Annual Plan for 10th Standard – NIOS Mathematics (2018-19)

The Annual plan for this year will be dictated by the NIOS board schedule and requirements.

Topic	Objectives	Month
Common Objectives	• Identify common real-world use-cases to understand the application of topics covered • Understand the language of mathematics as a means to succinctly express multiple, often complex, situations	June - March
Exam Practice	The children will be given practice to hone their exam-writing skills through the year, through various tests and examinations, using previous NIOS papers as reference material	June - March
Tutor Marked Assignments (TMA)	• Briefly review the topics required to complete the TMA questions • Complete the TMA in time for the NIOS submission deadline	June (timing will change depending on NIOS submission deadline)
Practicals	• Review relevant practical activities as the topic is covered • Complete record work and get work corrected periodically	June – October Revisit in February

Chapter-8 Percentage and its Applications	• Revisit fraction arithmetic and decimal arithmetic
	• Understand the following concepts and their application in real-life:
	  ○ Percentage
	  ○ Profit and Loss
	  ○ Discount
	  ○ Loans, Simple Interest and Compound Interest
	  ○ Growth and depreciation
	• Read, decode and solve problems in the above topics
		June

Chapter-20 Perimeters and Areas of Plane Figures	• Review perimeter and area formulae for various rectilinear and curved figures • Understand Heron's formula and how to use it to calculate the area of a triangle	June

	• Calculate the area and perimeter for compound shapes	
Chapter-2 Radicals	• Revisit irrational numbers and laws of exponents • Identify and simplify radicals (surds) to their simplest form • Perform arithmetic operations on surds • Rationalise surds	July
Chapter-25 Measures of Central Tendency	• Review averages (mean, median, mode) and range for ungrouped data • Calculate averages (mean, median, mode) and range for grouped data	July
Chapter-4 Special Products and Factorization	• Revisit factorisation of quadratic and cubic polynomials • Calculate the HCF and LCM of polynomials • Perform arithmetic operations on Rational Expressions	July, August
Chapter-6 Quadratic Equations	• Express a quadratic equation in its standard form • Solve a quadratic equation by factorisation • Solve a quadratic equation using the quadratic formula	August
Chapter-15 Circles Chapter-16 Angles in a Circle and Cyclic Quadrilateral	• Understand terms and definitions related to circles, angles in a circle and cyclic quadrilaterals • Understand and apply the properties related to circles, angles in a circle and cyclic quadrilaterals to solve for missing angles	August
Chapter-7 Arithmetic Progressions	• Identify arithmetic progression in number patterns • Find the *n*th term in an arithmetic progression • Find the sum of the first *n* terms in an arithmetic progression	September
Chapter-17 Secants, Tangents and their properties	• Understand definitions of chord, tangent and secant to a circle • Prove important properties of tangents and secants to a circle • Define and use the properties of tangents and secants to a circle to find missing angles and sides	September

Chapter-22 Introduction to Trigonometry	• Understand the uses of Trigonometry in real-world scenarios • Define and use trigonometric ratios to find missing sides of a right-angled triangle • Understand the relationship between various trigonometric ratios • Define and use trigonometric identities to simplify trigonometric expressions • Use trigonometric ratios for complementary angles to simplify and evaluate trigonometric expressions	October
Chapter-21 Surface Area and Volume of Solid Figures *	• Calculate surface area and volume of cubes, cuboids, cylinders, cones, hemispheres and spheres	November
Chapter-9 Instalment Buying	• Understand the various terms related to instalment purchases • Calculate the instalment amount, rate of interest and number of instalments using simple interest as well as compound interest models	November
Chapter-26 Introduction to Probability	• Understand the relationship between “chance” and probability • Understand the different types of probability (theoretical, experimental and subjective) • Understand the various terms related to theoretical probability (outcomes, event, random occurrence, etc.) • Calculate the probability for a given random event (throwing dice, picking a card, tossing a coin, etc)	December
Chapter-23 Trigonometric Ratios of some special angles	• Learn the trigonometric ratios for some special angles (0^o, 30^o, 45^o, 60^o, 90^o) • Use trigonometric ratios of these special angles to simplify and evaluate trigonometric expressions • Use trigonometric ratios of these special angles to solve for missing heights and distances in real-world problems	December, January
Chapter-12 Concurrent Lines*	• Understand definitions for circumcentre, orthocentre and centroid for a triangle • Use properties of these points to calculate missing sides	January
Chapter 11 - Congruence of Triangles	• Revisit criteria for congruence of triangles • Prove triangle properties using congruency principles	January

Chapter 18 - Construction of triangles using SSS, ASA, SAS and RHS	• Construct triangles, drawing from congruency criteria (SSS, SAS, ASA, RHS) • Understand inequality relationships for the sides and angles of a triangle • Use inequality properties to solve proofs related to triangles	
Chapter 14 – Similarity of Triangles Chapter 18 – Construction	• Revisit criteria for similarity of triangles • Prove triangle properties using similarity principles • Construct a triangle similar to a given triangle	January, February
Chapters-18 Constructions Chapter-19 Coordinate Geometry	• Construct a triangle given two or more properties • Construct a tangent to a circle • Identify the four quadrants of the coordinate system and plot a point given its (x, y) coordinates • Calculate the distance between two given points • Use the section formula to calculate the coordinates of a point on a line	February
Chapter-13 Quadrilaterals,	• Revisit properties of common quadrilaterals (trapezium, rhombus, kite, etc.) • Use various quadrilateral properties to solve proofs related to quadrilaterals	February
Revision	• Review test and exam papers of the past two years • Attempt past NIOS question papers	February, March

*Self-learning – students will be encouraged to work on these topics on their own, usually as homework over long breaks. Chapter-end problems will be solved together in class to ensure all are on the same page. Students will be expected to submit their work for these chapters and write tests, just like the other chapters