

# The London Acorn School.

Subject overviews

Maths



Term	Class/Year group	Subject area
Autumn	Class 1 Year 2	<p>Count to 100, forwards and backwards, beginning with 0 or 1, or from any given number <i>e.g. 19, 18, 17, 16, ...</i></p> <p>Count, read and write numbers to 100 in numerals,</p> <p>Begin counting in multiples of twos and tens <i>e.g. 2, 4, 6, 8, 10, 12,</i></p> <p>Given a number, identify one more and one less</p> <p>Recognise and name common 2-D shapes, including: 2-D shapes (<i>e.g. rectangles (including squares), circles and triangles</i>)</p> <p>Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least</p> <p>Read and write numbers from 1 to 20 in numerals</p> <p><i>Use language of ordering e.g. first, second, third</i></p> <p>Solve simple one-step problems (<i>in familiar practical contexts, including using quantities</i>) that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems <i>e.g. <math>3 + \quad = 7</math></i></p>
Spring	Class 1 Year 2	<p>Recognise and name 3-D shapes (<i>e.g. cuboids, including cubes, pyramids and spheres</i>).</p> <p><i>Reinforcement of number knowledge</i></p> <p>Count to and from 100, reading and writing numbers</p> <p>Can identify one more than or one less than a given number</p> <p>Can place all numbers on a number line correctly</p> <p><i>Use language of ordering e.g. first, second, third</i></p> <p>Number bonds and related subtraction facts <i>within 10, in several forms e.g. <math>3 + 4 = 7</math>; <math>4 = 7 - 3</math>;</i></p> <p>Add and subtract one-digit and two-digit numbers to 20 (<math>9 + 9</math>, <math>18 - 9</math>), including zero from materials</p> <p>Fractions-</p> <p>Recognise, find and name a half as one of two equal parts of an object, shape, <i>length</i> or quantity <i>e.g. Find half of a length of string, by folding;</i></p> <p>Multiplication</p> <p><i>Double and halve numbers to 20 e.g. double 6 is 12, half of 10 is 5</i></p> <p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p> <p>Represent, <i>memorise</i> and use number bonds and related subtraction facts <i>within 10, in several forms e.g. <math>3 + 4 = 7</math>; <math>4 = 7 - 3</math>;</i></p> <p>Add and subtract one-digit and two-digit numbers to 20 (<math>9 + 9</math>, <math>18 - 9</math>), incl. zero</p>

<p><b>Summer</b></p>	<p><b>Class 1 Year 3</b></p>	<p>Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening</p> <p>Recognise and use language relating to dates, including days of the week, weeks, months and years</p> <p>Tell the time to the hour and draw the hands on a clock face to show these times.</p> <p>Describe positions, directions and movements using language such as left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside</p> <p>Recognise, find and name a half as one of two equal parts of an object, shape, <i>length</i> or quantity <i>e.g. Find half of a length of string, by folding;</i>.</p> <p>Compare, describe and solve practical problems for:  lengths and heights (<i>e.g. long/short, longer/shorter, tall/short, double/half</i>)  mass or weight (<i>e.g. heavy/light, heavier than, lighter than</i>)  capacity/volume (<i>full/empty, more than, less than</i>)  time (<i>quicker, slower, earlier, later</i>)</p> <p><i>Use non standard measures to measure and begin to record the following:</i>  lengths and heights  mass/weight  capacity and volume</p> <p>Recognise and know the value of different denominations of coins</p>
<p><b>Autumn</b></p>	<p><b>Class 2 Year 3</b></p>	<p>Mental addition and subtraction</p> <ul style="list-style-type: none"> <li>- Revising the understanding and use of place value and number facts in mental addition and subtraction</li> <li>- Use multiple of 5 and 10 bonds to 100 to solve additions and subtractions</li> </ul> <p>Problem solving, reasoning and algebra</p> <p>Addition and subtraction</p> <ul style="list-style-type: none"> <li>- add and subtract 1-digit numbers to and from 2-digit numbers</li> <li>- using partitioning in adding and subtracting</li> <li>- Use money to add and subtract and record using the correct notation and place value</li> <li>- add and subtract 2-digit numbers using partitioning</li> <li>- add three 2-digit numbers by partitioning and recombining</li> <li>- use counting up to do mental subtractions with answers between 10 and 20, 10 and 30, and either side of 100</li> <li>- Word problems</li> </ul> <p>Number and place value</p> <ul style="list-style-type: none"> <li>- revising the understanding and use of place value and number facts</li> <li>- Compare and order 2-and 3-digit numbers</li> <li>- count on and back in 10s and 1s; add and subtract 2-digit numbers</li> <li>- solve problems using place value</li> <li>- placing 2-and 3-digit numbers on a line and using an empty number line to find differences</li> <li>- Comparing, ordering and understanding place value of 2-and 3-digit numbers; subtracting from 2-digit numbers</li> <li>- using prediction to estimate calculations</li> <li>- understanding place value, including in money</li> <li>- using number lines to compare and round numbers and to find differences</li> <li>- round 3-digit numbers to nearest 100</li> </ul> <p>Multiplication and division</p> <ul style="list-style-type: none"> <li>- key multiplication and division facts</li> </ul>

