Integrated Mathematics I / Part A

COURSE DESCRIPTION: This first-year high school integrated math course focuses on linear and simple exponential models. The course contrasts linear behavior with exponential behavior, and it uses both linear and simple exponential equations as models. Students learn about and work extensively with functions—analyzing function properties and behavior, creating new functions from known functions, and applying functions to various continuous and discrete situations. The statistics in the course focus on modeling. Topics in geometry include constructions, transformations, similarity, and congruence, and students use the Pythagorean theorem in analytic geometry contexts.

PREREQUISITES: Pre-Algebra (or equivalent)

COURSE LENGTH: One Semester

REQUIRED TEXT: Integrated Mathematics I: Reference Guide and Problem Sets

MATERIALS LIST: None

COURSE OUTLINE:

Unit 1: Expressions and Problem Solving

- Semester 1 Introduction
- Foundations for Unit 1
- Expressions
- Variables
- Translating Words into Variable Expressions
- Equations
- Translating Words into Equations
- Problem Solving
- Dimensional Analysis
- Precision and Accuracy
- Core Focus: Structure and Meaning
- Unit Review
- Unit Test

Unit 2: Solving Linear Equations and Inequalities

- Foundations for Unit 2
- Addition and Subtraction Equations
- Multiplication and Division Equations 1
- Multiplication and Division Equations 2
- Multiple Transformations
- Variables on Both Sides of an Equation
- Discuss: Linear Equations
- Transforming Formulas
- Inequalities
- Solving Inequalities
- Applications of Inequalities
- Core Focus: Reasoning
- Unit Review
- Unit Test

Unit 3: Linear Equations and Inequalities
- Foundations for Unit 3
- Graphs of Lines
- Forms of Linear Equations
- Writing Equations of Lines
- Applications: Linear Equations
- Graphing Linear Inequalities
- Systems of Linear Inequalities
- Constraints
- Core Focus: Linear Modeling
- Unit Review
- Unit Test

Unit 4: Introduction to Functions
- Foundations for Unit 4
- Relations
- Functions
- Function Equations 1
- Function Equations 2

- Linear Functions
- Intercepts
- Average Rate of Change
- Core Focus: Thinking About Domain and Range
- Unit Review
- Unit Test

Unit 5: Exponential Equations and Functions

- Foundations for Unit 5
- Properties of Exponents
- Exponential Expressions and Equations
- Exponential Expressions and Equations
- Graphing Exponential Functions
- Applications: Growth and Decay
- Features of Exponential Functions
- Core Focus: Multiple Representations
- Unit Review
- Unit Test

Unit 6: Sequences and Modeling with Functions

- Foundations for Unit 6
- Sequences and Patterns
- Arithmetic Sequences
- Geometric Sequences
- Applications: Sequences
- Function Parameters
- Combining Functions
- Core Focus: Comparing Models
- Unit Review
- Unit Test

Unit 7: Semester Review and Test

- Semester Review
- Semester Test

Integrated Mathematics I / Part B

COURSE DESCRIPTION: This first-year high school integrated math course focuses on linear and simple exponential models. The course contrasts linear behavior with exponential behavior, and it uses both linear and simple exponential equations as models. Students learn about and work extensively with functions—analyzing function properties and behavior, creating new functions from known functions, and applying functions to various continuous and discrete situations. The statistics in the course focus on modeling. Topics in geometry include constructions, transformations, similarity, and congruence, and students use the Pythagorean theorem in analytic geometry contexts.

PREREQUISITES: Pre-Algebra (or equivalent)

COURSE LENGTH: One Semester

REQUIRED TEXT: Integrated Mathematics I: Reference Guide and Problem Sets

MATERIALS LIST: None

COURSE OUTLINE:

Unit 1: Systems of Equations

- Semester 2 Introduction
- Foundations for Unit 1
- Systems of Equations
- Approximating Solutions with Graphs
- Substitution Method
- Linear Combination
- Linear Combination with Multiplication
- Applications: Systems of Linear Equations
- Core Focus: Justifying Linear Combination
- Unit Review
- Unit Test

Unit 2: Describing Data

- Foundations for Unit 2
- Measures of Center

- Variability
- Graphs of Univariate Data
- Selecting Measures of Center
- Frequency Distributions
- Discuss: Comparing Data Sets
- Core Focus: Outliers
- Unit Review
- Unit Test

Unit 3: Linear Models for Data
- Foundations for Unit 3
- Two-Way Tables
- Scatterplots
- Association
- The Correlation Coefficient
- Fitting a Line to Data
- Least Squares Regression
- Core Focus: Parameters and Residuals
- Unit Review
- Unit Test

Unit 4: Transformations
- Foundations for Unit 4
- Basic Geometric Terms and Definitions 1
- Basic Geometric Terms and Definitions 2
- Measuring Length
- Measuring Angles
- Transformations 1
- Transformations 2
- Discuss: Transformations
- Using Algebra to Describe Geometry 1
- Using Algebra to Describe Geometry 2
- Polygons and Symmetry 1
- Polygons and Symmetry 2

- Core Focus: Looking at Transformations
- Unit Review
- Unit Test

Unit 5: Congruence and Constructions

- Foundations for Unit 5
- Congruent Polygons and Their Corresponding Parts 1
- Congruent Polygons and Their Corresponding Parts 2
- Triangle Congruence: SSS, SAS, and ASA 1
- Triangle Congruence: SSS, SAS, and ASA 2
- Bisectors and Line Relationships 1
- Bisectors and Line Relationships 2
- Constructions with Polygons 1
- Constructions with Polygons 2
- Core Focus: Congruence and Rigid Motions
- Unit Review
- Unit Test

Unit 6: Analytic Geometry

- Foundations for Unit 6
- Using the Distance Formula
- Computing Area with Coordinates
- Discuss: Applications of Coordinates
- Your Choice
- Proofs and Coordinate Geometry 1
- Proofs and Coordinate Geometry 2
- Your Choice
- Slope 1
- Slope 2
- Core Focus: Coordinate Proofs
- Unit Review
- Unit Test

Unit 7: Projects

- Project Day 1
- Project Day 2
- Project Day 3
- Project Day 4
- Project Day 5

Unit 8: Semester Review and Test
- Semester Review
- Semester Test