

Integrated Math 1 Course Overview

Integrated Mathematics 1 is the first course of a three course sequence including Integrated Mathematics 1, Integrated Mathematics 2, and Integrated Mathematics 3. IM 1 is designed to use patterns, models, and conjectures to build mathematical understanding. Students taking this course will extend their knowledge in Number and Quantity, Algebra, Functions, Modeling, Geometry, and Statistics and Probability. Students taking this course will use a variety of approaches to deepen their understanding, such as mathematical sense making, making and testing conjectures and justifying conclusions, using mathematical models to represent real-world data, providing clear and concise answers, and having computational and symbolic fluency.

Students will show their understanding using formative and summative assessments, including: homework assignments, work done in class, quizzes, and unit tests. Students will also be working collaboratively to deepen their understanding of mathematics.

Integrated Math 2 Course Overview:

Integrated Mathematics 2 is the second course of a three course sequence including Integrated Mathematics 1, Integrated Mathematics 2, and Integrated Mathematics 3. This course is aligned to the Common Core State Standards for high school mathematics and supports the Common Core Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of mathematical relationships and concepts they will need to succeed in school and in life. It aims to formalize and extend the geometry that students have learned in previous courses. It does this by focusing on establishing triangle congruence criteria using rigid motions and formal constructions and building a formal understanding of similarity based on dilations and proportional reasoning. It also helps students develop the concepts of formal proof, explore the properties of two- and three-dimensional objects, work within the rectangular coordinate system to verify geometric relationships and prove basic theorems about circles. Students also use the language of set theory to compute and interpret probabilities for compound events.

The key concepts students will be exposed to in this course include geometric transformations (reflection, rotation, translation, and dilation) and symmetry, relationships between figures (such as similarity and congruence) in terms of rigid motions and similarity transformations and properties of plane figures. Units on plane and solid figures include measurements of plane figures (such as area, perimeter, and angle measure), theorems about circles, including arc lengths and areas of sectors, and measurements of three-dimensional solids (such as volume and surface area). The students will learn trigonometric basics such as tools for analyzing and measuring right triangles, general triangles, and complex shapes (such as the Pythagorean Theorem, and trigonometric ratios). A unit on probability has topics including independence and conditional probability, compound events, expected value, and permutations and combinations. Algebra topics that will be expanded upon are as follows: Investigation of a variety of functions including square root, cube root, absolute value, piecewise-defined, step,

and simple inverse functions; representations of quadratic functions with a graphs, tables, equations, and contexts; symbolic manipulation of expressions in order to solve problems, such as factoring, distributing, multiplying polynomials, expanding exponential expressions, etc.; and using algebra to write and solve equations arising from geometric situations.

Pre-requisite: Algebra 1 or Integrated Mathematics I (Recommended)

Integrated Math 3 Course Overview

Integrated Math 3 is the third course of a three course sequence including Integrated Math 1, Integrated Math 2, and Integrated Math 3. This course aligned to the Common Core State standards for high school mathematics and supports the Common Core Standards for Mathematical Practice. With this course, students will develop a deep conceptual understanding of mathematical relationships and concepts they will need to succeed in school and in life.

This course will extend the student's understanding in coordinate geometry, circles and other conic sections, binomial distributions, permutations and combinations, exponential and logarithmic functions, rates of change, derivatives, trigonometry and quadratics. The course demands that students further develop the logic needed for abstract problem solving and emphasizes the common core standards.

- Students evaluate probability based on the standard deviation of normally distributed data, differentiate between various methods of collecting data and distinguish between population and sample statistical central tendencies.
- Students use the Fundamental Theorem of Algebra to predict solutions to polynomial functions, then make and analyze decisions including diagnostic tests and quality control.
- Students use their understanding of function families including transformations of quadratic, cubic, exponential, logarithmic and trigonometric functions and their inverses to model and solve contextual problems adjusting parameters as needed to improve the predictability of their model and critique the models of others.
- Students expand their understanding of triangles to include non-right triangles leading to the development of the Law of Sines and the Law of Cosines including being able to state the number of possible solutions.

Key components of our Mathematics course that will be emphasized will include:

- A balance of mathematical understanding and skill proficiency
- Problem solving that underscores logical thinking and effective strategies
- Communication and justification of ideas and logical arguments
- Mastery over time so students build broad understanding that deepens
- Multiple ways of seeing and thinking about math tasks
- Effective teamwork so that students practice talking and listening about mathematics

Assessment strategies and tools will include

- Individual Tests
- Team Tests

- Participant Quizzes
- Student Presentations
- Class Observations
- Portfolios

Prerequisites:

Integrated Math 2 (Required)