		<ul style="list-style-type: none"> <li>- doubling and halving</li> <li>- multiplication and division facts for the 5, 10, 2, 4 and 3 times-tables</li> <li>- Word problems</li> <li>- Derive division facts from known times tables</li> <li>- Division with remainders</li> </ul> <p>Measurement</p> <ul style="list-style-type: none"> <li>- Telling the time with increasing accuracy; to the nearest five minutes on analogue and digital clocks</li> <li>- Know and understand the calendar, incl days, weeks and months</li> <li>- SI units and measurement of length and capacity</li> <li>- Choose an appropriate instrument to measure a length and use a ruler to estimate, measure and draw to the nearest centimetre</li> <li>- Know 1 litre = 1000ml</li> <li>- estimate and measure capacity in millilitres</li> </ul> <p>Geometry: properties of shapes</p> <ul style="list-style-type: none"> <li>- Identifying, describing and sorting 3D shapes</li> <li>- Properties of 3D shapes</li> </ul> <p>Statistics</p> <p>Fractions, ratio and proportion</p> <ul style="list-style-type: none"> <li>- Doubling and halving numbers up to 100 using partitioning</li> <li>- Understanding half and other unit fractions</li> <li>- understanding fractions and fractions of numbers</li> </ul>
Spring	Class 2 Year 3	<p>Number and place value</p> <ul style="list-style-type: none"> <li>- Rehearse place value in 3-digit numbers, order them on a number line and find a number in between</li> <li>- compare number sentences</li> <li>- Multiply and divide by 10 (whole number answers)</li> <li>- Place 3-digit numbers on empty 100 number lines</li> <li>- begin to place 3-digit numbers on 0-1000 landmarked and empty number lines</li> <li>- round 3-digit numbers to the nearest ten and to the nearest hundred</li> <li>- Understand place-value in 3-digit numbers</li> <li>- separate 3-digit numbers into hundreds, tens, and ones</li> <li>- begin to move tens and hundreds moving towards formal written addition</li> <li>- focuses on using number lines to facilitate an understanding of place value in 3-digit numbers</li> <li>- Order 3-digit numbers and find numbers between</li> </ul> <p>Addition and subtraction</p> <ul style="list-style-type: none"> <li>- solve additions and subtractions using place value</li> <li>- using partitioning in addition</li> <li>- Add pairs of 2-digit numbers using partitioning (crossing 10s, 100 or both) and then extend to add two 3-digit numbers (not crossing 1000)</li> <li>- use counting up as a strategy to perform mental subtraction</li> <li>- add two 3-digit numbers using vertical written addition (expanded)</li> <li>- add 2-and 3-digit numbers using vertical written addition (expanded)</li> <li>- Add two 2-digit numbers mentally</li> <li>- add 2-digit to 3-digit numbers mentally using place value and rounding add two 3-digit numbers using expanded written method (answers under 1000)</li> <li>- add two 3-digit numbers using expanded column addition</li> <li>- investigate patterns in numbers when adding them</li> <li>- choose to solve addition using a mental method or expanded column addition (written method)</li> <li>- solve subtractions of 3-digit -3-digit numbers using counting up (Frog)</li> <li>- use counting up and counting back as strategies to perform mental subtractions</li> </ul>

