SING YIN SECONDARY SCHOOL
SYLLABUS FOR MATHEMATICS (16-17)

FORM TWO

Textbook : New Progress in Junior Mathematics (2nd Edition) 2A & 2B
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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
1	Manipulations and Factorization of Polynomials	16	• Recognize polynomial is a special example of algebraic expressions • Recognize the meaning of the terminology related to polynomial • Add, subtract and multiply polynomials involving more than one variable • Understand factorization as a reverse process of expansion • Develop an intuitive idea of factorization of polynomials • Factorize polynomials by using common factors and grouping terms
2	Identities and Factorization	8	• Explore the meaning of identities and distinguish between equations and identities • Discover the identities: difference of two squares, the perfect square expression, and use them for manipulation and factorization of polynomials
3	Formulas	12	• Investigate, appreciate and observe the patterns of various number sequences such as polygonal numbers, arithmetic and geometric sequences, Fibonacci sequence • Use algebraic symbols to represent the number patterns • Obtain a preliminary idea of function such as input-processing-output concept • Manipulate algebraic fractions with linear factors as denominators • Explore familiar formulas and substitute values of formulas • Perform change of subject in simple formulas

4	Laws of Integral Indices	10	• Extend and explore the meaning of negative indices • Explore, understand and use the laws of integral indices to simplify simple algebraic expressions • Understand and compare numbers expressed in various bases in real-life situations • Recognize the place values in different numeral systems • Inter-convert between simple binary/hexadecimal numbers to decimal numbers
5	Approximation and Errors	6	• Learn the concepts and skills of rounding off numbers to a required number of significant figures • Understand the meaning of scientific notation • Use scientific notation in practical problems • Be aware of the size of errors during estimation and approximation • Understand and calculate absolute errors, relative errors and percentage errors
6	More about Statistical Diagrams and Graphs	18	• Construct and interpret histograms, frequency polygons and curves, cumulative frequency polygon and curves • Be able to differentiate between histograms and bar charts • Read data from given frequencies in graphs (including percentiles, quartiles, median) • Identify sources of deception in misleading graphs and their accompanying statements • Recognize the dangers of misinterpreting data
7	Linear Equations in Two Unknowns	16	• Plot and explore the graphs of linear equations in 2 unknowns • Formulate and solve simultaneous equations by algebraic and graphical methods • Recognize the approximate nature of the graphical method
			• Differentiate the cases in solving the equation $ax = b$ for $(a, b) = (0, 0), (0, r), (r, 0)$ and (r_1, r_2) • Extend the above concepts in solving simultaneous equations to draw appropriate conclusion: unique solution, infinitely many solutions and no solution
8	Angles in Rectilinear Figures	12	• Explore and use the properties of lines and angles of triangles • Explore and use the formulas for the angle sum of the interior angles and exterior angles of polygons • Explore regular polygons that tessellate • Appreciate the past attempts in constructing some special regular polygons with minimal tools at hand • Construct some special regular polygons using straight edges and compasses

9	Deductive Geometry	9	• Develop a deductive approach to study geometric properties through studying the story of Euclid and his book – *Elements* • Develop an intuitive idea of deductive reasoning by presenting simple proofs of geometric problems relating with angles and lines • Understand and use the conditions for congruent and similar triangles to perform simple proofs
10	Square Roots and Pythagoras' Theorem	11	• Recognize the existence of irrational numbers and surds • Recognize and appreciate different proofs of Pythagoras' theorem • Use Pythagoras' theorem and its converse to solve problems • Explore the representations of irrational numbers in the number line • Appreciate the dynamic element of mathematics knowledge through studying the story of the first crisis of mathematics • Manipulate commonly encountered surds including the rationalization of the denominator in the form of $\sqrt{a}$ • Appreciate the expressions of surds could be expressed in a more concise form • Learn how to rationalize the denominators of the forms $\left(\sqrt{a}+\sqrt{b}\right)$
11	Trigonometric Ratios	20	• Understand the sine, cosine and tangent ratios for angles between 0° to 90° • Apply trigonometric ratios to find measures of 2-D figures • Explore the exact value of trigonometric ratios on special angles 30°, 45° and 60° • Explore the properties and relations of trigonometric ratios • To study the proof of $\sin^2\theta + \cos^2\theta = 1$.
12	Area and Volume (II)	13	• Explore the formula for the area of a circle • Calculate circumferences and areas of circles • Calculate arc lengths and areas of sectors • Understand and use the formulas for surface areas and volumes of cylinders

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

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Signature of Teacher In Charge : _____

Checked by : _____