Long Term Plan - Maths

Year 9 (Route one)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Themes: Calculations and Angles and Polygons	**Key Themes:** Handling Data	**Key Themes:** Fractions, decimals and percentages	**Key Themes:** Formulae & Functions	**Key Themes:** Working with 2D shapes and Handling Data	**Key Themes:** 3D shapes and Sequences
Key Concepts: Students will have a strong understanding of methods of calculations in both calculator and non-calculator contexts. They will understand when to use each of the four operations in order to answer multi-step or real-life questions. They will understand the implied order of precedence when using multiple operations. They will be able to offer clear, logical solutions which explain each step of their method. This topic continues	**Key Concepts:** Students will learn an array of techniques which allow them to concisely represent data. They will learn how to calculate summary statistics for discrete and continuous data and learn how to use these statistics to support or refute an argument. Students will learn to interpret primary and secondary data and use these interpretations to form opinions. Students will learn about the misrepresentation of	**Key Concepts:** Students will understand the equivalence of fractions, decimals & percentages. Students will recognise that the same number can be expressed in different formats. Students will be comfortable with percentages representing proportions of the whole and in using percentages to compare changes in different numbers. Students will understand fractions as representations of both integral and	**Key Concepts:** Students will gain familiarity with the correct algebraic notation to represent the four operations, indices and order of operations. This builds on work covered previously within the learning journey. These manipulations are critical for any further understanding throughout further study of algebra and allow success with equations and algebraic fractions.	**Key Concepts:** Students will become familiar with the concept of measurement and the limits of our ability to accurately measure. They will build on their KS2 & KS3 mensuration skills in order to accurately draw and construct 2d shapes. They will build on KS2 knowledge and prior content within the 5 year learning journey of transformations, which allows access to all transformation skills required for success in future units of work	**Key Concepts:** Students build on their understanding of 2D shapes from previous units of work within the 5-year learning journey in order to classify and describe the properties of 3D shapes. Mensuration of 3D shapes allows problems involving volumes and surface areas of shapes to be solved and allows access to many problem-solving questions. Students will continue their work from KS2 and KS3 to

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 throughout the 5 Year learning journey. Students will have an understanding of the spatial properties of angles and turns. They will begin to appreciate the numerical significance of angles in polygons and the patterns and rules which govern them. They will learn the rules which allow the description of angles on parallel lines and the calculations of missing angles. This builds on prior content within the learning journey and allows students to access problem solving questions	data via incomplete or inaccurately labelled diagrams and will learn to assess the usefulness of both the data collected and the manner in which it is presented.	non-integral numbers & of numbers larger than 1. Students will recognise decimals as a format of non-integral numbers. All three representations are used throughout mathematics in problem solving and will allow students to access topics such as standard form and solving equations.		Students build on their knowledge of probability from earlier in the learning journey in order to be able to answer the most challenging of probability questions. Students become familiar with the concepts of correlation, causation and trends, allowing them to further assess links (or otherwise) between data, a skill required throughout the remainder of the learning journey and beyond.	be able to algebraically describe and recognise sequences. Students will recognise the importance of (and difference between) term to term rules and algebraic generation. Students will appreciate the link between all linear sequences, and will appreciate the geometric potential of specific sequences.