- choose to solve a given subtraction by counting up or counting back

#### Problem solving, reasoning and algebra

#### Multiplication and Division

- count in steps of 10, 50 and 100.12
- 2, 3, 4, 5, 8 and 10 times
- recognise and sort multiples of 2, 3, 4, 5, and 10
- double the 4 times-table to find the 8 times-table
- derive division facts for the 8 times-table
- multiply and divide by 4 by doubling or halving twice
- developing multiplication strategies using doubling and halving and the grid method
- division is related to multiplication and this relationship is used to solve missing number problems
- Double and halve numbers up to 100 by partitioning
- solve word problems involving doubling and halving
- multiply numbers between 10 and 25 by 1-digit numbers using the grid method
- divide multiples of 10 by 1-digit numbers using known tables facts
- see the relation between multiplication and division

#### Fractions, ratio and proportion

- fractions as numbers
- finding equivalent fractions
- placing fractions on a line
- fractions as operators
- finding fractions of amounts
- Identify  $\frac{1}{2}$ s,  $\frac{1}{3}$ s,  $\frac{1}{4}$ s,  $\frac{1}{6}$ s, and  $\frac{1}{8}$
- realise how many of each make a whole

#### Geometry

- properties of shapes
- position and direction
- Angles incl right angles, measurement of turn and the ° symbol
- understand angles are measured in degrees
- Recognise right angles and know they are 90°
- Properties of 2D shapes
- Finding perimeter
- to understand and use the term perimeter to mean the length/distance around the edge (border) of a 2D shape
- know a right angle is a quarter turn
- know 360° is a full turn
- begin to understand angles and identify size of angles in relation to 90°

#### Measurement

- begin to calculate using a ruler
- Money
  - subtract pounds and pence from five pounds
  - use subtraction, and column methods of addition. counting up (Frog) as a strategy to perform mental subtraction of amounts of money
  - subtract pounds and pence from ten pounds
- Time
  - focuses on time-telling on digital and analogue clocks

		<p>the calculation of time intervals</p> <p>word problems</p> <p>Tell the time to the nearest minute on analogue and digital clocks (minutes past and minutes to)</p> <p>time events in minutes and seconds</p> <p>find a time after a given interval (not crossing the hour)</p> <p>calculate time intervals</p>
<p><b>Summer</b></p>	<p><b>Class 2 Year 3</b></p>	<p>Addition and subtraction</p> <ul style="list-style-type: none"> <li>- Add 3-digit and 1-digit numbers mentally, using number facts; subtract 1-digit numbers from 3-digit numbers mentally using number facts; add and subtract</li> <li>- column addition</li> <li>- subtracting by counting up, and choosing appropriate methods to solve problem</li> <li>- Add 3-digit and 2-digit numbers using mental strategies</li> <li>- add two 3-digit numbers using mental strategies or by using column addition</li> <li>- use reasoning, trial and improvement to solve problems involving more complex addition</li> <li>- Use column addition to add three 2-and 3-digit numbers together and four 2-and 3-digit numbers together</li> <li>- subtract 3-digit numbers using counting up</li> <li>- solve word problems choosing an appropriate method</li> <li>- Add 3-digit numbers using column addition</li> <li>- solve problems involving measures</li> <li>- solve subtractions of 3-digit numbers using counting up</li> </ul> <p>Problem solving, reasoning and algebra</p> <p>Fractions, ratio and proportion</p> <ul style="list-style-type: none"> <li>- compare and order fractions with the same denominator</li> <li>- begin to recognise equivalences of <math>\frac{1}{2}</math></li> <li>- add and subtract fractions with the same denominator</li> <li>- Decimals, percentages and their equivalence to fractions</li> <li>- finding tenths of amounts</li> </ul> <p>recognise tenths and equivalent fractions</p> <p>find one-tenth and several tenths of multiples of 10 and begin to find one-tenth of single-digit numbers</p> <p>Multiplication and Division</p> <ul style="list-style-type: none"> <li>- multiples of 10 by counting on and back in 10s and using number facts to cross 100s</li> <li>- using tables facts to solve scaling problems, multiplications using the grid method</li> <li>- Divisions using chunking</li> <li>- Use function machines to multiply by 2, 3, 4, 5 and 8 and understand the inverse</li> <li>- use scaling to multiply heights and weights by 2, 4, 8, 5 and 10</li> <li>- use known facts to multiply multiples of 10 by 2, 3, 4 and 5</li> <li>- multiply numbers between 10 and 30 by 3, 4 and 5 using the grid method</li> <li>- multiply 2-digit numbers by 3, 4, 5 and 8 using the grid method</li> <li>- Divide without remainders, just beyond the 12th multiple</li> <li>- division with remainder</li> <li>- use the grid method to multiply 2-digit numbers by 3, 4, 5 and 8</li> <li>- begin to estimate products</li> <li>- Use the grid method to multiply 2-digit numbers by 3, 4, 5, 6 and 8</li> <li>- estimate products</li> <li>- decide whether to use multiplication or division to solve word problems</li> </ul> <p>Statistics</p> <ul style="list-style-type: none"> <li>- drawing and interpreting pictograms and bar graphs with different scales; where one square/symbol represents two units</li> <li>- Record and analyse data in the context of measuring weights</li> <li>- draw and interpret bar charts where one square represents one hundred units</li> </ul> <p>Measurement</p> <ul style="list-style-type: none"> <li>- Weight</li> </ul> <p>compare and measure weights in multiples of 100g</p>

