

Year 4

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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</p>	<ul style="list-style-type: none"> 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. 	<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 Read Roman numerals to 100 (I to C) and know that over time, 	<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 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.

		the numeral system changed to include the concept of zero and place value.	
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NOTES:

- Use a variety of representations, including measures, to develop fluency in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice.
- Begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.
- Connect estimation and rounding numbers to the use of measuring instruments.
- Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time.

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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</p>	<ul style="list-style-type: none"> • Add and subtract numbers mentally, including: <ul style="list-style-type: none"> ○ 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. 	<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.
<p>NOTES:</p> <ul style="list-style-type: none"> • Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency 			

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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</p>	<ul style="list-style-type: none"> 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 (\times), division (\div) and equals (=) signs Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. 	<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

NOTES:

- Practise to become fluent in the formal written method of short multiplication and short division with exact answers (see calculation policy).
- Write statements about the equality of expressions (for example, use the distributive law $39 \times 7 = 30 \times 7 + 9 \times 7$ and associative law $(2 \times 3) \times 4 = 2 \times (3 \times 4)$).
- Combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations for example, $2 \times 6 \times 5 = 10 \times 6 = 60$.
- Solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children.

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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"> 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 nonunit 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 	<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 $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$ Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the 	<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

same denominator within one whole [for example, $7\frac{5}{6} + 7\frac{1}{6} = 14\frac{6}{6}$]

- Compare and order unit fractions, and fractions with the same denominators

Solve problems that involve all of the above.

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.

NOTES:

- Connect hundredths to tenths and place value and decimal measure.
- Extend the use of the number line to connect fractions, numbers and measures.
- Understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.
- Make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities.
- Use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, $9\frac{6}{6} = 3\frac{2}{2}$ or $4\frac{1}{1} = 8\frac{2}{2}$).

- Continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole.
- Learn throughout that decimals and fractions are different ways of expressing numbers and proportions. Pupils' understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole number by 10 and later 100.
- Practise counting using simple fractions and decimals, both forwards and backwards.
- Learn decimal notation and the language associated with it, including in the context of measurements.
- Make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They should be able to represent numbers with one or two decimal places in several ways, such as on number lines.

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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,</p>	<ul style="list-style-type: none"> • 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 	<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 capacity [for example, using water]

	<ul style="list-style-type: none">• Compare durations of events [for example to calculate the time taken by particular events or tasks].		<ul style="list-style-type: none">• 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.
	<p>NOTES:</p> <ul style="list-style-type: none">• Build on understanding of place value and decimal notation to record metric measures, including money.• Use multiplication to convert from larger to smaller units.• Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.• Relate area to arrays and multiplication.		

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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</p>	<ul style="list-style-type: none"> • 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 <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines</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.
<p>NOTES:</p> <ul style="list-style-type: none"> • Continue to classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium). 			

- Compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular.
- Draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape.

Unit	What do I need to know before I start this unit? (Year 2)	What will I be learning this year?	What is the next step? (Year 5)
<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"> • Order and arrange combinations of mathematical objects in patterns and sequences • 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 anticlockwise). 	<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.
<p>NOTES:</p> <ul style="list-style-type: none"> • Learn to draw a pair of axes in one quadrant, with equal scales and integer labels. • Read, write and use pairs of coordinates, for example (2, 5), including using coordinate plotting ICT tools. 			

Unit	What do I need to know before I start this unit? (Year 3)	What will I be learning this year?	What is the next step? (Year 5)
<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 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. 	<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.
<p>NOTES:</p> <ul style="list-style-type: none"> • Understand and use a greater range of scales in their representations. • Begin to relate the graphical representation of data to recording change over time. 			