MATHEMATICS
MEDIUM TERM PLAN – Y6

Concept	National Curriculum Objectives	Key Skills	Concrete Resources	Vocabulary
Number **Place Value** (Autumn Term)	• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number problems and practical problems that involve all of the above.	• Numbers to 1000000 • Numbers to 10000000 • Read and write numbers to 10000000 • Powers of 10 • Number line to 10000000 • Compare and order any integers • Round any integer • Negative numbers		number, numeral, equal to, more, less, consecutive, one, tens, hundred, thousands, ten thousands, millions, ten millions, place value, represent, exchange, more, fewer, smaller, bigger, largest, compare, order, size, last, before, after, next, above, digit
Number **Addition, Subtraction, Multiplication and Division** (Autumn Term)	• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations	• Add and subtract integers • Common factors • Common multiples • Rules of divisibility • Primes to 100 • Square and cube numbers • Multiply up to a 4-digit number by a 2-digit number • Solve problems with multiplication • Short division • Division using factors • Introduction to long division (chunking method) • Long division (chunking) with remainders • Solve problems with division • Solve multi-step problems • Order or operations		Addition, add, more, and, total, altogether, double, near double, half, halve, subtract, takeaway, how many are left?, fewer, difference between, equals, is the same as, number bonds/pairs/facts, missing number, tens boundary, hundreds boundary, ones boundary, tenths boundary, inverse, multiplication, multiply, multiplied by, multiple, factor, groups of, times, product, array, rows, columns, repeated

	• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	• Mental calculations and estimations		addition, division, dividing, divided into, left over, remainder, grouping, sharing, sharing equally, equal groups of, doubling, halving, number patterns, multiplication table, multiplication fact, division fact, inverse square, squared, cube, cubed
Number **Fractions (1)** (Autumn Term)	• use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions >1 • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	• Equivalent fractions and simplifying • Equivalent fractions on a number line • Compare and order (denominator) • Compare and order (numerator) • Add and subtract simple fractions • Add and subtract any two fractions • Add mixed numbers • Subtract mixed numbers • Multi-step problems		Fraction, equivalent fraction, mixed number, numerator, denominator, equal part, equal grouping, equal sharing, parts of a whole, half, two halves, one of two equal parts, quarter, two quarters, three quarters, one of four equal parts, one third, two thirds, one of three equal parts, sixths, sevenths, eighths, tenths, hundredths, thousandths
Number **Fractions (2)** (Autumn Term)	• multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, ¼ × ½ = $^1/_8$] • divide proper fractions by whole numbers [for example, $^1/_3$ ÷ 2 = $^1/_6$] • associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $^3/_8$	• Multiply fractions by integers • Multiply fractions by fractions • Divide a fraction by an integer • Divide any fraction by an integer • Mixed questions with fractions • Fractions of an amount • Fraction of an amount- find the whole		
Measurement **Converting units** (Autumn Term)	• solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert 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 • convert between miles and kilometres	• Metric measures • Convert metric measures • Calculate with metric measures • Miles and kilometres • Imperial measures		mass, weight, equal to, equals, the same as, big, bigger, small, smaller, metric, imperial, kilometre, miles, metres, centimetres, gram, pounds, inches, pints, tonnes, gallons