		<p>know how many grams are in a kilogram estimate and weigh objects to the nearest 100g</p> <ul style="list-style-type: none"> <li>- 2D Shapes developing understanding and vocabulary of shape and angle measuring perimeters Identify, name and draw horizontal, vertical, perpendicular, parallel and diagonal lines, angles and symmetry in 2D shapes measure the perimeter of 2D shapes by counting and measuring with a ruler</li> <li>- Time telling the time 5, 10, 20 minutes later using am/pm and 24-hour clock tell the time on analogue and digital clocks to the minute</li> </ul>
<b>Autumn</b>	<b>Class 3 Year 4</b>	<p>Finding pairs with a total of 100; adding to the next multiple of 100 and subtracting to the previous multiple of 100; subtract by counting up to find a difference; adding several numbers</p> <p>Read, write 4-digit numbers and know what each digit represents; compare 4-digit numbers using &lt; and &gt; and place on a number line; add 2-digit numbers mentally; subtract 2-digit and 3-digit numbers</p> <p>Learn <math>\times</math> and <math>\div</math> facts for the 6 and 9 times-table and identify patterns; multiply multiples of 10 by single-digit numbers; multiply 2-digit numbers by single-digit numbers (the grid method); find fractions of amounts</p> <p>Tell and write the time to the minute on analogue and digital clocks; calculate time intervals; measure in metres, centimetres and millimetres; convert lengths between units; record using decimal notation</p> <p>Add two 3-digit numbers using column addition; subtract a 3-digit number from a 3-digit number using an expanded column method (decomposing only in one column)</p> <p>-Double 3-digit numbers and halve even 3-digit numbers; revise unit fractions; identify equivalent fractions; reduce a fraction to its simplest form; count in fractions (each fraction in its simplest form)</p> <p>-Look at place value in decimals and the relationship between tenths and decimals; add two 4-digit numbers; practise written and mental addition methods; use vertical addition to investigate patterns</p> <p>-Round 4-digit numbers to the nearest: 10, 100 and 1000; subtract 3-digit numbers using the expanded written version and the counting up mental strategy and decide which to use</p> <p>-Convert multiples of 100g into kilograms; convert multiples of 100ml into litres; read scales to the nearest 100ml; estimate capacities; draw bar charts, record and interpret information</p> <p>-Use the grid method to multiply 3-digit by single-digit numbers and introduce the vertical algorithm; begin to estimate products; divide numbers (up to 2 digits) by single-digit numbers with no remainder, then with a remainder</p>
<b>Spring</b>	<b>Class 3</b>	Number and place value

