Math - IB Programme

Math - IB Programme Courses

Advanced Middle Years Programme Algebra 1

Advanced Middle Years Programme Algebra 1 includes all objectives in the PWCS Algebra 1 curriculum and the Virginia Standards of Learning. In addition, enrichment and extension topics such as linear programming, absolute value functions, and real-life math applications are emphasized. Critical thinking skills and use of graphing calculator technology are also important components in this course. Alternative assessments such as projects, oral and written communication and cooperative learning activities are a regular part of this course. This course has an associated Standards of Learning (SOL) test. Students will participate in these tests only when they have not yet earned sufficient credit for graduation and/or satisfied federal testing requirements.

Credits 1
Grades
9
Course Designation
International Baccalaureate (IB),
Weighted (0.5W)
Schools
Gar-Field High School
Unity Reed High School
Prerequisites
8th grade Pre-Algebra

Advanced Middle Years Programme Algebra 2

Adv-MYP Algebra 2 is the prerequisite for IB Math: Applications and Interpretations SL and IB Math: Analysis and Approaches 1 (SL). The course incorporates and expands the knowledge from both Adv-MYP Algebra and Adv-MYP Geometry. The course includes all objectives from the PWCS Algebra 2 curriculum with emphasis on and completion of projects and internationalism. A graphing calculator is used throughout the course. As in all courses, students will acquire technical writing skills within the mathematics curriculum. This course has an associated Standards of Learning (SOL) test. Students will participate in these tests only when they have not yet earned sufficient credit for graduation and/or satisfied federal testing requirements. Algebra 2 is required for Advanced Studies Diploma.

Credits 1
Grades
9, 10, 11
Course Designation
International Baccalaureate (IB),
Weighted (0.5W)
Schools
Gar-Field High School
Unity Reed High School
Prerequisites
Advanced Middle Years Programme Geometry

Advanced Middle Years Programme Algebra 2 - Extended

Advanced Middle Years Programme (Adv-MYP) Algebra 2 Extended is an accelerated course that integrates select Pre-Calculus concepts. Students are expected to master algebraic mechanics and understand the underlying theory and apply the concepts to real-world situations. Examples of extended topics include graphing, solving equation, and solving practical problems with exponential, logarithmic, and rational functions, composition and inverse functions application to practical situations, conic sections, and sum of finite convergent series. The study of the trigonometric circular functions will continue from Adv-MYP Geometry and prepare students for further study of this topic. This

course has an associated Standards of Learning (SOL) test. Students will participate in these tests only when they have not yet earned sufficient credit for graduation and/or satisfied federal testing requirements. Algebra 2 is required for the Advanced Studies Diploma. This course replaces Adv-MYP Algebra 2-Trigonometry (2020-21 and earlier).
Credits 1
Grades
10, 11
Course Designation
Weighted (0.5W),
International Baccalaureate (IB)
Schools
Gar-Field High School
Unity Reed High School
Requirements
Teacher recommendation
Prerequisites
Advanced Middle Years Programme Geometry

Advanced Middle Years Programme Geometry

Advanced Middle Years Programme Geometry is an accelerated program of study for students interested in pursuing the IB level math courses. The course includes all objectives from the PWCS Advanced Geometry curriculum with particular emphasis on Algebraic connections. Additional topics in trigonometry and transformational graphing are included. Graphing utilities are used throughout the course. This course has an associated Standards of Learning (SOL) test. Students will participate in these tests only when they have not yet earned sufficient credit for graduation and/or satisfied federal testing requirements.
Credits 1
Grades
9, 10
Course Designation
Weighted (0.5W),
International Baccalaureate (IB)
Schools
Gar-Field High School
Unity Reed High School
Prerequisites
Advanced Middle Years Programme Algebra 1, Advanced Algebra 1, *or* Algebra 1 (with teacher recommendation)

IB Math: Analysis and Approaches 1 (HL)

