Year 3

Number – Number and place value	**Number – Addition and subtraction**	**Number – Multiplication and division**	**Number – Fractions**
• count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given Number • recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • compare and order numbers up to 1000 • identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words • solve number problems and practical problems involving these ideas [i.e. number and place value]	• add and subtract numbers mentally, including: – a three-digit number and ones – a three-digit number and tens – a three-digit number and hundreds • add and subtract numbers with up to three 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, using number facts, place value, and more complex addition and subtraction	• 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 • 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 objects	• count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 • recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • recognise and show, using diagrams, equivalent fractions with small denominators • add and subtract fractions with the same denominator within one whole [for example, 57 + 17 = 67] • compare and order unit fractions, and fractions with the same denominators • solve problems that involve all of the above [i.e. fractions]

Measurement	**Geometry – Properties of shapes**	**Statistics**
• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • measure the perimeter of simple 2-D shapes • add and subtract amounts of money to give change, using both £ and p in practical contexts • 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]	• draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • recognise angles as a property of shape or a description of a turn • identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle • identify horizontal and vertical lines and pairs of perpendicular and parallel lines	• 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

Year 4

Number – Number and place value	Number – Addition and subtraction	Number – Multiplication and division
• count in multiples of 6, 7, 9, 25 and 1000 • find 1000 more or less than a given number • count backwards through zero to include negative numbers • recognise the place value of each digit in a four-digit number (thousands, • hundreds, tens, and ones) • order and compare numbers beyond 1000 • identify, represent and estimate numbers using different representations • round any number to the nearest 10, 100 or 1000 • solve number and practical problems that involve all of the above and with increasingly large positive numbers • read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	• 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	• recall 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

Number – Fractions (including decimals)	**Measurement**	**Geometry – Properties of shapes**	**Geometry – Position and direction**	**Statistics**
• 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 • recognise and write decimal equivalents of any number of tenths or hundredths • recognise and write decimal equivalents to ¼, ½, ¾ • find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths • round decimals with one decimal place to the nearest whole number • compare numbers with the same number of decimal places up to two decimal places • 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; hour to minute] • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares • estimate, compare and calculate different measures, including money in pounds and pence • 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	• compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry	• describe positions on a 2-D grid as coordinates in the first quadrant • describe movements between positions as translations of a given unit to the left/right and up/down • plot specified points and draw sides to complete a given polygon	• interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Year 5

Number – Number and place value	**Number – Addition and subtraction**	**Number – Multiplication and division**
• 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

Number – Fractions (including decimals and percentages)

- 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]
- 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 = $\frac{71}{100}$]
- 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 per cent 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

Measurement

- 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), and including 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

Geometry – Properties of shapes

- 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 (°)
- identify:
  – angles at a point and one whole turn (total 360°)
  – angles at a point on a straight line and $\frac{1}{2}$ 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 – 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

Statistics

- solve comparison, sum and difference problems using information presented in a line graph
- complete, read and interpret information in tables, including timetables

Year 6

Number – Using Numbers

- how to use number skills in real life
- how to use numbers in everyday money problems
- how to use a number line to understand negative numbers
- how to use the symbols <<(less than) and >>(greater than)
- how to use a number line to calculate with negative numbers
- how to add negative numbers
  how to subtract negative numbers.

Sequences

- how to use function machines to generate input or output values
- how to describe some simple number patterns
- how to create sequences and describe them in words
- how to generate and describe simple whole-number sequences
- how to use the special sequence called the sequence of square numbers
- how to use the special sequence called the sequence of triangular numbers.

Area, perimeter and Volume

- how to work out the perimeters and areas of 2D shapes
- how to work out the volumes of cubes and cuboids
- how to use simple formulae to calculate perimeter, area and volume
  how to work out the capacity of a cube or a cuboid.

Decimal numbers

- how to order decimal numbers by size
- how to multiply and divide decimal numbers by 1010, $100100$and 10001000
- how to use estimation to check your answers
- how to add and subtract decimal numbers
- how to multiply and divide decimals by whole numbers.

Working with numbers

- what square roots are
- that you can use a calculator to work out square roots
- how to round whole numbers and decimals
- the order of operations
- how to carry out long multiplication
- how to carry out long division
- how to calculate with measurements.

Statistics

- how to calculate the mode, the median, the mean and the range for a set of data
- how to use tally charts and frequency tables to collate data
- how to interpret statistical diagrams and charts
- how to collect and organise data
- how to create data collection forms
- how to create questionnaires
- how to draw simple conclusions from data.

Algebra

- how to use letters to represent numbers
- how to use the rules (conventions) of algebra
- how to simplify algebraic expressions
- how to use and write formulae.

Fractions

- how to find equivalent fractions
- how to write a fraction in its simplest form
- how to add and subtract fractions with the same and different denominators
- how to convert a simple improper fraction to a mixed number
- how to convert a mixed number into an improper fraction
- how to add and subtract mixed numbers with the same and different denominators.

Angles

- how to measure and draw angles
- how to calculate angles at a point, angles on a straight line and vertically opposite angles
- how to calculate angles in a triangle
- how to calculate angles in a quadrilateral
- how to recognise parallel, intersecting and perpendicular lines
- how to explain the geometrical properties of triangles and quadrilaterals.

Coordinates and graphs

- how to use coordinates in all four quadrants
- how to draw a variety of graphs
- how to recognise lines of the form $x=a, y=b x=a, y=b$
- how to recognise the graphs of $y=x, y=-x y=x, y=-x$ and $y=a x y=ax$

how to interpret and draw graphs that show real-life problems.

Percentages

- how to interpret percentages as fractions or decimals
- how to work out a fraction or a percentage of a quantity
- when and how you can work out using a percentage of a quantity without using a calculator
- how to work out the result of a simple percentage change
- how to solve simple problems involving percentage changes.

Probability

- how to use the correct words to describe probability
- how to work with a probability scale
- how to work out theoretical probabilities in different situation
- how to use experimental probability to make predictions.

Symmetry	**Equations**	**Interpreting data**	**Ratio**
• how to recognise shapes that have reflective symmetry • how to use line symmetry • how to recognise and use rotational symmetry • how to reflect shapes in a mirror line • how to use coordinates to reflect shapes in all four quadrants • how to tessellate a shape.	• how to solve simple equations • how to set up equations to solve simple problems.	• how to read data from a pie chart in which the data is given as percentages • how to read data from pie charts when the sectors are simple fractions of the whole • how to use the mean and range to compare sets of data • how to carry out and interpret a statistical survey.	• how to use ratio notation • how to use ratios to compare quantities • how to simplify ratios • how to use ratios to find totals or missing quantities • the connection between ratios and fractions • how to use ratios to solve problems in everyday life.