## Year 4

- Place 4-digit numbers on landmarked lines
- 0–10000 and 1000–2000
- round 4-digit numbers to the nearest 10, 100 and 1000
- mentally add and subtract to/from 4-digit and 3-digit numbers using place-value
- Count on and back in multiples of 10, 100 and 1000
- Count on in multiples of 25 and 50
- Understand place value in 4-digit numbers
- Partition 4-digit numbers

### Decimals

- Recognise, use, compare and order decimal numbers
- Understand place value in decimal numbers
- Recognise that decimals are tenths
- Round decimals to the nearest whole number
- Divide 2-digit numbers by ten to get decimal numbers
- Divide 3-digit numbers by 100 to get decimal numbers

### Addition and subtraction

- add and subtract multiples of 10 and 100 to/from 4-digit numbers
- Use expanded written subtraction and compact written subtraction to subtract pairs of 3-digit numbers (one 'exchange'); use expanded column
- 2-digit numbers from 3-digit numbers (one 'carry')
- use Frog to find change from £10, £20 and £50
- add 4-digit numbers using written method with answers greater than 10000

### Problem solving, reasoning and algebra

### Multiplication and division

- learn the 7× table
- Multiplication methods involving money
- use the vertical algorithm to multiply 3-digit numbers by 1-digit money
- Understand how to divide 2-digit and 3-digit numbers by 1-digit numbers using place value and mental strategies
- divide numbers by 1-digit numbers to give answers between 10 and 25, with remainders
- identify factor pairs and use these to solve multiplications and divisions with larger numbers
- use Frog to find complements to multiples of 1000
- Multiply by 100 to get 3-digit multiples of ten
- Use the vertical algorithm to multiply 3-digit numbers by 1-digit numbers
- explore patterns
- use mental strategies and tables facts to divide 2-digit and 3-digit numbers by 1-digit numbers to give answers between 10 and 35, without remainders
- solve word problems

### Measurement

#### - Money

solve simple money problems with decimals to two decimal places

Add amounts of money using written methods and mentally using place value

- draw lines of a given length

convert from one unit of measurement to another

#### - Time

tell the time on a 24-hour clock using am and pm correctly

Convert pm times to 24 hour clock and vice versa

Use 24 hour clock to calculate intervals of time

### Fractions, ratio and proportion

- find non-unit fractions of 2
- find equivalent fractions and use them to simplify
- Halves, thirds and quarters

