Algebra 2 Accelerated
MYP Level 5
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I. Course summary

This is a high school algebra course that meets MYP Aims and Objectives and satisfies the State of Minnesota's mathematics requirement for high school graduation and prepares students to continue their study of math in pre-calculus.

The course incorporates the MYP fundamental concepts of holistic learning, intercultural awareness and communications, in that connections between mathematics and other subjects are emphasized. The IB learner profile is used as a guide in developing and implementing the curriculum.

Focus will be placed on inquiry and reflection, which enables students to better develop, understand, and apply and algebraic concepts. This course will extend from linear functions, through polynomials and quadratic functions, as well as developing mathematical reasoning. Finally, students are expected to be able to show what they know if a variety of manners.

II. Units of Study

- •Foundations for Functions
- •Linear Systems
- •Polynomial Functions
- •Rational and Radical Functions
- •Probability and Statistics
- •Trigonometric Graphs and Identities

- •Linear Functions
- •Quadratic Functions
- •Exponential and Logarithmic Functions
- •Properties and Attributes of Functions
- •Sequences and Series

III. Standards and IB MYP Aims

The state standards identified as priority standards by St. Paul Public Schools in Algebra are:

9.2.1.1 Understand the definition of a function. Use functional notation and evaluate a function at a given point in its domain.

9.2.1.5. Identify the vertex, line of symmetry and intercepts of the parabola corresponding to a quadratic function, using symbolic and graphical methods, when the function is expressed in the form $f(x) = ax^2 + bx + c$

$f(x) = ax^2 + bx + c$, in the form $f(x) = a(x - h)^2 + k$ $f(x) = a(x - h)^2 + k$, or in factored form.

9.2.2.1 Represent and solve problems in various contexts using linear and quadratic functions.

9.2.2.3 Sketch graphs of linear, quadratic and exponential functions, and translate between graphs, tables and symbolic representations. Know how to use graphing technology to graph these functions.

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9.2.4.2 Represent relationships in various contexts using equations involving exponential functions; solve these equations graphically or numerically. Know how to use calculators, graphing utilities or other technology to solve these equations.

9.2.4.8 Assess the reasonableness of a solution in its given context and compare the solution to appropriate graphical or numerical estimates; interpret a solution in the original context.

9.2.4.5 Solve linear programming problems in two variables using graphical methods.

9.4.1.1 Describe a data set using data displays, including box-and-whisker plots; describe and compare data sets using summary statistics, including measures of center, location and spread. Measures of center and location include mean, median, quartile and percentile. Measures of spread include standard deviation, range and inter-quartile range. Know how to use calculators, spreadsheets or other technology to display data and calculate summary statistics.

9.4.2.1 Evaluate reports based on data published in the media by identifying the source of the data, the design of the study, and the way the data are analyzed and displayed. Show how graphs and data can be distorted to support different points of view. Know how to use spreadsheet tables and graphs or graphing technology to recognize and analyze distortions in data displays.

9.4.3.1 Select and apply counting procedures, such as the multiplication and addition principles and tree diagrams, to determine the size of a sample space (the number of possible outcomes) and to calculate probabilities.

The MYP aims of teaching and learning mathematics include encouraging 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.

IV. Text/Resources
1. **Holt <u>Algebra 2</u> textbook** is available on our SCHOOLOGY page.
2. Students must supply a 3-ring binder and/or a 3-subject notebook and folder solely for Algebra 2 Accelerated and a pen/pencil.
3. A graphing calculator is required. If you are unable to purchase one at this time and you qualify for free or reduced lunch the school will be able to provide one to you dependent upon the amount available.

V. Methods of Assessment
Grades will be given at the conclusion of each quarter with 1 progress grade given over the course of the semester. Grades will consist of **70% summative assessments** and **30% formative assessments**, as stated by the Highland Park Senior High Grading Policy. The assessments will be based upon the aforementioned objectives and will include the MYP assessment criteria. ☹ **Unfortunately, there is NO EXTRA CREDIT** ☹ .

In this class, students will complete a variety of IB MYP assessments such as broad based exams, group problems, written reflections, quizzes and projects. Assessments like these give students a chance to show their understanding and skills, and in turn, these assessments give teachers useful information, which can be shared with students and families to help improve learning. Students are evaluated in four different areas with IB MYP rubrics for this class:

Criterion A	Knowing and Understanding	-Select appropriate mathematics when solving problems in both familiar and unfamiliar situations -Apply the selected mathematics successfully when solving problems -Solve problems correctly in a variety of contexts.
Criterion B	Investigating Patterns	-Select and apply mathematical problem-solving techniques to discover complex patterns -Describe patterns as general rules consistent with findings -Prove, or verify and justify, general rules.
Criterion C	Communication in Mathematics	-Use appropriate mathematical language (notation, symbols and terminology) in both oral and written explanations -Use appropriate forms of mathematical representation to present information -Move between different forms of mathematical representation -Communicate complete, coherent and concise mathematical lines of reasoning -Organize information using a logical structure.
Criterion D	Applying Mathematics in a Real Life Context	-Identify relevant elements of authentic real-life situations -Select appropriate mathematical strategies when solving authentic real-life situations -Apply the selected mathematical strategies successfully to reach a solution

		-Justify the degree of accuracy of a solution -Justify whether a solution makes sense in the context of the authentic real-life situation.

IB MYP rubrics use an 8-point international scale, with 8 representing "excellent achievement" and 1 representing "limited achievement." When these assessments will be counted toward students' grades in the class, they will be converted to a standard A, B, C, D, N scale and the point value will appear on the rubric. Parents & guardians, please ask your student to share their rubrics with you.

Please also refer to the "Highland Park Senior High School Grading and Assessment Policy" on the Highland Park Senior High webpage for further information on the grading scale, make up work, retakes, and/or late work. Students can access scores, grades, missing work, and/or attendance on the "parent/student portal" tab at www.highlandsr.spps.org.

VI. Methodology In MYP, teachers use a variety of teaching methods to promote thinking and communication. Critical thinking requires students to draw justifiable conclusions and generalizations from investigating patterns. Communication and reflection helps deepen understanding.

VII. Other course information
Students will be expected to adhere to the following **CLASSROOM PRINCIPLES**:
1. **RESPECTFUL** – Demonstrate respect for self, others, school, and the community
2. **RESPONSIBLE** – Be a responsible member of the school and classroom community
3. **SAFE** – Help create a school environment where every student (like you!) feels safe

Homework will be given daily, and will be checked for completion and correctness in various manners.

EXTRA HELP!
-   You can certainly come in to our room (**2304**) most days **before or after school to work with me**. However, you need to communicate your intention to come in, or else I may not be here.
-   You can certainly *google things*. Everything we do in this class has been done before. You might find an alternative explanation/demonstration that works best for you.
-   **Work together!** You will find your understanding and abilities will increase dramatically if you explain, discuss, and listen as a member of a group.

→ CLASS VALUES ←
RESPECTFUL – RESPONSIBLE – SAFE
PRESENT – CURIOUS