KOTHARI INTERNATIONAL SCHOOL, NOIDA
Annual Syllabus (2023–24)
Cambridge Lower Secondary
Stage-9 IGCSE
Subject – Mathematics

S.NO.	MONTHS	TOPICS	LEARNING OBJECTIVES
1.	April	**Ch-1: Review of number concepts** 1.1 Different types of numbers 1.2 Multiples and factors 1.3 Prime numbers 1.4 Working with directed numbers 1.5 Powers, roots and laws of indices 1.6 Order of operations 1.7 Rounding and estimating **Ch-2: Making sense of algebra** 2.1 Using letters to represent unknown values 2.2 Substitution 2.3 Simplifying expressions 2.4 Working with brackets 2.5 Indices	Students should be able to • Identify and classify different types of Numbers. • Find common factors and common multiples of Numbers. • Write numbers as products of their prime factors. • Calculate squares, square roots, cubes and cube roots of numbers. • Work with integers used in real life situations. • Perform basic calculations using mental methods and with a calculator. Students should be able to • Use letters to represent numbers. • Write expressions to represent mathematical information. • Substitute letters with numbers to find the value of an expression. • Add & subtract like terms to simplify expressions. • Multiply and divide to simplify expressions. • Apply the laws of indices to simplify expressions.

2.	May	**Ch-3: Lines, angles and shapes**	Students will be able to
		3.1 Lines and angles	• Talk about points, Lines, Angles and shapes.
		3.2 Triangles	• Classify measure & Construct Angles.
		3.3 Quadrilaterals	• Calculate unknown angles using angle relationships & properties of Different kind of polygons.
		3.4 Polygons	
		3.5 Circles	• Calculate unknown angles in irregular Polygons.
		3.6 Construction	
		Ch-4: Collecting, organising and displaying data	Students will be able to
		4.1 Collecting and classifying data	• Collect data and classify different types of Data.
		4.2 Organising data	• Organise data Using tally tables, frequency tables, stem and leaf diagrams and two- way tables.
		4.3 Using charts to display data	• Draw pictograms, Bar graphs, and pie charts to display data and answer questions about it.
3.	July	**Ch-5: Fractions, percentages and standard form**	Students should be able to
		5.1 Revisiting fractions	• Find equivalent fractions, simplifying fractions.
		5.2 Operations on fractions	• Add, subtract, multiply and divide fractions and mixed numbers.
		5.3 Percentages	
		5.4 Standard form	
		Ch-6: Equations, factors and formulae	Students will be able to
		6.1 Solving equations	• Expand brackets that have been multiplied by a negative number and solve a linear equation.
		6.2 Factorising algebraic expressions	• Factorise an algebraic expressions where all terms have common factors and to rearrange a formula to change the subject.
		6.3 Rearranging formula	

4.	August	**Ch-7: Perimeter, area and volume** 7.1 Perimeter and area in two dimensions 7.2 Three-dimensional objects 7.3 Surface areas and volumes of solids	Students will be able to • Find out the area and perimeters of 2-d shapes. • Find perimeter and areas of compound shapes, areas and circumference of circle and its parts. • Find volume and surface area of solids like pyramids, cones and spheres.
		Ch-8: Introduction to probability 8.1 Understanding basic probability 8.2 Sample space diagrams 8.3 Combining independent and mutually exclusive events	Students should be able to • Calculate probabilities associated with simple experiments and probability of combined events with the help of possibility diagrams. • Identify when events are independent or mutually exclusive.
5.	September	**MID-TERM ASSESSMENT**	
6.	October	**Ch-9: Sequences, surds and sets** 9.1 Sequences 9.2 Rational and irrational numbers 9.3 Surds 9.4 Sets	Students will be able to • Describe the rule for continuing a sequence and find the n terms of some sequences and describe sequences from patterns of shapes. • List the elements of a set that have been described by a rule. • Find unions and intersections of sets, complement of sets, represent sets and solve problems using Venn diagrams and express recurring decimals as fractions.

