Year 5 Maths

Reasoning	
Make connections	• Poses own questions and create problems for peers that are similar to ones worked on in class • Develops own lines of enquiry
Evaluate	• Considers efficiency of methods and adapts work accordingly throughout problem solving activities
Draw conclusions	• Conjectures to develop own line on enquiry when testing outcomes • Draws own valid conclusions and give an explanation of reasoning (including written explanations)
Generalise	• Identifies more complex patterns and begins to express generalisations using symbolic notation
Justify	• Justifies methods chosen and why the solution is not the best one • Supports conclusions with examples and counter examples

Problem Solving Strategies
• Organises, deconstructs and prioritises information; uses systematic lists and tables to identify information • Uses informed 'guess, check and improve' • Identifies and uses a pattern • Draws a mathematical model to support visualisation of a problem • Uses and applies negative proof (uses counter argument to prove the rules) • Uses a structured approach to tackle a problem • Solves a simpler related problem

Year 5 Statutory Objectives

Number and place value	**Addition and subtraction**	**Multiplication and division**	**Fractions (including decimals and percentages)**	**Measurement**	**Geometry: properties of shapes**	**Geometry: position and direction**	**Statistics**
□read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit □count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 □interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero □round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 □solve number problems and practical problems that involve all of the above □read Roman numerals to 1000 (M) and recognise years written in Roman numerals	□add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) □add and subtract numbers mentally with increasingly large numbers □use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy □solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	□identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. □know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers □establish whether a number up to 100 is prime and recall prime numbers up to 19 □multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers □multiply and divide numbers mentally drawing upon known facts ▪ divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context ▪ multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 ▪ recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) ▪ solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes ▪ solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign ▪ solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	□compare and order fractions whose denominators are all multiples of the same number □identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths □recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$] □add and subtract fractions with the same denominator and multiples of the same number □multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams □read and write decimal numbers as fractions [for example, 0.71 = $^{71}/_{100}$] □recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents □round decimals with two decimal places to the nearest whole number and to one decimal place □read, write, order and compare numbers with up to three decimal places □solve problems involving number up to three decimal places □recognise the percent symbol (%) and understand that percent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100, and as a decimal □solve problems which require knowing percentage and decimal equivalents of $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ and those with a denominator of a multiple of 10 or 25	□convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) □understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints □measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres □calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes □estimate volume [for example, using 1 cm^3 blocks to build cuboids(including cubes)] and capacity[for example, using water] □solve problems involving converting between units of time □use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling	□identify 3-D shapes, including cubes and other cuboids, from 2-D representations □know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles □draw given angles, and measure them in degrees (^{o}) □identify: - angles at a point and one whole turn (total 360^o) - angles at a point on a straight line and ½ a turn (total 180^o) - other multiples of 90^o ▪ use the properties of rectangles to deduce related facts and find missing lengths and angles ▪ distinguish between regular and irregular polygons based on reasoning about equal sides and angles	□identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	□solve comparison, sum and difference problems using information presented in a line graph □complete, read and interpret information in tables, including timetables