which combine angles with algebra and other numerical concepts.					
Links to prior learning: 18.1 - Seen before: Fundament teaching In KS1 and KS2, we extend knowledge in year 7 (especially in unit 1.1) and year 8. 18.2 - Seen before: Seen initially in KS2 and again in year 7 in our place value unit. 18.3 - Seen before: Key topic studied throughout your mathematical careers. Taught distinctly in year 7 19.1 - Seen before: We studied angle rules in shape during year 7. Recall on these will assist progress. 19.2 - Seen before: We studied angle rules in shape during year 7. Recall on	**Links to prior learning:** 20.1 - Seen before: Studied initially in year 8 with statistics unit 20.2 - Seen before: Studied initially in year 8 with statistics unit 20.3 - Seen before: Studied initially in year 7 and 8 with types of averages/spread 20.4 - Seen before: Stem and leaf diagrams will be new content, but averages have been covered previously in year 7 during units 1 and 2	**Links to prior learning:** 21.1 - Seen before: Converting FDP has been taught in KS2 and year 7/8. This unit is consolidation and extension of these principles. 21.2 - Seen before: Studied initially in year 7 unit 6 21.3 - Seen before: Studied initially in year 7 unit 4	**Links to prior learning:** 22.1 - Seen before: Substitution has been taught in year 7 and skills consolidated in year 8. 22.2 - Seen before: Expanding and factorising brackets taught in year 7 and earlier in year 9.	**Links to prior learning:** 23.1 - Seen before: Area has been taught since KS2. Area was further re-covered in year 7 of standard 2d shapes. 23.2 - Seen before: All taught during year 8 transformation unit, these base skills will be consolidated and strengthened. 24.1 - Seen before: We saw standard frequency trees in year 8 through data handling and probability 24.2 - Seen before: Studied first in year 8. Plotting coordinates will have been first seen in KS2. 24.3 - Seen before: New topic not previously seen. Skills	**Links to prior learning:** 25.1 - Seen before: Seen at the end of year 8 when studying volume and surface area, we looked at definitions of faces, edges and vertices. 25.2 - Seen before: Studied volume in year 8 with a focus on cuboids, cubes. 25.3 - Seen before: Studied surface in year 8 with a focus on cuboids, cubes. 26.1 - Seen before: We have studied sequence and patterns in year 8 and knowledge has been checked in DIN's during the past few years. Now is time to develop unquestioning fluency.

these will assist progress. 19.3 - Seen before: Initially taught in Year 7 Unit 5 19.4 - Seen before: During construction in year 8 we constructed using SSS, ASA and SAS. In addition, we have studied recipe problems and scaling with is a similar skill to similar shapes. 19.5 - Seen before: Measuring and drawing angles using a protractor was taught in year 7 and used in year 8 with drawing pie charts.				required such as reading graphs and plotting have previous teaching.	26.2 - Seen before: We have studied nth term in year 8 when studying sequences and patterns. Now is time to develop unquestioning fluency and problem-solving skills
Vocabulary: Integer, negative, positive, ascending, descending, decimal point, decimal place, inequality, less than, fewer than, more than, greater than, repetition, significant figures, approximation,	**Vocabulary:** Interpret, variable, representation, discrete, continuous, mean, median, mode, range, outlier, frequency, vertical, horizontal, frequency diagram, frequency table, tally, sector, dual, compound,	**Vocabulary:** Recurring, terminating, decimal point, decimal place, fraction, numerator, denominator, mixed, top-heavy, improper, cancel, percentage, percentage change, original amount, multiplier, convert,	**Vocabulary:** Substitute, expression, term, value, formula, formulae, subject, inequality, greater than, less than, factor, common factor, factorise, expand, bracket, coefficient, power,	**Vocabulary:** 2-D ,triangle, equilateral, isosceles, scalene, square, kite, trapezium, isosceles trapezium, parallelogram, rhombus geometry, constructions, compass, protractor, units, cm, mm, m,	**Vocabulary:** Surface, face, edge, vertex, vertices, cube cuboid, prism, cylinder, sphere, cone, properties, isometric, construct, interpret, plans, elevations, volume, cube, cuboid, capacity, surface

estimation, add sum, total, subtract, minus, negative, difference, take away, multiply, product, divide, quotient, per, value for money, best buy. Acute, obtuse, reflex, right angle, triangle, quadrilateral, pentagon, hexagon, heptagon, octagon, nonagon, decagon, polygon, regular, irregular, exterior angle, interior angle, vertically opposite, sum, point, alternate, corresponding, co-interior, allied, supplementary, equilateral, isosceles, scalene, right-angled, hypotenuse square, rectangle, parallelogram, rhombus, trapezium, isosceles trapezium, kite, congruent, similar, bearing.	angle, proportion, grouped, ungrouped, misleading, categorical, quantitative, qualitative interpret.	express, order, increase, decrease, compound, simple, order, interest, reciprocal.	like term, quadratic, squared, term, identity, scientific, variable, positive, negative, quadratic	round, accuracy, decimal places, significant figures, perimeter, area segments, scale drawings, translations, rotations, reflections similar, enlargement, reflection. Probability, independent, dependent, combined, tree diagrams, scatter graphs, bivariate data, correlation, causation, lines of best fit, interpolate, extrapolate, trend, time series, ratio, frequency tree, point, plot, causation, construct, interpret.	area, formula Generate, terms, sequence, term-to-term, position-to-term, arithmetic, *n*th term, geometric, triangular, square, cube, progressions, Fibonacci, linear.