Long Term Plan - Maths

Year 8

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Themes: Statistics and Probability	**Key Themes:** Sequences and Transformations	**Key Themes:** Constructions	**Key Themes:** Circles, Volume and Surface Area	**Key Themes:** Pythagoras, Trigonometry and Compound Measures	**Key Themes:** Expressions
Key Concepts: The study of statistics offers an opportunity to reinforce pupils' understanding of number, place value, and the four operations in the solving of problems. More specifically, graphs and charts may offer useful links to fractions, ratio and proportion. It is important that such connections are made explicit and that students have the chance to use statistics in other topic areas after Unit 8.	**Key Concepts:** Students will have a strong understanding of sequences, including recognising sequences, not just mathematical but in real life. This topic continues from Key Stage 2 Mathematics with added extension topics to challenge our more able students. The content of this unit is vital for all remaining work throughout the Mathematics scheme of work. Students will have a strong understanding of shape, including	**Key Concepts:** This topic continues from Key Stage 2 Mathematics with added extension topics to challenge our more able students. The content of this unit is vital for all work during the 5-year Maths scheme of work. Students will be expected to convert fluently between metric units of length and mass. Students will also be able to work with and create scale drawings which is a skill that will also be revisited throughout the remainder of the	**Key Concepts:** Students will have a strong understanding of the use of pi and where it originates from. Students will be able to calculate the area, perimeter/circumference of circles and compound shapes including circles. Students should be able to apply their skills to functional questions. This topic continues from Key Stage 2 Mathematics with added extension topics to challenge our more able students. The content of this unit is vital for	**Key Concepts:** This unit of work is designed only for Set 1 – 3 students. Students in Set 4 will need to spend time consolidating key topics to ensure they are fluent. This information can be picked up from previous assessments. The students in Set 1-3 should be able to find missing sides using Pythagoras Theorem and also be confident in applying the required skills to questions where Pythagoras is not obvious. They should	**Key Concepts:** Students will have developed knowledge of algebra and the representation of symbols in mathematics. Key skills from KS2 and developed so far throughout the learning journey are essential preparation for the needs of the curriculum. Students will be introduced to more complex calculations and will be challenged on their ability to balance and rearrange equations in a variety of

Students will have a strong understanding of all aspects of Probability. This topic continues from Key Stage 2 Mathematics with added extension topics to challenge our more able students. The content of this unit is vital for all remaining time during the Mathematics scheme of work.	symmetry, rotational symmetry, reflections, rotations and translations. This topic continues from Key Stage 2 Mathematics where students will have already been taught skills such as recognising 2D shapes, plotting points in all four quadrants, students should also have an understanding of the concept of rotation. Extension topics to challenge our more able students. The content of this unit is vital for all remaining work throughout the Mathematics scheme of work.	Mathematics scheme of work.	all remaining work throughout the Mathematics scheme of work. Students will have a strong understanding of the volume and surface area and how it links to calculating the area of a shape. Students should be able to apply their skills to functional questions. This topic continues from Key Stage 2 Mathematics with added extension topics to challenge our more able students. The content of this unit is vital for all remaining work throughout the Mathematics scheme of work.	be able to label triangles with common notation such as hypotenuse, opposite and adjacent. This will be extended to find missing side lengths and angles. Students have met a variety of measurement units and this unit empowers them to become comfortable in conversions. Conversions appear in a variety of contexts throughout their 5 year journey. Students understand concepts such as speed and pressure in terms of their everyday experiences – this unit allows them to be able to mathematically explain these everyday experiences.	contexts.