IB Math: Analysis and Approaches is the first year in a two-year course that has a substantial mathematical element and is designed for students interested in extending their developing of mathematical arguments, problem solving, and exploring real and abstract applications, with and without technology. This course includes the content from Mathematics Analysis SL with additional content and at a faster pace. Topics include number and Algebra from arithmetic sequences and series to solutions of systems of linear equations in three unknowns; functions including rational functions to the graphs of the absolute value of the full function; geometry and trigonometry from the distance of two points in three-dimensional space to vectors; statistics and probability from concepts of populations and samples to variance and probability densities, and calculus from the concepts of limits and derivatives to the Maclaurin series.
Credits 1
Grades
11
Course Designation
Higher Level (HL) ,
Weighted (1.0W),
International Baccalaureate (IB)
Schools
Gar-Field High School

Unity Reed High School
Requirements
Teacher recommendation
Prerequisites
Advanced Middle Years Programme Algebra 2 - Extended

IB Math: Analysis and Approaches 1 (SL)

IB Math: Analysis and Approaches 1 (SL) is the first year in a two-year mathematics course that fulfills the Group 5 requirement in the IB Diploma Programme. The course is designed for math students who are preparing for studies in subjects such as chemistry, economics, psychology and business administration. The goal is to provide students with a solid foundation in Pre-Calculus topics such as functions and trigonometry, further extend their studies in probability and statistics, and begin their studies in calculus by exploring derivatives and integrals. Students will use technology as a tool for learning and develop an awareness of global contributions to the field of mathematics sciences. Students wishing to study subjects such as physics, engineering and technology should take the Mathematics HL course.
Credits 1
Grades
10, 11
Course Designation
Standard Level (SL),
Weighted (1.0W),
International Baccalaureate (IB)
Schools
Gar-Field High School
Unity Reed High School
Prerequisites
Advanced Middle Years Programme Algebra 2 - Extended *or* Advanced Middle Years Programme Algebra 2 (with teacher recommendation)

IB Math: Analysis and Approaches 2 (HL)

IB Mathematics 2 HL is the second year of the two-year sequence in mathematics that meets the requirements of the IB Diploma Programme. This course builds on and extends the knowledge base of IB Mathematics 1 HL. IB Mathematics 2 HL is the study of concepts, techniques, and applications of differential and integral calculus, including Taylor series, the convergence or divergence of infinite series, and differential equations. Students in this course will complete one portfolio project and will take the Analysis & Approaches HL exams.
Credits 1
Grades
12
Course Designation
Higher Level (HL) ,
Weighted (1.0W),
International Baccalaureate (IB)
Schools
Gar-Field High School
Unity Reed High School
Requirements
Teacher recommendation
Prerequisites
IB Math: Analysis and Approaches 1 (HL)

IB Math: Analysis and Approaches 2 (SL)

This course is the second year of the two-year sequence that meets the requirements of the IB Diploma Programme. This course builds on and extends the knowledge base of IB Math: Analysis and Approaches 1 (SL) to include topics in calculus. Students in this course will complete a portfolio project (mathematics exploration) and take the Analysis & Approaches SL exams.

Credits 1
Grades
11, 12
Course Designation
Standard Level (SL),
Weighted (1.0W),
International Baccalaureate (IB)
Schools
Gar-Field High School
Unity Reed High School
Requirements
Teacher recommendation
Prerequisites
IB Math: Analysis and Approaches 1 (SL)

IB Math: Applications and Interpretations (SL)

This course is a one-year course designed for students with varied backgrounds and abilities who are interested in social sciences, humanities, certain economics, statistics and engineering courses, and the arts. The emphasis of this course is to make explicit the applications of the mathematics being taught using technology, solving practical problems and exploring mathematical models. Topics include: arithmetic sequences and series; logarithms and exponentials; functions; geometry and trigonometry; probability and statistics; and introduction to calculus. Students will complete a portfolio project (math exploration) and take the IB Math: Applications and Interpretations SL Exam.

Credits 1
Grades
12
Course Designation
Standard Level (SL),
Weighted (1.0W),
International Baccalaureate (IB)
Schools
Gar-Field High School
Unity Reed High School
Requirements
Teacher recommendation
Prerequisites
Advanced Middle Years Programme Algebra 2