Annual Plan for 10th Standard – IGCSE Mathematics (2019-20)

The Annual plan for this year will be dictated by the IGCSE 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 - February
Exam Practice	The students will be given practice to hone their exam-writing skills through the year, through various tests and examinations, using previous IGCSE papers as reference material	June - February

Chapters 1 – 7, 17	• Review Examination Practice and any doubts from the Holiday HW
	• Specifically focus on:
	  ○ Regular polygons and their angle sum property
	  ○ Simple geometrical constructions
	  ○ Arithmetic operations for numbers in standard form using a calculator
	  ○ Different tabular (new: stem and leaf diagrams) and graphical representations and their applications
	  ○ Percentage increase/decrease and reverse percentages
	  ○ Sectors, nets and mensuration of 3-D objects
		June

Chapter 22 – More equations, formulae and functions	• Review setting up an equation and transforming formulae for more complex formulae* • Understand and work with functions, composite functions and inverse of a function	June
Chapter 21 – Ratio, rate and proportion	• Review ratio, scale and rate* • Interpret and perform calculations using kinematic graphs • Review direct and inverse proportion for algebraic terms* • Understand increasing/decreasing amounts by a given ratio	July
Chapter 9 – Sequences and sets	• Learn to work with sequences of numbers and shapes (linear, quadratic and cubic sequences) • Understand the basics of Set Theory and the various terms and symbols related to sets • Learn to use Venn diagrams to represent the various operations on sets	July
*Chapter 11 – Pythagoras theorem and similar shapes	• Use the similarity of shapes to find missing sides, areas and volumes • Use scale drawings to find missing angles and distances • Understand the use of bearings in real-world scenarios • Use trigonometric ratios to accurately calculate missing angles and distances	July, August

Chapter 15 – Scale drawings, bearings and trigonometry	• Use trigonometric ratios to calculate areas of polygons • Use trigonometric ratios to calculate missing angles and distances in three dimensions • Plot and interpret graphs of common trigonometric functions	
Chapter 16 – Scatter diagrams and correlation	• Understand bivariate data and draw scatter diagrams to represent them • Understand correlation and how to interpret correlation for bivariate data • Draw lines of best fit and make predictions for given data	August
*Chapter 10 – Straight lines and quadratic equations Chapter 14 – Further solving of equations and inequalities	• Review plotting graphs given linear equations and vice versa • Find the mid-point and length of a given line segment (using Cartesian coordinates) • Revisit quadratic equations using factorisation, completing the squares and using the quadratic formula* • Review algebraic fractions* • Understand linear inequalities with one variable and solve for them algebraically • Represent inequalities with two variables and simultaneous inequalities on a Cartesian plane • Become familiar with linear programming and use it to solve for real-world problems in inequalities	September
Chapter 8 – Introduction to probability Chapter 24 – Probability using tree diagrams	• 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) • Identify and work with independent and mutually exclusive events • Calculate the probability of simple combined events using tree diagrams and Venn diagrams	October
*Chapter 12 – Averages and measures of spread Chapter 20 – Histograms and frequency distribution diagrams	• Review different measures of central tendency and identify the appropriate measure to use in a given situation* • Calculate averages for raw data*, ungrouped and grouped frequency distributions • Understand different measures of spread and identify the appropriate measure to use in a given situation • Calculate range, percentiles and quartiles for raw data • Calculate range for ungrouped and grouped frequency distribution tables • Revisit histograms for unequal class intervals*	October, November

	• Calculate median, quartiles, percentiles and inter-quartile range using the cumulative frequency curve	
Chapter 23 – Vectors and Transformations	• Understand the various types of transformations in a plane and transform a given 2-D object using transformation properties • Understand vectors and perform various operations on vectors	November, December
Chapter 13 - Understanding measurement	• Review conversion from one set of units to another in the metric system * • Use conversion graphs and exchange rates to convert from one system of units to another * • Calculate lower and upper bounds for rounded measurements	January
Chapter 18 – Curved graphs	• Plot graphs for quadratic, reciprocal, cubic and exponential equations • Use graphs to find solutions for associated equations • Estimate the gradients for various curves • Understand the idea of a derived function. • Use the derivatives of functions of the form ax^n • Apply differentiation to gradients and turning points (stationary points). Discriminate between maxima and minima	January
Chapter 19 – Symmetry	• Understand line and rotational symmetry in 2-D objects • Understand plane and rotational symmetry in 3-D objects • Revisit symmetry and angle relationships within a circle to solve for missing angles and lengths*	January
Revision	• Review test and exam papers of the past two years • Attempt past IGCSE question papers	January, February

*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