Links to prior learning:	**Links to prior learning:**	**Links to prior learning:**	**Links to prior learning:**	**Links to prior learning:**	**Links to prior learning:**
8.1 - Seen before: Taught in KS2 how to draw bar charts other data representations 8.2 - Seen before: Skills needed taught in year 7 (angles around a point, drawing/measuring angles) and at KS2 shown how to draw pie charts. 8.3 - Seen before: New topic not previously seen or studied. 8.4 - Seen before: Taught averages/spread of data from small data sets in year 7 units (mean, mode, median and range) 9.1 - Seen before: New topic not previously studied. May have heard of probability outside of school 9.2 - Seen before:	10.1 - Seen before: Observed and noted at KS2 10.2 - Seen before: New topic not previously seen. 10.3 - Seen before: New topic not previously seen. Skills needed from substitution strand of algebra. 11.1 - Seen before: Properties of shapes is covered in KS1 and KS2 curriculum 11.2 - Seen before: Seen reflections and symmetry in KS2. 11.3 - Seen before: New topic not previously studied. Will be using skills from previous strand and multiplication and division	12.1 - Seen before: You have used unit conversions during year 7. You will also have seen different units of measure on products and signs. 12.2 - Seen before: Constructions is a completely new topic. However, you will have used protractors and compasses before. These skills will be needed	13.1 - Seen before: Area of circles is a completely new topic. 13.2 - Seen before: Circumference of circles is a completely new topic. However, you will have seen perimeter before in year 7 14.1 - Seen before: Not seen directly, but observed while studying nets of 3d shapes in KS2 14.2 - Seen before: Studied volume of a cube and cuboid in KS2 through use of formula.	15.1 - Seen before: Never studied previously. Will be using skills such as solving equations studied in year 7 15.2 - Seen before: Never studied previously. Will be using skills such as solving equations studied in year 7 16.1 - Seen before: Converting units was first seen in year 7 and addressed in DIN activities in year 8 16.2 - Seen before: This is new content for all students although units of mass and volume have previously been seen.	17.1 - Seen before: Studied in Year 6 and in year 7. We have checked basic understanding through DIN's 17.2 - Seen before: Indices laws will have first been demonstrated in year 7 in our algebra unit. 17.3 - Seen before: Will have been first taught in year 7 and checked through DINs 17.4 - Seen before: Will have been first taught in year 7 and checked through DINs

New topic not previously studied. May have heard of probability outside of school 9.3 - Seen before: New topic not previously studied. Links can be made to two-way tables studied earlier in year 8.					
Vocabulary: Interpret, variable, representation, discrete, continuous, mean, median, mode, range, outlier, frequency, vertical, horizontal, illustrate, sector, illustrate, pictogram, tally chart, bar chart, dual bar chart, histogram, pie chart, investigate, population, interpolate, extrapolate, measure. Probability, likely, unlikely, impossible,	**Vocabulary:** Arithmetic, geometric, function, sequence, *n*th term, derive, quadratic, triangular, prime, cube, square, odd, even, solve, change, subject, inequality, represent, substitute, bracket, expand, linear, equation, balance, pattern, accuracy, negative, fractional, integer, Fibonacci, positive, negative, decimal, fraction, coordinate.	**Vocabulary:** Construct, compass, protractor, interpret, scale, SAS, ASA, SSS, triangle, quadrilateral, congruent, scale, volume, convert, map, bearings, measure, quadrilateral.	**Vocabulary:** Circle, calculate, area, circumference, perimeter, compound, pi, diameter, radius, tangent, chord, sector, segment, calculate, semi-circle, quarter, composite, formula Triangle, rectangle, parallelogram, trapezium, area, perimeter, formula, length, width, prism, compound, measurement, polygon, cuboid,	**Vocabulary:** Triangle, right angle, Pythagoras' Theorem, hypotenuse, opposite, adjacent, square, square root, prove, apply, calculate, justify, round, SOHCAHTOA, sine, cosine, tangent, inverse. Speed, distance, time, convert, miles, kilometres, speedometer, mass, density, volume, weight, hours, minutes, seconds,	**Vocabulary:** Formula, expression, expanding, brackets, binomials, linear, equation, identity, algebraic, substitute, rearrange, balance, positive, negative, variable, simplify, factor, manipulate, quadratic, factorise, cubic, coefficient, indices, sequences.

certain, even chance, occurring, theoretical, enumerate, combined, mutually exclusive, random, dependant, independent, systematically	Transformation, rotation, reflection, enlargement, translation, single, combination, scale factor, mirror line, centre of rotation, centre of enlargement, column vector, vector, similarity, congruent, angle, direction, coordinate, describe, fractional, negative, two dimensional		volume, symmetry, vertices, edge, face, units, conversion Area, perimeter, formula, length, width, measurement, volume, circle, segment, arc, sector, cylinder, circumference, radius, diameter, pi, sphere, cone, hemisphere, segment, accuracy, surface area	calculate, second, minute, hour, day, mm, cm, m, km, litre, millilitre, kg, g, m/s, km/h, density, mass, volume.	