DIXONS MANNINGHAM PRIMARY

Mathematics

Curriculum Principles

By the end of Year 6, a student of mathematics at Dixons Manningham Primary will:

- know the fundamental skills in mathematics which allow them to understand how to use this knowledge in secondary school and beyond.
- recognise the beauty in sophisticated mathematical methods; be aware of naturally occurring mathematical structures; be analytical thinkers and have a thirst for mathematical reasoning.
- have developed fluency in procedures and be keen problem solvers.

In order to achieve a true understanding of mathematics, topics have been intelligently sequenced based on the following rationale:

- Our approach uses White Rose Maths as its spine. Adopting the best of a 'mastery' and 'spiral' curricula, topic areas are investigated in depth over time to allow pupils to master it as well as revisited and extended on a regular basis. This sequence of learning promotes a deeper understanding of the mathematical concepts being taught, whilst also minimises the potential of forgetting due to material being covered with more regularity.
- Within the classroom, the idea that memory of new information is lost without spaced learning and interleaving is addressed in several ways: lessons often begin with a "Do Now" that promotes recall of integral knowledge; staff use targeted retrieval questions that are timed to minimise the likelihood of degrading schemas; interventions are also used to support children that did not fully commit new learning to their long term memory by providing children with more opportunities for applied practice from previous units of work.
- Deliveries follow our learning policy and are designed flexibly to support the varied needs of learners in each class. This ranges from wholes class, to split or no introductions. Each Maths lesson, then moves on to a teacher modelling worked examples using 'I do, we do, you do', which involves gradually reducing the level of scaffold. This reduction supports practical independence of learners but also their perception of themselves as a capable, independent learner.
- Conceptual development consists of four stages: Fluency, Varied Fluency, Reasoning and Problem Solving. The weighting of each stage is adapted by teachers to provide the most relevant 'diet' for our children whilst addressing the balance that will best serve them in later life. Learning is monitored through aggressive monitoring, listen to pupil talk and observing recorded work. This sequence aligns with the White Rose Maths scheme, allowing each student to work towards mastery and removing the ceiling from their learning.
- We teach to the top with scaffolding and support for those who need it in order to allow all students to achieve and experience the very best of what has been thought and said. The mathematics curriculum addresses social disadvantage by addressing gaps in students' knowledge and skills whilst teaching to age-related expectations
- Times Table Rockstars (KS2) and weekly arithmetic quizzes support the learning of install recall facts and core learning

The mathematics curriculum will address social disadvantage by addressing gaps in students' knowledge and skills:

- students in need of intervention are targeted by close teacher observation and ongoing formative assessment. With a particular focus of students performing below age related expectations, daily Direct Instruction interventions occur in small groups with a teacher. These ensure gaps are closed as swiftly as possible.
- oracy skills have been proven to be instrumental to a child's future success. Regrettably, students from disadvantaged backgrounds, a significantly high percentage of the cohort we serve, do not always receive the same opportunities to develop this skill. The mathematics curriculum aims to challenge this through the exploration of functional questions. Emphasis is given to explaining mathematical reasoning, initially through scaffold, using stem sentences and key vocabulary until these are embedded and the student is able to explain mathematical reasoning independently.
- Times Table Rockstars and weekly arithmetic quizzes encourage the drill like practice to embed learning.

