

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

Textbook : New Horizon Senior Mathematics Compulsory Part – 4B, 5A, 5B & 6

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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	<ul style="list-style-type: none"> <li>• To understand direct and inverse variations and their applications to real-life problems</li> <li>• To understand the graphs of direct and inverse variations</li> <li>• To understand joint and partial variations and their applications to real-life problems</li> </ul>
12	More about Quadratic Equations	6	<ul style="list-style-type: none"> <li>• To formulate and solve equations which can be transformed into quadratic equations</li> <li>• To solve practical problems leading to quadratic equations</li> </ul>
13	Simultaneous Equations	7	<ul style="list-style-type: none"> <li>• To solve simultaneous equations in two unknowns (one linear and one quadratic) by the graphical method</li> <li>• To solve simultaneous equations in two unknowns (one linear and one quadratic) by the algebraic method</li> <li>• To solve practical problems leading to simultaneous equations</li> </ul>
16	Inequalities	11	<ul style="list-style-type: none"> <li>• To solve compound linear inequalities in one unknown</li> <li>• To solve quadratic inequalities in one unknown by the graphical method</li> <li>• To solve quadratic inequalities in one unknown by the algebraic method</li> </ul>
17	More about Graphs of Functions	14	<ul style="list-style-type: none"> <li>• To solve the equation <math>f(x) = k</math> by using the graph of <math>y = f(x)</math></li> <li>• To solve the inequalities <math>f(x) &gt; k</math>, <math>f(x) &lt; k</math>, <math>f(x) \geq k</math> and <math>f(x) \leq k</math> by using the graph of <math>y = f(x)</math></li> <li>• To understand the transformations of a function</li> </ul>
18	Permutation and Combination	14	<ul style="list-style-type: none"> <li>• To understand the addition rule and multiplication rule in the counting principle</li> <li>• To understand the concept and notation of permutation</li> <li>• To solve problems on the permutation of distinct objects without repetition</li> <li>• To understand the concept and notation of combination</li> <li>• To solve problems on the combination of distinct objects without repetition</li> </ul>

19	More about Probability	13	<ul style="list-style-type: none"> <li>To recognize the notation of set language including union, intersection and complement</li> <li>To understand the addition law of probability and the concepts of mutually exclusive events and complementary events</li> <li>To recognize the concept and notation of conditional probability</li> <li>To understand the multiplication law of probability and the concept of independent events</li> <li>To use permutation and combination to solve problems relating to probability</li> </ul>
20	Arithmetic and Geometric Sequences	6	<ul style="list-style-type: none"> <li>To understand the concepts and the properties of arithmetic sequences</li> <li>To understand the concepts and the properties of geometric sequences</li> <li>To solve real-life problems relating to sequences</li> </ul>
21	Summation of Arithmetic and Geometric Sequences	10	<ul style="list-style-type: none"> <li>To understand the formulas of the sum of a finite number of terms of an arithmetic sequence and a geometric sequence</li> <li>To find the sum to infinity for certain geometric sequences</li> <li>To solve real-life problems relating to the summation formulas</li> </ul>
22	Measures of Dispersion	8	<ul style="list-style-type: none"> <li>To understand the concepts of dispersion, range and the inter-quartile range</li> <li>To construct and interpret box-and-whisker diagrams and use them to compare the distributions of different sets of data</li> <li>To understand the concept of standard deviation for both grouped and ungrouped data sets</li> <li>To compare the dispersions of different sets of data using appropriate measures</li> <li>To understand the applications of standard deviation to real-life problems</li> <li>To explore the effects of the changes in data on dispersion</li> </ul>
23	Circles and Locus	18	<ul style="list-style-type: none"> <li>To understand the equation of a circle</li> <li>To find the number and coordinates of the points of intersection of a straight line and a circle</li> <li>To find the equations of tangents to a circle</li> <li>To understand the concept of loci</li> <li>To describe and sketch the locus of points satisfying given conditions</li> <li>To describe the locus of points with algebraic equations</li> </ul>

24	Applications of Trigonometry	10	<ul style="list-style-type: none"> <li>• To apply trigonometric formulas in solving two-dimensional problems</li> <li>• To explore the angle between two straight lines, the angle between a straight line and a plane, the angle between two planes</li> <li>• To explore the distance between a point and a line, and the distance between a point and a plane in three-dimensional geometry</li> <li>• To apply trigonometric formulas in solving three-dimensional problems</li> </ul>
25	Linear Programming	6	<ul style="list-style-type: none"> <li>• To represent the graphs of linear inequalities in two unknowns on a plane</li> <li>• To solve systems of linear inequalities in two unknowns</li> <li>• To optimize a function in two variables under constraints</li> <li>• To solve real life linear programming problems</li> </ul>
26	Uses and Abuses of Statistics	4	<ul style="list-style-type: none"> <li>• To understand the concepts of population and sample</li> <li>• To recognize different techniques in survey sampling and the basic principles of questionnaire design</li> <li>• To discuss and recognize the uses and abuses of statistical methods in various daily-life activities or investigations</li> <li>• To assess statistical investigations presented in different sources such as news media, research reports, etc.</li> </ul>

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

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Signature of Teacher In Charge : \_\_\_\_\_

Checked by : \_\_\_\_\_