Year 8 MATHS

Overall Intent:

In year 8, students develop and build on the skills gained from the year 7 course as well as the Key Stage 2 curriculum. During year 8, students will revisit year 7 topics in more depth and new, more challenging concepts will be introduced. Throughout the year, all six key maths strands (number, algebra, ratio, proportion and rates of change, geometry and measure, probability, statistics) are covered, ensuring that fluency, reasoning and problem-solving skills are embedded throughout the course. Content is designed with interleaving as a key element, so that skills are woven throughout this and subsequent years allowing students constantly to reinforce and extend their understanding.

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic/Area of study	ALGEBRA MENTAL METHODS NUMERACY STATISTICAL GRAPH DRAWING	NUMERACY AREA/PERIMETER MEAN/MEDIAN/MODE ALGEBRA	FRACTIONS, DECIMALS AND PERCENTAGES ALGEBRA	NUMERACY NEGATIVE NUMBERS ANGLES AND CONSTRUCTION	RATIO PROBABILITY ALGEBRA TRANSFORMATIONS	VOLUME
Key learning aims – knowledge and skills	**Algebra:** Distinguish the different roles played by letter symbols in equations, formulae and functions; know the meanings of the words formula and function. Know that algebraic operations follow the same conventions and order as arithmetic operations; use index notation for small positive integer powers. **Mental Methods:** Know the rules of rounding and be able to apply it to; powers of 10,	**Numeracy:** Understand the concept of BIDMAS stands for and how it is used for calculations with more than one operation. Understand the method for multiplying by powers of 10. **Area/Perimeter:** Understand the difference between area and perimeter. Be able to calculate the area of a variety of 2D shapes including circles and some compound shapes. **Mean/Median/Mode:**	**Fractions, Decimals and Percentages:** Know how to convert a fraction to a decimal, know how to order fractions, know how to apply the four operations with fractions, know how to convert between fractions, decimals and percentages, understand the ideas of percentage increasing and decreasing. **Algebra:** Know how to generate and describe integer	**Numeracy:** Know how to add and subtract decimals, use knowledge of place value to multiply and divide with decimals, strategies for multiplication and division, strategies for calculating fractions and percentages of whole numbers, multiplication and division of decimals. **Negative Numbers:** Add, subtract, multiply and divide integers, order negative numbers.	**Ratio:** Consolidate understanding of the relationship between ratio and proportion, know how to reduce a ratio to its simplest form, including a ratio expressed in different units, recognise links with fraction notation, understand how to divide a quantity into two or more parts in a given ratio, know about the unitary method to solve simple word problems involving ratio and direct proportion.	Know and use the formula for the volume of a cuboid, know how to calculate surface area of cuboids.

	nearest whole number and one or two decimal places, recognise and use multiples, factors (divisors), common factor, highest common factor, lowest common multiple and primes, know squares, positive and negative square roots, cubes and cube roots, and index notation for small positive integer powers. **Numeracy:** Know addition and subtractions facts, know times tables, know the rules for negative numbers, know some calculator buttons. **Statistical Graph Drawing:** Know and construct the different ways we can represent data (pie charts, bar charts, simple line graphs, stem and leaf diagrams, scatter graphs).	Understand the concept of mean, median and range. Know how to calculate averages and range from grouped data. **Algebra:** Know how to plot in all four quadrants, know how to plot the graphs of linear functions, recognise that equations of the form $y = mx + c$ correspond to straight-line graphs.	sequences, know how to generate terms of a linear sequence, begin to use linear expressions to describe the n^{th} term of an arithmetic sequence.	**Angles and Construction:** Identify alternate angles and corresponding angles, know some angle rules; angles of a triangle, quadrilateral, opposite angles, angles around a point, angles on a line, know that if two 2-D shapes are congruent, corresponding sides and angles are equal, know and use geometric properties of cuboids and shapes made from cuboids; begin to use plans and elevations, know how bearings are used to specify direction, know about simple loci.	**Probability:** Know the vocabulary of probability, know that if the probability adds to 1, understand ways of recording all possible outcomes, know that increasing the number of trials leads to better estimates of probability, compare experimental and theoretical probabilities in different contexts. **Algebra:** Begin to use graphs and set up equations to solve simple problems involving direct proportion. **Transformations:** Transform 2-D shapes by simple combinations of rotations, reflections and translations, understand and use the language and notation associated with enlargement, know that if two 2-D shapes are congruent, corresponding sides and angles are equal.	
Assessment	Mental methods green sheet	Mean, median, mode, range green sheet	AP1: Mid-year exam	Negative numbers green sheet		AP2: End of year exam