### Geometry

		<ul style="list-style-type: none"> <li>- Property of shapes sort 2D shapes according to their properties draw shapes with given properties and explain reasoning</li> <li>- Angles recognise and compare acute, right and obtuse angles</li> <li>- Identify Parallel and perpendicular lines</li> <li>- Symmetry recognise and draw line symmetry in shapes draw the other half of symmetrical shapes</li> <li>- Perimeter finding missing lengths in rectilinear shapes</li> </ul>
<p><b>Summer</b></p>	<p><b>Class 3 Year 4</b></p>	<p>Number and Place Value Read, write and compare 4-digit numbers and place on a line; find 1000 more or less than any given number; read, write and compare 5-digit numbers; recognise what each digit represents in a 5-digit number; read, use and compare negative numbers in the context of temperature</p> <p>Decimals, percentages and their equivalence to fractions Multiply and divide numbers by 10 and 100 including decimals (tenths and hundredths); read and write decimals (to 1 and 2 places), understanding that these represent parts (tenths and hundredths) of numbers; mark 1-and 2-place decimals on a line; count in tenths (0.1s) and hundredths (0.01s); multiply numbers with up to 2 decimal places by 10 and 100, and divide numbers by 10 and 100; say the number one tenth and one hundredth more or less than a given number; round decimal numbers to the nearest whole number</p> <p>Mental Multiplication and Division Learn 11 and 12× tables; develop and use effective mental multiplication strategies; use a vertical written method to multiply 3-digit numbers by 1-digit numbers; use rounding to estimate answers; use a written method to multiply 3-digit numbers, including amounts of money by 1-digit numbers; multiply 2-digit and 3-digit numbers by 1-digit numbers; understand how division ‘undoes’ multiplication and vice versa; divide above the tables facts using multiples of 10</p> <p>Number and place value; Measurement; Geometry: properties of shapes Recognise and read Roman numerals to 100; begin to know the history of our number system including 0; calculate area and perimeter of rectilinear shapes using multiplication and addition, or counting; recognise, name and classify 2D shapes identifying regular and irregular polygons; sort 2D shapes according to properties including types of quadrilaterals and triangles; revise 3D shapes, consider 2D-shaped sides on 3D shapes, and sort shapes</p> <p>Decimals, percentages and their equivalence to fractions; Problem solving, reasoning and algebra; Fractions, ratio and proportion Understand, read and write 2-place decimals; compare 2-place decimals in the context of lengths; add and subtract 0.1 and 0.01 and say a number one-tenth (0.1) or one-hundredth (0.01) more or less than a given number; revise equivalent fractions; write fractions with different denominators with a total of 1; recognise decimal and fraction equivalents</p> <p>Mental addition and subtraction; Mental multiplication and division; Written multiplication and division; Problem solving, reasoning and algebra Add two 2-digit numbers or a 2-digit number to a 3-or 4-digit number mentally; subtract 2-, 3-and 4-digit numbers using counting up; derive factors of 2-digit numbers and use factors and doubling to solve multiplication mentally; solve integer scaling problems using mental strategies and spot a relationship between products; solve correspondence problems, using a systematic approach and calculate using mental multiplication strategies</p> <p>Written addition and subtraction; Problem solving, reasoning and algebra; Mental addition and subtraction Solve written addition of two 4-digit numbers; add amounts of money (pounds and pence) using column addition; solve 4-digit minus 4-digit and 4-digit minus 3-digit subtractions using written column method</p>

		(decomposition) and check subtraction with addition; solve word problems choosing an appropriate method
<b>Autumn</b>	<b>Class 4 Year 5</b>	<p>Number and place value; Written addition and subtraction; Problem solving, reasoning and algebra Read, write, compare and order 5-digit numbers, understanding the place value and using &lt; and &gt; signs; add and subtract multiples of 10, 100 and 1000 to and from 5-digit numbers; use written addition to add two 4-digit numbers; work systematically to spot patterns</p> <p>Mental addition and subtraction; Number and place value Add and subtract 2-3-and 4-digit numbers mentally; choose a strategy for solving mental additions or subtractions; solve word problems</p> <p>Decimals, percentages and their equivalence to fractions; Problem solving, reasoning and algebra; Mental multiplication and division Understand place value in decimal numbers; multiply and divide numbers with up to two decimal places by 10 and 100; multiply and divide by 0 and 100; add and subtract 0.1 and 0.01; multiply and divide by 4 by doubling or halving twice; use mental multiplication strategies to multiply by 20, 25 and 9</p> <p>Measurement Revise converting 12-hour clock times to 24-hour clock times; find a time a given number of minutes or hours and minutes later; calculate time intervals using 24-hour clock format; measure lengths in mm and convert to cm; find perimeters in cm and convert cm to m</p> <p>Addition and Subtraction Solve subtraction using a written method for 3-digit – 3-digit numbers and for 4-digit numbers; use counting up (Frog) as a strategy to perform mental subtraction; find change from a multiple of ten pounds using counting up</p> <p>Mental multiplication and division; Fractions, ratio and proportion Recognise which numbers are divisible by 2, 3, 4, 5, 6, 9 and 25 and identify multiples; find factors; recording results systematically and finding all factors of a given number; compare and place fractions on a line; find equivalent fractions and reduce them to their simplest form</p> <p>Mental multiplication and division; Written multiplication and division; Problem solving, reasoning and algebra Use mental strategies to multiply and divide multiples of 10 and 100; use a written method to multiply 3-digit and 4-digit numbers by 1-digit numbers and estimate answers, divide 3-digit numbers by 1-digit numbers using a written method and express remainders as a fraction and solve division word problems</p> <p>Geometry: properties of shapes; Problem solving, reasoning and algebra Use a protractor to measure and draw angles in degrees; recognise, use terms and classify angles as obtuse, acute and reflex; recognise that angles on a line total 180° and angles round a point total 360°; identify and name parts of a circle including diameter, radius and circumference; draw circles to a given radius using a pair of compasses; relate angles to turns, and recognise that a 360° angle is a complete turn; use angle facts to solve problems related to turn</p> <p>Number and place value; Decimals, percentages and their equivalence to fractions; Fractions, ratio and proportion Place numbers to 100 000 and decimals up to two places on a line, round numbers to the nearest 10, 100 and 1000 and decimals up to two places to the nearest whole number; compare and order numbers with up to two decimal places; reduce fractions to their simplest form; know and recognise equivalent fractions and decimals to half, tenths and fifths</p> <p>Mental addition and subtraction; Written addition and subtraction; Mental multiplication and division; Written multiplication and division; Problem solving, reasoning and algebra Revise mental and written addition and subtraction strategies, choose to use a mental strategy or written method to solve addition and subtraction, choose to solve word problems involving multiplication and division questions including 2-and 3-digit by 1-digit and 2-digit by 2-digit using a mental or a written method, use mathematical reasoning to work out a function, identify the operation being used on numbers, understand that addition and subtraction are inverse operations multiplication and division, use function machines</p>
<b>Spring</b>	<b>Class 4 Year 5</b>	<p>Number and place value; Decimals, percentages and their equivalence to fractions; Problem solving, reasoning and algebra Read, write and order numbers with up to 6 digits and understand the place value of each digit; place 6-digit numbers on a number line and find numbers between; solve place-value additions and</p>

