Year 5 Mathematics	Year 6 Mathematics **(Builds on and consolidates Y5 Curriculum) Below are the <u>KEY PERFORMANCE INDICATORS</u> for end of Year 6. Children need to achieve these to demonstrate they have reached the required standard at the end of Primary School and are 'Secondary Ready'.**

Year 5	Year 6
Number and place value • <u>read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</u> • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • <u>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero</u> • 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.	**Number and place value** • <u>Round any number to a required degree of accuracy up to 10,000,000</u> • <u>Uses negative numbers in context and calculates intervals across zero</u>
Addition and subtraction • <u>add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</u> • <u>add and subtract numbers mentally with increasingly large numbers</u> • 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.	**Addition and subtraction** • <u>Solves addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</u> • <u>Uses estimation to check answers to calculations and determines, in the context of a problem, an appropriate degree of accuracy.</u>
Multiplication and division • <u>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</u> • <u>solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors</u> • 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 addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign <u>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.</u>	 • <u>Multiplies multi-digit numbers up to four digits by a two-digit whole number using the formal written method of long multiplication.</u> • <u>Divides numbers up to four digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</u>
Fractions (including decimals and percentages) • <u>compare and order fractions whose denominators are all multiples of the same number</u> • 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 (e.g 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 • <u>read and write decimal numbers as fractions (e.g. 0.71 = 71/100)</u> • 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 • <u>read, write, order and compare numbers with up to three decimal places</u> • solve problems involving number up to three decimal places • recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator hundred, and as a decimal fraction <u>solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25</u>	**Fractions (including decimals and percentages)** • <u>Uses written division methods in cases where the answer has up to two decimal places</u> • <u>Solves problems which require answers to be rounded to specified degrees of accuracy.</u> • <u>Recalls and uses equivalences between simple fractions, decimals and percentages, including in different contexts</u>
MEASUREMENT • <u>convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</u> • understand and use equivalences between metric units and common imperial units such as inches, pounds and pints • <u>measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</u> • <u>calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes</u> • estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water) • solve problems involving converting between units of time	**MEASUREMENT** • <u>Uses, reads, writes and converts between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to three decimal places.</u>

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• use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. •	

GEOMETRY Properties of shapes
• identify 3-D shapes, including cubes and other cuboids, from 2-D representations
• now angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
• <u>draw given angles, and measure them in degrees (^{o})</u>
• identify:
    angles at a point and one whole turn (total 360°)
    angles at a point on a straight line and ½ a turn (total 180°)
    other multiples of 90°
• 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.
	GEOMETRY Properties of shapes
	• <u>Compares and classifies geometric shapes based upon their properties and sizes and finds unknown angles in any triangles, quadrilaterals and regular polygons.</u>

Position and direction 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.	Position and direction • <u>Draws and translates simple shapes on the coordinate plane and reflects them in the axis.</u> • <u>Interprets pie charts and line graphs and uses them to solve problems</u>
STATISTICS • solve comparison, sum and difference problems using information presented in a line graph • <u>complete, read and interpret information in tables, including timetables.</u>	STATISTICS • <u>Calculates and interprets the mean as an average.</u>
	Ratio Proportion and Algebra • <u>Solves problems involving the calculation of percentages e.g. of measure and calculations such as 15% of 360 and the use of percentages for comparison.</u> • <u>Solves problems involving unequal sharing and grouping using the knowledge of fractions and multiples.</u> • <u>Uses simple formulae</u>

Mental Calculations
    • Count on/back in repeated steps of 10, 100, 1000, 0.1, 0.01 including bridging across 1, 10, 100 or 1000
    • Identify near doubles including decimals
    • Consolidate work on adding and subtracting the nearest multiples of 10, 100 or 1000 and adjusting.
    • Add and subtract three digit by a two digit mentally by portioning, adding/ subtracting tens first
    • Add decimal numbers by finding pairs that total 1
    • Add 3 two digit multiples of 10.
    • Add and subtract mentally pairs of three digit numbers
Use knowledge of place value and addition and subtraction of two digit numbers to derive sums and differences of decimals.
	Mental Calculations
	• Can perform mental calculations, including mixed operations and large numbers
	• Consolidate knowledge of addition facts and related subtraction facts.
	• Can partition to add or subtract and then adjust 4.3-2.9 = 4.3-3+0.1
	• Can recall and use equivalences between simple fractions, decimals and percentages in different contexts.
	• Consolidate solving calculation problems involving scaling by simple fractions and simple rates.
	• Consolidate knowledge of multiples and factors, including all factor pairs of a number and common factors of 2 numbers.
	• Consolidate recall of square numbers and cube numbers and the notation for them.
	• Consolidate recall of prime numbers up to 19
	• Identify common factors, common multiples and prime numbers greater than 100
	• Multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places.

Problem Solving • Is able to check possible solutions against all given criteria • Is able to describe the rule of a pattern or relationship in own words or pictures. • Is able to test predicted terms to see if a possible rule works. • Is able to find a stated term in the sequence • All possible solutions will be listed in a systematic way • Is able to decide when all possibilities have been listed	