SING YIN SECONDARY SCHOOL
Syllabus for F.5 Mathematics (2016-2017)
(Challenging Class)

Textbook : New Horizon Senior Mathematics Compulsory Part – 4B, 5A, 5B & 6
Kwun Chun Kit, Suen Suk Nam   Hong Kong Educational Publishing
Company

Students are expected to develop the following attitudes:
- to love logical thinking
- to accept careful work as important
- to accept challenging work.

Chapter	Topics	Approx. No. of Period	Objectives
11	Variations	12	• To understand direct and inverse variations and their applications to real-life problems • To understand the graphs of direct and inverse variations • To understand joint and partial variations and their applications to real-life problems
12	More about Quadratic Equations	6	• To formulate and solve equations which can be transformed into quadratic equations • To solve practical problems leading to quadratic equations
13	Simultaneous Equations	7	• To solve simultaneous equations in two unknowns (one linear and one quadratic) by the graphical method • To solve simultaneous equations in two unknowns (one linear and one quadratic) by the algebraic method • To solve practical problems leading to simultaneous equations
16	Inequalities	11	• To solve compound linear inequalities in one unknown • To solve quadratic inequalities in one unknown by the graphical method • To solve quadratic inequalities in one unknown by the algebraic method
17	More about Graphs of Functions	14	• To solve the equation $f(x) = k$ by using the graph of $y = f(x)$ • To solve the inequalities $f(x) > k$, $f(x) < k$, $f(x) \geq k$ and $f(x) \leq k$ by using the graph of $y = f(x)$ • To understand the transformations of a function
18	Permutation and Combination	14	• To understand the addition rule and multiplication rule in the counting principle • To understand the concept and notation of permutation • To solve problems on the permutation of distinct objects without repetition • To understand the concept and notation of combination • To solve problems on the combination of distinct objects without repetition • To apply binomial expansion to solve combination problems

19	More about Probability	13	• To recognize the notation of set language including union, intersection and complement • To understand the addition law of probability and the concepts of mutually exclusive events and complementary events • To recognize the concept and notation of conditional probability • To understand the multiplication law of probability and the concept of independent events • To use permutation and combination to solve problems relating to probability
20	Arithmetic and Geometric Sequences	6	• To understand the concepts and the properties of arithmetic sequences • To understand the concepts and the properties of geometric sequences • To solve real-life problems relating to sequences
21	Summation of Arithmetic and Geometric Sequences	10	• To understand the formulas of the sum of a finite number of terms of an arithmetic sequence and a geometric sequence • To find the sum to infinity for certain geometric sequences • To solve real-life problems relating to the summation formulas
22	Measures of Dispersion	8	• To understand the concepts of dispersion, range and the inter-quartile range • To construct and interpret box-and-whisker diagrams and use them to compare the distributions of different sets of data • To understand the concept of standard deviation for both grouped and ungrouped data sets • To compare the dispersions of different sets of data using appropriate measures • To understand the applications of standard deviation to real-life problems • To explore the effects of the changes in data on dispersion
23	Circles and Locus	18	• To understand the equation of a circle • To find the number and coordinates of the points of intersection of a straight line and a circle • To find the equations of tangents to a circle • To understand the concept of loci • To describe and sketch the locus of points satisfying given conditions • To describe the locus of points with algebraic equations • To find the equations of the common tangents at the touching point at which the two circles touch each other

24	Applications of Trigonometry	10	• To apply trigonometric formulas in solving two-dimensional problems • To explore the angle between two straight lines, the angle between a straight line and a plane, the angle between two planes • To explore the distance between a point and a line, and the distance between a point and a plane in three-dimensional geometry • To apply trigonometric formulas in solving three-dimensional problems
25	Linear Programming	6	• To represent the graphs of linear inequalities in two unknowns on a plane • To solve systems of linear inequalities in two unknowns • To optimize a function in two variables under constraints • To solve real life linear programming problems
26	Uses and Abuses of Statistics	4	• To understand the concepts of population and sample • To recognize different techniques in survey sampling and the basic principles of questionnaire design • To discuss and recognize the uses and abuses of statistical methods in various daily-life activities or investigations • To assess statistical investigations presented in different sources such as news media, research reports, etc.

Note: Contents in the shaded boxes are not included in the syllabus.

- END -

Signature of Teacher In Charge : _____

Checked by : _____