

## **EXPLORATIONS IN MATHEMATICS**

Explorations in Math is an engaging and interactive mathematics course with group instruction and individualized targeted intervention strategies. This course is designed to have students master the prerequisite skills needed for success in their grade level math course as determined by frequent topic-specific assessments tied to the current units being taught in the regular class. This supplemental course is designed to have students master the skill progressions and conceptual understandings for success in their regular mathematics course.

### **ALGEBRA I**

The fundamental purpose of this course is to build upon the mathematics students learned in the middle grades. The critical areas, called units, deepen and extend understanding of linear and exponential relationships by contrasting them with each other and by applying linear models to data that exhibit a linear trend, and students engage in methods for analyzing, solving, and using quadratic functions.

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### **GEOMETRY**

The fundamental purpose of this course is to build upon the geometry students learned in the middle grades. Students will explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematic arguments. Transformations are emphasized early in this course. Close attention is made to the conceptual category in the high school Common Core State Standards in Mathematics (CCSS-M).

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### **ALGEBRA II**

Building on their work with linear, quadratic, and exponential functions, students extend their repertoire of functions to include polynomial, rational, and radical functions. Students work closely with the expressions that define the functions, and continue to expand and hone their abilities to model situations and to solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms.

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### **QUANTITATIVE REASONING**

Quantitative Reasoning (QR) is a course designed to create active problem solvers by showing students how math skills and concepts are used in real life. To be an effective adult, students must be able to read and use quantitative data, understand quantitative evidence, and apply basic quantitative skills to solve real world problems. Students will learn how to work with and understand numbers that are shown to them in many forms, including surveys, graphs, tables, and data displays. They will also apply mathematical reasoning and use mathematics to support their arguments and express their findings from research. Students will use what they learn in this class to strengthen the survey/math portion of their Senior Honors Project research and presentation. The course is student-centered and topics within units will vary based upon students' interest areas.

### **PRE-CALCULUS**

Pre-calculus promotes in-depth understanding of mathematical concepts necessary for AP Calculus or Calculus by reinforcing properties, algebra, graphs, language functions, analytic geometry, trigonometry, and polar equations.

### **CALCULUS**

Calculus introduces the notion of limit and how it is used to define the derivative and the integral. Students use the derivative and integral to solve problems of motion, area, and volume in 2- and 3-D space.