

Year 5

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Number – Place Value</p> <p>Vocabulary: Number, zero, one to twenty and beyond, none, count (on, up, to, from, down), before, after, more, less, many, few, fewer, least, fewest, smaller, greater, equal to, the same as, odd, even, pair, units, tens, ones, digit, numeral, figures, compare, size, value, between, halfway between, above, below, add on, count on, count back, bridging, number bonds, hundreds, thousands, estimate, exchange, approximately, negative number, round to, interval, ascending, descending, decimal, decimal point, integer, million, sequence,</p>	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 1000000 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. 	<ul style="list-style-type: none"> 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 and practical problems that involve all of the above

equivalence, equivalent, decimal, one decimal place, two decimal places	<ul style="list-style-type: none">• 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.		
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NOTES:

- Identify the place value in large whole numbers.
- Continue to use number in context, including measurement.
- Extend and apply understanding of the number system to the decimal numbers and fractions that they have met so far.
- Recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule.
- Recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule in words (for example, add $\frac{1}{2}$).

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Number – Addition and Subtraction</p> <p>Vocabulary: Number bonds, number lines, add, more, plus, make, sum, total, altogether, number bonds, number lines, add, more, plus, make, sum, total, altogether, inverse, double, halve, equals, the same, difference between, subtract, take away, minus, less than <, more than >, decimal, whole, tenth, hundredth, thousandth, fraction, coins, notes, pounds, pence, change, cheaper, more expensive, estimate, over estimate, under estimate, million, sequence, equivalence,</p>	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 <p>Identify common factors, common multiples and prime numbers</p> <p>Use their knowledge of the order of operations to carry out</p>

equivalent, decimal, one decimal place, two decimal places			calculations involving the four operations <ul style="list-style-type: none">• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
NOTES: <ul style="list-style-type: none">• Practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency (see calculation policy).• Practise mental calculations with increasingly large numbers to aid fluency (for example, $12\ 462 - 2300 = 10\ 162$).			

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Number – Multiplication and Division</p> <p>Vocabulary: count in twos, fives, tens, how many times? Lots of, groups of, multiples of, repeat addition, array, row, column, double, halve, share, equal, group in pairs/threes, divide, divided by, left over, sets of, grouping, sharing, multiple, multiplication, commutative principle, doubling, halving, equivalent, prime, composite, prime factor, factor tree, multiple, lowest common factor, common multiple, common factor, square, cube, power of</p>	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 (nonprime) 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 	<ul style="list-style-type: none"> 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

- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

NOTES:

- Practice and extend their use of the formal written methods of short multiplication and short division (see calculation policy).
- Apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations.
- Use and understand the terms factor, multiple and prime, square and cube numbers.
- Interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example, $98 \div 4 = 4 \text{ } 98 = 24 \text{ r } 2 = 24 \frac{2}{4} = 24.5 \approx 25$).
- Use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres. Distributivity can be expressed as $a(b + c) = ab + ac$.

Understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, $4 \times 35 = 2 \times 2 \times 35$; $3 \times 270 = 3 \times 3 \times 9 \times 10 = 92 \times 10$).

Use and explain the equals sign to indicate equivalence, including in missing number problems (for example, $13 + 24 = 12 + 25$; $33 = 5 \times \text{ }$).

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Number – Fractions</p> <p>Vocabulary: Half, quarter, part, section, equal, equal parts, whole, unit fraction, non-unit fraction, integer, numerator, denominator, represent, share, group, mixed number, whole number, divide, set, multiple, tenth, interval, mixed number, improper fraction simplify, hundredth</p>	<ul style="list-style-type: none"> 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 $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ 	<ul style="list-style-type: none"> 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. 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 	<ul style="list-style-type: none"> 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 Multiply simple pairs of proper fractions, writing the answer in its simplest form Divide proper fractions by whole numbers

- 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.

- 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 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

- Associate a fraction with division and calculate decimal fraction equivalents
- 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

NOTES:

- Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions.
- Extend their knowledge of fractions to thousandths and connect to decimals and measures.
- Connect equivalent fractions > 1 that simplify to integers with division and other fractions > 1 to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions.
- Connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years. This relates to scaling by simple fractions, including fractions > 1 .

- Practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems.
- Extend their understanding of adding and subtracting fractions to calculations that exceed 1 as a mixed number.
- Continue to practise counting forwards and backwards in simple fractions.
- Continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities. Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.
- Say, read and write decimal fractions and related tenths, hundredths and thousandths accurately and are confident in checking the reasonableness of their answers to problems.
- Mentally add and subtract tenths, and one-digit whole numbers and tenths.
- Practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example, $0.83 + 0.17 = 1$).
- Go beyond the measurement and money models of decimals, for example, by solving puzzles involving decimals.
- Make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is $1/100$, 50% is $50/100$, 25% is $25/100$) and relate this to finding 'fractions of'.

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Measurement</p> <p>Vocabulary: Estimate, measure, heavy, light, long, short, centimetres, metres, minutes, hours, seconds, clock, timer, length, width, height, perimeter, total sides, acute, obtuse, right angle, month, year, midnight, midday, am, pm, duration, estimate, consecutive, hour, minute, second, past to, end, start, digital, analogue, elapsed, length, width, rectilinear, area, volume, mass, capacity, potential, unit cube, kilo, milli, inch, foot, yard, imperial unit, pound (lb) ounce (oz) stone, gallon, pint</p>	<ul style="list-style-type: none"> • 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 Mathematics – key stages 1 and 2 28 Statutory requirements • 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. 	<ul style="list-style-type: none"> • 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 (cm²) and square metres (m²) and estimate the area of irregular shapes • Estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and 	<ul style="list-style-type: none"> • 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 <p>Convert between miles and kilometres</p> <ul style="list-style-type: none"> • 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 cubic centimetres

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.

(cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].

NOTES:

- Use knowledge of place value and multiplication and division to convert between standard units.
- Calculate the perimeter of rectangles and related composite shapes, including using the relations of perimeter or area to find unknown lengths. Missing measures questions such as these can be expressed algebraically, for example $4 + 2b = 20$ for a rectangle of sides 2 cm and b cm and perimeter of 20cm.
- Calculate the area from scale drawings using given measurements.
- Use all four operations in problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days).

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Geometry – Properties of Shape</p> <p>Vocabulary: group, sort, cube, cuboid, pyramid, sphere, cone, cylinder, circle, triangle, square, hexagon, pentagon, flat, curved, straight, face, side, edge, corner, 2D, 3D, length, width, side, vertex, vertices, edge, face, degree, interior angle, missing angle, square meter, square centimetre</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ Angles at a point and one whole turn (total 360o) ○ Angles at a point on a straight line and 1/2 a turn (total 180o) ○ Other multiples of 90o • 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. 	<ul style="list-style-type: none"> • 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 circles, 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.

NOTES:

- Become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor.
- Use conventional markings for parallel lines and right angles.
- Use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools.
- Use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Geometry – Position and Direction</p> <p>Vocabulary: Position, direction, over, under, next to, on inside, above, below, top, bottom, side, on, in outside, inside, out, around, front, back, behind, apart, middle, edge, centre, corner, direction, left, right, up down, forwards, backwards, across, close, far, near, along, through, rotate, rotation, degrees, right angle, ninety degree, one hundred and eighty degrees, clockwise, anticlockwise, reflect</p>	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
<p>NOTES:</p> <ul style="list-style-type: none"> Recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Reflection should be in lines that are parallel to the axes. 			

Unit	What do I need to know before I start this unit? (Year 4)	What will I be learning this year?	What is the next step? (Year 6)
<p>Geometry – Statistics</p> <p>Vocabulary: count, tally, sort, graph, block, set, list, table, bar chart, pictogram, interpret, represent, interval</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Solve comparison, sum and difference problems using information presented in a line graph • Complete, read and interpret information in tables, including timetables. 	<ul style="list-style-type: none"> • Interpret and construct pie charts and line graphs and use these to solve problems • Calculate and interpret the mean as an average.
<p>NOTES:</p> <ul style="list-style-type: none"> • Connect work on coordinates and scales to their interpretation of time graphs. • Begin to decide which representations of data are most appropriate and why. 			