Curriculum Overview

	Cycle 1	Cycle 2	Cycle 3
Early Years	• Categorise objects by shape, size, colour. • Match items based on properties. • Explore pattern. • Extend and create ABAB patterns. • Fit shapes in inset puzzles and jigsaws • Fill and empty containers • Use blocks to create simple structures and arrangements • Anticipate time based events Understand 'soon' or 'later' • Begin to use language of size Select a small number of objects • Know that a group of things changes when something is added or taken away • Begin to use fingers to show 1 or 2 • Recite numbers in order to 5	• Recite numbers past 5 • Realise that not only objects but anything can be counted. • Say one number name for each item 1-5, in order • Recognise and order digits 1-5 • Represent 5 using fingers and objects • Match some numerals and quantities correctly • Say who has fewer • Fast recognition of up to 3 objects (without counting) • Use fingers for counting • Begin to compare length, weight and capacity • Begin to sequence events… Talk about and begin to describe shapes used in construction • Select shapes appropriately for tasks • Combine shapes to make new ones	• Compare two groups of objects saying when they have the same • Say who has fewer • Say who has more • Link numeral and amounts • Understand final number is the total in the set • Recite numbers 1-10 • Begin to solve maths problems within 5 • Use some positional language • Discuss routes and locations, using words like 'in front of', and 'behind' • Order and sequence familiar events Select a particular named shape (2D) • Explore 2D and 3D shapes.
Reception	• Subitise 1-3 items • Represent numbers 1-5 in a variety of ways • Begin to explain composition of numbers using visual aids • Link 1-5 with its cardinal number value • Begin to understand the concept of 1 more and 1 less using object • Know that the last number reached when counting is the total • Begin to use a 5 frame model Begin to count objects, actions and sounds up to 10 accurately • Order numbers to 5 • Begin to understand doubles • Sort objects by colour, size or shape • Continue, copy and create AB patterns • Compare the size of objects • Talk about passage of time Join in with number rhymes • Select, rotate and manipulate shapes to develop spatial reasoning • Follow prepositional instructions	• Begin to compare numbers and quantities up to 10 • Begin to recall number bonds to 5 and some to 10. • Double numbers 1-5 and begin to recall some double facts • Double numbers 5-10 using concrete objects • Begin to subitise 1-5 • Partition and recombine amounts • Write addition number sentence with support • Begin to work out 1 more and 1 less using a number line • Begin to recognise some coins and their value • Begin to count beyond 10 by rote and using objects • Begin to count in 2s with support • Order numbers to 10 • Continue, copy and create AB, ABB, ABBC patterns • Measure and compare length using non-standard measures • Know that there are 7 days in a week and 12 months in a year • Complete jigsaw puzzles independently	• Compare quantities up to 10 • Automatically recall some number bonds to 10 • Automatically recall number bonds to 5 including subtraction facts • Subitise up to 5 Solve practical problems by sharing into equal groups • Add 2 single digit numbers • Begin to work out 1 more and 1 less than a number up to 20 • Write addition and subtraction number sentences • Verbally count beyond 20 • Exposed to counting in jumps of 5 and 10 • Recognise numbers 1-20 in and out of order • Use mathematical language when comparing length, weight and capacity • Name some 3D shapes and explain their properties Follow instructions using prepositional language
YEAR 1	**Week 1 -4 Place Value (within 10)** • Count to ten, forwards and backwards using numerals and words • Identify one more or one less • Identify and represent numbers using objects and use the language of: equal to, more than, less than (fewer), most, least **Week 5-8 Addition and Subtraction (within 10)**	**Week 1 – 4 Addition and Subtraction (within 20)** • Represent and use number bonds and related subtraction facts • Read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs. • Add and subtract one-digit and two-digit numbers including zero.	**Week 1 – 3 Multiplication and Division** • Count in multiples of twos, fives and tens • Solve one step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays **Week 4-5 Fractions**

