SoW Overview: Summer 2020: Year 10

The current year 10 have covered 2 terms of a 5 term GCSE course. There will be some aspects that will still need consolidation; as well as the need for regular practice of key skills covered. In addition to this there will be a need to address the content scheduled for the summer term, whilst students are engaged in home learning.

This document provides an overview and possible timetable for some key topics and skills practice that students could work on whilst normal lessons are disrupted. Higher content is in bold.
This is based on the principles of the Hampshire Scheme of Learning, which is available to schools subscribing to Moodle Plus and seeks to cover a wide range of key ideas across the domains of the maths curriculum.

It is important that teachers provided a range of tasks to support the objectives as appropriate for their students. This should include a variety of tasks that are accessible from home such as teacher prepared materials and problem-solving opportunities such as those provided by 'Nrich'
In this way, we are aiming for all students to experience the best study aids and opportunities, given the circumstances under which we are all working.

In addition to this, we will offer one or two 'Problems of the Week' for each unit to support teachers and students with further study.

Summer 1

Week	Domain	Unit Objectives
1	Geometry: Congruence, Pythagoras and Trigonometry	• apply the concepts of congruence and similarity, including the relationships between lengths, **{areas and volumes}** in similar figures • apply Pythagoras' Theorem and trigonometric ratios to find angles and lengths in right-angled triangles **{and, where possible, general triangles}** in two **{and three}** dimensional figures
2	Statistics: Bivariate data and univariate data	• use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing. • interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: ➢ appropriate graphical representation involving discrete, continuous and grouped data, **{including box plots}** ➢ appropriate measures of central tendency (including modal class) and spread **{including quartiles and inter-quartile range}**
3	Proportion: Direct and inverse	• compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity (including trigonometric ratios) • understand that X is inversely proportional to Y is equivalent to X is proportional to $\frac{1}{Y}$; **{construct and}** interpret equations that describe direct and inverse proportion
4	Algebra: Linear and quadratic graphs	• use the form y=mx + x c to identify parallel **{and perpendicular}** lines; find the equation of the line through two given points, or through one point with a given gradient • recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function $y=\frac{1}{x}$ with $x \neq 0$, **{the exponential function $y = k^x$ for positive values of k, and the trigonometric functions (with arguments in degrees) , y = sin x, y = cos x and y = tan x for angles of any size}** **{sketch translations and reflections of the graph of a given function}**
5	Proportion: Compound units	• convert between related compound units (speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts

Summer 2

Week	Domain	Unit Objectives
1	Number: Standard form Accuracy	• calculate with numbers in standard form A 10n, where 1 ≤ A < 10 and n is an integer • **{change recurring decimals into their corresponding fractions and vice versa}** • apply and interpret limits of accuracy when rounding or truncating, **{including upper and lower bounds}.**
2	Probability	• apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one • calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions • **{calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams}.**
3	Statistics: Averages, charts and calculations	• interpret and construct tables and line graphs for time series data • **{construct and interpret diagrams for grouped discrete data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use}**
4	Geometry: Area and perimeter	• identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, tangent, arc, sector and segment • calculate arc lengths, angles and areas of sectors of circles • calculate surface areas and volumes of spheres, pyramids, cones and composite solids
5	Algebra: Functions	• where appropriate, interpret simple expressions as functions with inputs and outputs; **{interpret the reverse process as the 'inverse function'; interpret the succession of two functions as a 'composite function'}** • simplify and manipulate algebraic expressions (including those involving surds **{and algebraic fractions}**) by: ➢ factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of two squares**; {factorising quadratic expressions of the form $ax^2 + bx + c$ }** ➢ simplifying expressions involving sums, products and powers, including the laws of indices
6	Number: Integers, powers and roots	• **{estimate powers and roots of any given positive number}** • calculate with roots, and with integer **{and fractional}** indices • calculate exactly with fractions, **{surds}** and multiples of π; **{simplify surd expressions involving squares [for example $\sqrt{12} = \sqrt{4 \times 3} = \sqrt{4} \times \sqrt{3} = 2\sqrt{3}$] and rationalise denominators}**
7	Algebra: Interpreting graphs	• plot and interpret graphs (including reciprocal graphs **{and exponential graphs}**) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration • **{calculate or estimate gradients of graphs and areas under graphs (including quadratic and other non-linear graphs), and interpret results in cases such as distance-time graphs, velocity-time graphs and graphs in financial contexts}**