		Ch-10: Straight lines and quadratic equations	Students will be able to
		10.1 Straight line graphs	• Construct a table of values and plot points to draw graphs.
		10.2 Quadratic expressions and equations	• Find gradient of a straight line and determine the equation of a line.
			• Determine the equation of a line parallel to a given line .
			• Calculate the gradient of a line using coordinates of points on the line and find the gradient of parallel and perpendicular lines.
			• Find the length of a segment and the coordinates of its midpoint and factorise quadratic equations.
		Ch-11: Pythagoras' theorem and similar shapes	Students will learn to use
		11.1 Pythagoras' theorem	• Pythagoras theorem to find unknown sides of a right-angled triangles and to use theorem to solve the problems.
		11.2 Understanding similar triangles	• To use properties of similar triangles to solve problems and find unknown lengths in similar figures.
		11.3 Understanding similar shapes	
		11.4 Understanding congruence	• Use the relationship between sides and areas of similar figures to find missing values and recognise similar solids.
			• Calculate the volume and surface area of similar solids and to use the basic conditions for congruency in triangles.
7.	November	**Ch-12: Averages and measures of spread**	Students should be able to
		12.1 Different types of averages	• Calculate the mean, median and mode of sets of data and to interpret the range as a measure of spread.
		12.2 Making comparisons using averages and ranges	• Construct and use frequency distribution tables for grouped data.
		12.3 Calculating averages and ranges for frequency data	

		12.4 Estimating the mean and finding the modal class for grouped data 12.5 Quartiles	• Identify the class that contains the median of grouped data. • Divide data into quartiles and calculate the interquartile range. • Construct and interpret box and whisker plots.
		Ch-13: Understanding measurement 13.1 Understanding units 13.2 Time 13.3 Limits of accuracy – upper and lower bounds 13.4 Conversion graphs 13.5 Exchanging currencies	Students will be able to • Find lower and upper bounds of numbers that have been quoted to a given accuracy • Use conversion graphs to change units from one measuring system to another. • Use exchange rates to convert currencies. • Use conversion graphs to change units from one measuring system to another.
8.	December	**Ch-14: Further solving of equations and inequalities** 14.1 Simultaneous linear equations 14.2 Linear inequalities 14.3 Regions in a plane 14.4 Completing the square 14.5 Quadratic formula 14.6 Factorising quadratics where the coefficient of x^2 is not 1 14.7 Algebraic fractions	Students should be able to • Derive and solve simultaneous linear equations graphically and algebraically • Solve linear inequalities and find regions in a plane. • Solve quadratic equations by using the quadratic formulas • Factorise quadratics and simplify algebraic fractions.

		Ch-15: Scale drawings, bearings and trigonometry 15.1 Scale drawings 15.2 Bearings 15.3 Understanding the tangent, cosine and sine ratios 15.4 Exact trigonometric ratios 15.5 Solving problems using trigonometry 15.6 Sines, cosines and tangents of angles greater than 90° 15.7 The sine and cosine rules 15.8 Area of a triangle 15.9 Trigonometry in three dimensions	Student will be able to • Make scale drawings, interpret scale drawings, calculate bearings , calculate sine, cosine and tangent ratios for right angled triangles. • Calculate the length of sides and angles of right angled triangles. • Solve trigonometric equations finding all the solutions between o to 360 degrees. • Calculate the area of a triangle that is not right angled using the sine ratio. • Use all three ratios together with Pythagoras theorem in three dimensions.
9.	January	**Ch-16: Scatter diagrams and correlation** 16.1 Introduction to bivariate data	Student should be able to • Draw a scatter diagram for bivariate data. • Identify whether or not there is a positive or negative correlation between the two variables. • Decide whether or not a correlation is strong or weak. • Draw a line of best fit. • Use a line of best fit to make predictions and to decide how reliable the predictions are.
10.	February	**REVISION FOR TERM END EXAM**	
11.	February & March	**TERM END EXAM**	