	• Represent and use number bonds and related subtraction facts • Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs • Add and subtract one digit numbers • Solve one step problems that involve addition and subtraction **Week 9 Geometry- Shape** • Recognise and name common 2-D shapes including • Recognise and name common 3-D shapes **Week 10 – 12 Place Value (within 20)** • Count to twenty, forwards and backwards, from any given number using numbers and words • Identify one more or one less • Identify and represent numbers using objects and pictorial representations and use the language of: equal to, more than, less than (fewer), most, least	• Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 =□–9 **Week 5-7 Place Value (within 50)** • Count forwards and backwards, beginning with 0 or 1, or from any number using numerals and words • Identify one more or one less. • Identify and represent numbers using objects and use the language of: equal to, more than, less than (fewer), most, least. • Count in multiples of twos, fives and tens. **Week 8-9 Measurement: Length and Height** • Measure and begin to record lengths and heights. • Compare, describe and solve practical problems for: lengths and heights **Week 10-12 Measurement: Weight and Volume** • Measure and begin to record mass/weight, capacity and volume. • Compare, describe and solve practical problems for mass/weight: [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]	• Recognise, find and name a half as one of two equal parts of an object, shape or quantity • Recognise, find and name a quarter as one of four equal parts • Compare, describe and solve practical problems for: lengths and heights and mass/weight **Week 6 Geometry: Position and Direction** • Describe position, direction and movement, including whole, half, quarter and three quarter turns **Week 7-8 Place Value (within 100)** • Count to hundred, forwards and backwards using numerals and words • Identify one more or one less • Identify and represent numbers using objects a, and use the language of: equal to, more than, less than (fewer), most, least **Week 9 Money** • Recognise and know the value of different denominations of coins and notes **Week 10-11 Time** • Recognise and use language relating to dates, including days of the week, weeks, months and years • Tell the time to the hour and half past the hour and draw the hands on a clock face **Week 12 Consolidation**
YEAR 2	**Week 1- 4 Place Value** • Read and write numbers to at least 100 in numerals and in words • Recognise the place value of each digit in a two-digit number (10s, 1s) • Identify, represent and estimate numbers using different representations • Compare and order numbers from 0 up to 100; use <, > and = signs • Use place value and number facts to solve problems • Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward **Week 5-9 Addition and Subtraction** • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, 2 two-digit numbers adding 3 one-digit numbers • Show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot	**Week 1-2 Money** • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • Find different combinations of coins that equal the same amounts of money • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change **Week 3-7 Multiplication and Division** • Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts • Show that multiplication of 2 numbers can be done in any order (commutative) and division of 1 number by another cannot	**Week 1-3 Fractions** • Recognise, find, name and write fractions 1/2, 1/3, 1/4, 2/4 and ¾ of a length, shape, set of objects or quantity • Write simple fractions for example, ½ of 6 =3 and recognise the equivalence of 2/4 and ½ **Week 4-5 Time** • Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. • Know the number of minutes in an hour and the number of hours in a day. • Compare and sequence intervals of time. **Week 7-8 Statistics** • Interpret and construct simple pictograms, tally charts, block diagrams and simple tables • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity • Ask and answer questions about totalling and comparing categorical data

	• Solve problems with addition and subtraction applying their increasing knowledge of mental and written method • Recognise and use the inverse relationship between addition and subtraction **Week 10-12 Geometry: Properties of Shapes** • Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces • Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] • Compare and sort common 2-D and 3-D shapes and everyday objects	**Week 8-9 Measurement: Length and Height** • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit • Compare and order lengths, mass, volume/capacity and record the results using >, <and = **Week 10-12 Measurement: Mass, Capacity and Temperature** • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • Compare and order lengths, mass, volume/capacity and record the results using >, <and =	**Week 9-10 Geometry: Position and Direction** • Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) • Order and arrange combinations of mathematical objects in patterns and sequences **Week 11-12 Problem Solving and Investigations**
YEAR 3	**Week 1- 3 Place Value** • Identify, represent and estimate numbers using different representations • Find 10 or 100 more or less • Recognise the place value of each digit in a 3-digit number (100s, 10s, 1s) • Compare and order numbers up to 1,000; reading and writing numbers • Solve number problems and practical problems • Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less **Week 4-8 Addition and Subtraction** • Add and subtract numbers mentally, including: a three-digit number and 1s, a three-digit number and 10s, a three-digit number and 100s • Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction • Estimate the answer to a calculation and use inverse operations to check answers • Solve problems, including missing number problems **Week 9 – 12 Multiplication and Addition** • Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	**Week 1 – 3 Multiplication and Division (continued)** **Week 4 Money** • Add and subtract amounts of money to give change, using both £ and p in practical contexts **Week 5 – 6 Statistics** • Interpret and present data using bar charts, pictograms and tables • Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables **Week 7 – 9 Length and Perimeter** • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). • Measure the perimeter of simple 2-D shapes. **Week 10-12 Fractions** • Count up and down in tenths; recognize that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 • Recognise and use fractions as numbers • Recognise, find and write fractions of a discrete set of objects • Solve problems that involve the above	**Week 1- 3 Fractions** • Recognise and show, using diagrams, equivalent fractions with small denominators • Compare and order unit fractions, and fractions with the same denominators • Add and subtract fractions with the same denominator within one whole [for example,5/7+1/7=6/7] • Solve problems that involve the above **Week 4 – 6 Time** • Tell and write the time from an analogue clock, including using Roman numerals from I to XII and 12-hour and 24-hour clocks • Estimate and read time with increasing accuracy to the nearest minute • Record and compare time in terms of seconds, minutes and hours. Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight • Know the number of seconds in a minute and the number of days in each month, year and leap year • Compare durations of events [for example to calculate the time taken by particular events or tasks] **Week 7-8 Properties of Shape** • Recognise angles as a property of shape or a description of a turn • Identify right angles, recognize that two right angles make a half-turn, three make three quarters of a turn and four a complete turn;

	• Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m object		identify whether angles are greater than or less than a right angle • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines • Draw 2-D shapes and make 3-D shapes using modelling materials • Recognise 3-D shapes in different orientations and describe them **Week 9 – 11 Mass and Capacity** • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) **Week 12 Consolidation**
YEAR 4	**Week 1-4 Place Value** • Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value • Count in multiples of 6, 7, 9, 25 and 1,000 • Find 1,000 more or less than a given number • Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s) Order and compare numbers beyond 1,000 • Identify, represent and estimate numbers using different representations • Round any number to the nearest 10, 100 or 1,000 • Solve number and practical problems **Week 5 – 7 Addition and Subtraction** • Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • Estimate and use inverse operations to check answers to a calculation Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why **Week 8 Length and Perimeter** • Convert between different units of measure [for example, kilometre to metre; hour to minute] • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres **Week 9-12 Multiplication and Division** • Recall multiplication and division facts for multiplication tables up to 12 × 12 • Count in multiples of 6, 7, 9, 25 and 1000 • Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers • Solve problems involving multiplying and adding, including using the	**Week 1-3 Multiplication and Division (continued)** • Recall and use multiplication and division facts for multiplication tables up to 12 ×12 • Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. • Recognise and use factor pairs and commutativity in mental calculations • Multiply two-digit and three-digit numbers by a one-digit number using formal written layout • Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one-digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects **Week 4 Area** • Find the area of rectilinear shapes by counting squares **Week 5-8 Fractions** • Recognise and show, using diagrams, families of common equivalent fractions • Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten • Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number • Add and subtract fractions with the same denominator **Week 9-11 Decimals** • Recognise and write decimal equivalents of any number of tenths or hundredths • Find the effect of dividing a one- or two-digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths	**Week 1-2 Decimals (continued)** • Compare numbers with the same number of decimal places up to two decimal places • Round decimals with one decimal place to the nearest whole number • Recognise and write decimal equivalents to 1/4,1/2 and 3/4 • Understand the effect of dividing a one or two-digit number by 10 or 100. • Identifying the value of the digits in the answer as ones, tenths and hundredths **Week 3-4 Money** • Estimate, compare and calculate different measures, including money in pounds and pence • Solve simple measure and money problems involving fractions and decimals to two decimal places **Week 5 Time** • Read, write and convert time between analogue and digital 12- and 24-hour clocks • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days **Week 6-7 Statistics** • Interpret and present discrete and continuous data using appropriate graphical methods • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs **Week 8–10 Geometry: Properties of Shape** • Identify acute and obtuse angles and compare and order angles up to 2 right angles by size • Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and size • Identify lines of symmetry in 2-D shapes presented in different orientation

	distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	• Solve simple measure and money problems involving fractions and decimals to two decimal places • Convert between different units of measure [for example, kilometre to metre] **Week 12 Consolidation**	• Complete a simple symmetric figure with respect to a specific line of symmetry **Week 11 Position and Direction** • Describe positions on a 2-D grid as coordinates in the first quadrant • Plot specified points and draw sides to complete a given polygon • Describe movements between positions as translations of a given unit to the left/right and up/down **Week 12 Consolidation**
YEAR 5	**Week 1- 3 Place Value** • 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 0 • Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 • Solve number problems and practical problems that involve all of the above • Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals **Week 4 – 5 Addition and Subtraction** • 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 • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why **Week 6 – 7 Statistics** • Solve comparison, sum and difference problems using information presented in a line graph • Complete, read and interpret information in tables, including timetables **Week 8-9 Multiplication and Division** • Multiply and divide numbers mentally, drawing upon known facts • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 • Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers • Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	**Week 1 – 3 Multiplication and Division** • Multiply and divide numbers mentally drawing upon known facts • Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2-digit numbers. • Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division and interpret remainders appropriately for the context • Solve problems involving addition and subtraction, multiplication and division and a combination of these **Week 4 – 9 Fractions** • Compare and order fractions whose denominators are 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=11/5] • Add and subtract fractions with the same denominator and denominators that are 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] • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates **Week 10- 12 Decimals and Percentages** • Read, write, order and compare numbers with up to three decimal places • 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	**Week 1-3 Decimals** • Recognise and write decimal equivalents of any number of tenths or hundredths • Find the effect of dividing a one or two digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths • Solve simple measure and money problems involving fractions and decimals to two decimal places • Convert between different units of measure [for example, kilometre to metre] **Week 5–7 Geometry: Properties of Shape** • Identify 3-D shapes, including cubes and other cuboids, from 2-D representations • 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 • Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • Draw given angles, and measure them in degrees. 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° **Week 8 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 **Week 9-10 Measurement: Converting Units** • Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml] • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • Solve problems involving converting between units of time **Week 11 Measurement: Volume**

	• Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes • 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 **Week 10-12 Perimeter and Area** • Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes	• Solve problems involving number up to three decimal places • Recognise the percent symbol (%) and understand that per cent 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 fractions with a denominator of a multiple of 10 or 25	• Estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling for example, using water] **Week 12 Consolidation**
YEAR 6	**Week 1-2 Place Value** • 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 0 • Solve number and practical problems that involve all of the above **Week 3-6 Addition, Subtraction, Multiplication and Division** • 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 4 operations • Solve addition and subtraction multi-step problems in contexts • 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 **Week 7-10 Fractions** • Use common factors to simplify fractions; use common multiples to	**Week 1 – 2 Decimals** • Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places • Multiply 1-digit numbers with up to 2 decimal places by whole numbers. • Use written division methods in cases where the answer has up to 2 decimal places • Solve problems which require answers to be rounded to specified degrees of accuracy **Week 3 – 4 Percentages** • Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison • Recall and use equivalences between simple fractions, decimals and percentages including in different contexts **Week 5 – 6 Algebra** • Use simple formulae • Generate and describe linear number sequences • Express missing number problems algebraically • Find pairs of numbers that satisfy an equation with two unknowns • Enumerate possibilities of combinations of two variables **Week 7 Measurement: Converting Units** • 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 3 dp	**Week 1–6 Consolidation, Problem Solving and Investigations** **Week 7-8 Statistics** • Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. • Interpret and construct pie charts and line graphs and use these to solve problems. • Calculate the mean as an average. **Week 9-11 Ratio** • Solve problems involving the relative sizes of two quantities where missing values can be found

	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 • Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8] • Divide proper fractions by whole numbers • Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction • Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts **Week 11 Geometry: Position and Direction** • Describe positions on the full coordinate grid (all four quadrants) • Draw and translate simple shapes on the coordinate plane, and reflect m in the axes	• Convert between miles and kilometres **Week 8-9 Perimeter, Area and Volume** • Recognise that shapes with the same areas can have different perimeters and vice versa • Recognise when it is possible to use 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 cm3, m3and extending to other units (mm3, km3) • by using integer multiplication and division facts. • Solve problems involving similar shapes where the scale factor is known or can be found. **Week 10 -11 Geometry: Properties of Shape** • Draw 2-D shapes using given dimensions and angles • Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons • Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles • Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. **Week 12 Consolidation**	