Number **Decimals** *(Spring Term)*	• associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $^3/_8$] • identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places • multiply one-digit numbers with up to two decimal places by whole numbers • use written division methods in cases where the answer has up to two decimal places. • solve problems which require answers to be rounded to specified degrees of accuracy • recall and use equivalences between simple fractions, decimals and percentages including in different contexts	• Three decimal places • Multiply by 10, 100, 1000 • Divide by 10, 100, 1000 • Multiply decimals by integers • Divide decimals by integers • Division to solve problems • Decimals as fractions • Fractions to decimals •		Decimal, decimal fraction , decimal point, decimal place, decimal equivalent, ones, tenths, hundredths, value, digit, represents, proportion, in every, for every, percentage, per cent, %
Number **Percentages** (Spring Term)	• use written division methods in cases where the answer has up to two decimal places. • solve problems which require answers to be rounded to specified degrees of accuracy • recall and use equivalences between simple fractions, decimals and percentages including in different contexts	• Understand percentages • Fractions to percentages • Equivalent F.D.P • Order F.D.P • Percentage of amount • Percentages • Percentages - missing values		percentage, per cent, %, tenths, hundredths, fraction, equivalent, out of 100, for every
Number **Algebra** (Spring Term)	• use simple formulae • generate and describe linear number sequences • express missing number problems algebraically • find pairs of numbers that satisfy number sentences involving two unknowns • enumerate possibilities of combinations of two variables	• Find a rule – one step • Find a rule – two steps • Forming expressions • Substitution • Formulae • Forming equations • Solve simple one step equations • Solve two steps equations • Find pairs of values • Enumerate possibilities		formula, formulae, equation, unknown, variable, expression, function, substitute, substitution, values,
Measurement **Perimeter, area and volume** (Spring Term)	• recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use the formulae for area and volume of shapes • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3]	• Shapes – same area • Area and perimeter • Area of a triangle • Area of a parallelogram • What is volume? • Volume counting cubes • Volume of a cuboid		Millilitre, centimetre, metre, kilometre, length, height, width, long, short, tall, high, low, wide, narrow, thick, thin, longer, shorter, taller, higher, longest, shortest, tallest, highest, far, furthest, near, close distance apart, perimeter, ruler, metre stick, tape measure,

				area, covers, squared centimetre, cubic centimetres, cubic metres, cubic millilitres, cubic kilometres, capacity, volume, full , holds, contains
Number **Ratio** (Spring Term)	• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and use percentages for comparison • solve problems involving similar shapes where the scale factor is known or can be found • solve problems involving unequal sharing and grouping using knowledge of fractions and multiples	• Using ratio language • Ratio and fractions • Introducing the ratio symbol • Calculating ratio • Using scale factors • Calculating scale factors • Ratio and proportion problems		in every, for every, ratio, proportion, scale, percent, percentage, unequal grouping, unequal sharing
Geometry **Position and Direction** (Spring Term)	• describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes.	• The first quadrant • Four quadrants • Translations • Reflections		Position, over, under, above, below, top, bottom, side, on, in outside, inside, around, in front, behind, front, back, beside, next to, opposite, apart, between middle, edge, centre, corner, direction, journey, route, left, right, up, down, higher, lower, forwards, backwards, sideways, across, next to, close, along, through, to, from, towards, away from, clockwise, anti-clockwise, compass point, North, South, East, West, North-East, North-West, South-East, South-West, horizontal, vertical, diagonal, translate, translation, degree movement, whole turn, translate, half turn, quarter turn, three-quarter turn, rotate,

				rotation, right angle, acute angle, obtuse angle, reflection, straight line, ruler, set square, angle measurer, protractor, compass,
Statistics (Summer Term)	• interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average	• Read and interpret line graphs • Draw line graphs • Use line graphs to solve problems • Circles • Read and interpret pie charts • Pie charts with percentages • Draw pie charts • The mean		Count, tally, sort, vote, graph, represent block graph, pictogram, group, set, list, table, chart, bar chart, frequency table, Carroll diagram , Venn diagram, label title, axis, axes, diagram, most popular, least popular, most common, least common, maximum , minimum value, outcome, mean, distribution
Geometry **Properties of Shape** (Summer Term)	• draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • illustrate and name parts of circle, including radius, diameter and circumference and know that the diameter is twice the radius • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	• Measure with a protractor • Introduce angles • Calculate angles • Vertically opposite angles • Angles in a triangle • Angles in a triangle – special cases • Angles in a triangle – missing angles • Angles in special quadrilaterals • Angles in regular polygons • Draw shapes accurately • Draw nets of 3-D shapes		Shape, pattern, flat, curved, straight, round, hollow, solid, surface, size, symmetry, corner, side, point, rectangle (including square), rectangular, circle, circular, triangle, triangular, pentagon, pentagonal, hexagon, hexagonal, octagon, octagonal, quadrilateral, right-angled, equilateral triangle, isosceles triangle, scalene triangle, heptagon, octagon, x-axis, y-axis, quadrant, parallel, perpendicular, face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, hemisphere, cone, cylinder, prism, triangular prism, tetrahedron, polyhedron, regular, irregular,

				polygon, right-angled, perpendicular, parallel