

Integrated Math 1, Part 2

Course Outline & Objectives

Course Description:

In Integrated Math 1, Part 2, students connect algebraic and geometric reasoning through the study of lines, systems, transformations, triangles, and data. They analyze parallel and perpendicular lines, solve systems of equations and inequalities, and use rigid motions and congruence theorems to investigate figures and triangles. Students explore triangle centers and inequalities before concluding with statistics and data analysis, including measures of center and spread, data displays, two-way tables, scatterplots, and linear models.

Credits - One Semester (0.5 Carnegie unit / CA: 5 credits) | Prerequisites: Integrated Math 1, Part 1

Course Outline

Unit 1: Parallel and Perpendicular Lines

- 1.1 Lines and Angles
- 1.2 Parallel Lines and Algebra
- 1.3 Proving Lines Parallel
- 1.4 Slope and Equations of Parallel Lines
- 1.5 Slope and Equations of Perpendicular Lines

Unit 2: Systems of Equations and Inequalities

- 2.1 Solving Systems by Graphing
- 2.2 Solving Systems Using Substitution
- 2.3 Solving Systems Using Elimination
- 2.4 Solving Special Systems
- 2.5 Applying Systems
- 2.6 Solving Systems of Linear Inequalities

Common Core Standards

In Unit 1, students will:

Identify and classify relationships between lines and angles, including parallel, perpendicular, and skew lines. Use transversals to recognize special angle pairs and apply angle theorems to solve problems. Prove lines are parallel using angle relationships and their converses. Apply the concept of slope to determine and write equations of parallel and perpendicular lines. Solve geometric problems using algebraic equations that represent relationships between angles and lines.
[G-CO.A.1, G-CO.C.9, G-GPE.B.5]

In Unit 2, students will:

Solve systems of linear equations using graphing, substitution, and elimination methods. Identify systems that have one solution, no solution, or infinitely many solutions. Apply systems of equations to solve real-world word problems involving two variables. Graph and interpret solutions to systems of linear inequalities. Analyze overlapping solution regions for systems of inequalities and determine feasible solutions.
[A-CED, A-REI]

Course Outline

Unit 3: Rigid Motion and Congruence

- 3.1 Classifying Triangles and Angles of Triangles
- 3.2 Rigid Transformations
- 3.3 Symmetry
- 3.4 Compositions of Transformations
- 3.5 Congruent Figures
- 3.6 Congruent Triangles (SSS, SAS)
- 3.7 Congruent Triangles (ASA, AAS)
- 3.8 HL and CPCTC
- 3.9 Isosceles and Equilateral Triangles

Unit 4: Relationships in Triangles

- 4.1 Midsegments of a Triangle
- 4.2 Perpendicular and Angle Bisectors
- 4.3 Medians and Altitudes of Triangles
- 4.4 Constructing Centers of Triangles
- 4.5 Indirect Proofs
- 4.6 Inequalities in One and Two Triangles

Unit 5: Statistics and Data Analysis

- 5.1 Quantitative and Qualitative Data
- 5.2 Measures of Center and Spread
- 5.3 Representing Univariate Data
- 5.4 Two-Way Frequency Tables
- 5.5 Scatterplots and Linear Relationships
- 5.6 Trend Lines and Interpreting Linear Models
- 5.7 Line of Best Fit and Evaluating Linear Models

Common Core Standards

In Unit 3, students will:

Classify triangles by sides and angles and apply the Triangle Sum and Exterior Angle Theorems. Describe and perform rigid transformations—translations, reflections, and rotations—on the coordinate plane. Identify line, point, and rotational symmetry and explore compositions of transformations. Prove figures and triangles congruent using SSS, SAS, ASA, AAS, HL, and CPCTC. Solve problems involving isosceles and equilateral triangles using triangle congruence and geometric reasoning.

[G-CO.A.2, G-CO.A.4, G-CO.A.5, G-CO.B.6, G-CO.B.7, G-CO.B.8, G-CO.C.10, G-SRT.B.5]

In Unit 4, students will:

Explore triangle centers by constructing and analyzing midsegments, angle bisectors, perpendicular bisectors, medians, and altitudes. Identify and apply properties of points of concurrency: circumcenter, incenter, centroid, and orthocenter. Solve problems using triangle inequality theorems, including the Triangle Inequality and Hinge Theorems. Use indirect reasoning to prove geometric conjectures. Apply triangle relationships to classify sides and angles and solve problems involving triangles.

[G-CO.C.9, G-CO.C.10, G-SRT.B.5]

In Unit 5 students will:

Classify data as quantitative or qualitative, and understand concepts like sample, population, and types of variables. Calculate and interpret measures of center and spread, including mean, median, mode, range, IQR, and standard deviation. Represent and analyze univariate data using visual tools such as dot plots, box plots, histograms, bar graphs, and pie charts. Create and interpret two-way frequency tables and calculate joint, marginal, and conditional relative frequencies. Analyze scatterplots, fit and interpret linear models, assess model accuracy using residuals, and distinguish between correlation and causation.

[S-ID]