculum, students will have the opportunity to utilize strategies from the International Baccalaureate program. They will utilize the IB learner profiles as a means to deepen their learning inside of the classroom and develop the characteristics of a life-long learner. In order to demonstrate success, students will demonstrate critical thinking, perseverance, and attend to precision.

II. IB Aims and Objectives:

A. Knowing and Understanding
B. Investigating Patterns
C. Communicating
D. Applying Mathematics in Real-Life Contexts

The aims of all MYP subjects state what a teacher may expect to teach and what a student may expect to experience and learn. These aims suggest how the student may be changed by the learning experience. The aims of MYP 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

Key Concepts: Form, Logic, Relationships
Related Concepts: Change, Equivalence, Generalization, Justification, Measurement, Model, Pattern, Quantity, Representation, Simplification, Space, System

III. Topics:

- Factors and Multiples
- Area and Volume
- Decimals and Fractions
- Ratios, Rates, Unit Rates
- Percents
- Expressions, Equations, and Inequalities
- Signed Numbers
- The Four Quadrants
- Statistical Processes and Numerical Summaries

IV. Service Learning:

At KMS, MYP students will engage in Service Learning activities. A community in need will be chosen, students will research the needs and how to help, write an action plan, take action on the plan and complete the service, and then create a presentation of their work. They will demonstrate Learner Profile attributes and will reflect on the Approaches to Learning skills that they are strengthening. The service learning activities are semester-long. Students use a self-paced guide and process journal to complete these activities. In addition, teachers act as facilitators as students work through their projects rather than direct instructors. The work for these service learning activities take place during our IB Projects period.

V. Internationalism

In the use of the Carnegie curriculum resource, students will reference cultural traditions, food, and international locations. Additionally, the text will provide biographical information regarding mathematicians from around the world.

VI. Teaching Methods

In sixth grade mathematics, teaching methods include inquiry, investigation, and partner and small group collaboration. Students will develop questions to drive their learning. Student investigation will be facilitated to guide students in creating meaning in mathematical algorithms, formulas, and processes. As students progress through their learning, they will utilize purposefully planned methods of collaboration.

VII. Assessment

Students will complete open response, multiselect, multiple choice, matching, and true/false assessments.

Criterion for assessments:

A. Knowing and Understanding
   i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations
   ii. Apply the selected mathematics successfully when solving problems
   iii. Solve problems correctly in a variety of contexts

B. Investigating Patterns
   i. Apply mathematical problem-solving techniques to recognize patterns
   ii. Describe patterns as relationships or general rules consistent with correct findings
   iii. Verify whether the pattern works for other examples

C. Communicating
   i. Use appropriate mathematical language
   ii. Use different forms of mathematical representation to present information
   iii. Communicate coherent mathematical lines of reasoning
   iv. Organize information using a logical structure

D. Applying Mathematics in Real-Life Contexts
   i. Identify relevant elements of authentic real-life situations
   ii. Select appropriate mathematical strategies when solving authentic real-life situations
   iii. Apply the selected mathematical strategies successfully to reach a solution
   iv. Explain the degree of accuracy of a solution
   v. Describe whether a solution makes sense in the context of authentic real-life situation

VIII. Resources

"Mathematics Subject Guide." Edited by IBO, *International Baccalaureate*, International Baccalaureate, 2014, IBO.org.