Grade 9-12

Semi-Private Class and Open Lecture

Course Syllabus

August 2020

Part 1 Semi-Private Class Syllabus

Semi-private (SP) tutorials provide students a comprehensive review of curriculum math and enhancement. The course manual includes both standard-level exercises and advanced-level questions. The class size for each SP tutorial is between 1 to 4 students.

The course manual will be distributed by email one week before the tutorial. Students need to work on the problem sheet (or pre-read the exercise if you find them challenging) before each class. The course-manual material comes from various resources, including IXL, Jump Math, Singapore math, IB curriculum, Waterloo CEMC courseware, sample contests, etc.

Following gives a brief course syllabus of semi-private tutorials for Grade 9-12. Remark: topics are subject to adjustment to meet students' level.

3 rules for the semi-private online class:

- o   Rule 1: Accept the class invitation if you plan to participate.
- o   Rule 2: Pre-read and prepare the course manual carefully before the class.
- o   Rule 3: Do the homework! Send me your questions online
  https://sallybanana.com/banana-math

Grade 9 Semi-Private Course Syllabus

Section 1	Rational Numbers
Section 2	Powers, Exponents, and Square Roots
Section 3	Similar Polygons
Section 4	Measurement
Section 5	Linear Relations, Equations, and Inequalities
Section 6	Polynomials
Section 7	Probability
Section 8	Symmetry
Section 9	Circle Geometry
Section 10	Data Collection and Analysis

Grade 10 Semi-Private Course Syllabus

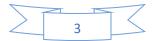| Section 1	Systems of Linear Equations
Section 2	Analytic Geometry: Line Segments and Circles
Section 3	Graphs of Quadratic Relations
Section 4	Factoring Algebraic Expressions
Section 5	Applying Quadratic Models
Section 6	Quadratic Models
Section 7	Similar Triangles and Trigonometry
Section 8	Acute Triangle Trigonometry

Grade 11 Semi-Private Course Syllabus

Section 1	Introduction to Functions
Section 2	Equivalent Algebraic Expressions
Section 3	Quadratic Functions
Section 4	Exponential Functions
Section 5	Trigonometric Ratios
Section 6	Sinusoidal Functions
Section 7	Discrete Functions
Section 8	Financial Applications

Milestone review (Grade 9-11)

By the end of the class, students should be able to have the following skill set.

- Exponent laws
- Manipulating expressions
- Polynomials
- Radical and rational expressions
- Investigating prime factorization
- Linear and non-linear relations
- Solving linear equations and linear systems
- Analytic geometry and statistics

- Pythagorean theorem
- Measurement of 2D figures and 3D solids
- Optimization
- Geometric relationships
- Triangle trigonometry
- Angles in standard position
- Algebra of quadratic relations
- Quadratic equations
- Intersections of lines and parabolas
- Inverse of functions
- Arithmetic and geometric sequences
- Financial applications including simple interest
- Compounding interest and annuities
- Exponential and sinusoidal functions

Grade 12 Semi-Private Course Syllabus

Part 1	Advanced Functions and Pre-Calculus
Part 2	Calculus and Vectors
Part 3	Problem Solving and Mathematical Discovery

Part 2 Open Lecture Course Syllabus

Open Lectures (OL) provide students short-term, seasonal and topic-based online tutorials. Course manual of open lectures covers both curriculum level and contest level exercises but is more focusing on a particular math topic. For instance, a review of probability, a recap of algebra, etc.

The course manual will be distributed by email one week before the tutorial. Students need to work on the problem sheet (or pre-read the exercise if you find them challenging) before each class. The course-manual material comes from various resources, including IXL, Jump Math, Singapore math, IB curriculum, Waterloo CEMC courseware, sample contests, etc.

Following gives a list of topics that will be distributed in the upcoming open lectures. Remark: topics are subject to adjustment to meet students' needs.

3 rules for the Open Lecture online class:

- o Rule 1: Accept the class invitation if you plan to participate.
- o Rule 2: Pre-read and prepare the course manual carefully before the class.

- o Rule 3: Do the homework! Send me your questions online
  https://sallybanana.com/banana-math