		<p>subtractions with 6-digit numbers; understand place value in decimal numbers as tenths and hundredths; multiply and divide by 10/100/1000 using a place-value grid; understand place value in decimal numbers to 2-decimal places; place decimal numbers on a line; round two-place decimal numbers to nearest tenth and whole number; say the number a tenth or a hundredth more</p> <p>Mental addition and subtraction; Problem solving, reasoning and algebra; Written addition and subtraction Rehearse mental addition strategies for decimals and whole numbers; use counting on as a strategy to perform mental addition of 2-place decimals to the next whole number; solve missing number sentences; use mental strategies to solve multi-step word problems; use counting up as a strategy to perform written subtraction (Frog)</p> <p>Mental multiplication and division; Number and place value; Problem solving, reasoning and algebra Use rules of divisibility to find if numbers are divisible by 2, 3, 4, 5, 9 and 10; identify prime numbers; revise finding factors of numbers; find squares and square roots of square numbers; finding patterns and making and testing rules; use mental multiplication and division strategies; relate mental division strategies to multiples of ten of the divisor</p> <p>Problem solving, reasoning and algebra; Geometry: properties of shapes; Measurement; Statistics Know properties of equilateral, isosceles, scalene and right-angled triangles; find that angles in a triangle have a total of 180°; sort triangles according to their properties; use scales to weigh amounts to the nearest half interval; convert from grams to kilograms and vice versa, from millilitres to litres and vice versa, and from metres to kilometres and vice versa; read scales to the nearest half division; understand that we measure distance in kilometres and miles; use ready reckoning to give approximate values of miles in kilometres and vice versa; draw line conversion graphs</p> <p>Written addition and subtraction; Problem solving, reasoning and algebra; Measurement Use a written column method to add amounts of money in pounds and pence; add 2-place decimals using written column addition; subtract decimal numbers using counting up (Frog)</p> <p>Written Multiplication and Division Use a written method (grid) to multiply pairs of 2-digit numbers; use short division to divide 3-digit numbers by 1-digit numbers, including those which leave a remainder</p> <p>Written multiplication and division; Fractions, ratio and proportion Find unit fractions and non-unit fractions of 3-digit numbers; use short multiplication to multiply 3-digit numbers by 1-digit numbers; begin to use short multiplication to multiply 4-digit numbers by 1-digit numbers</p> <p>Geometry: properties of shapes; Problem solving, reasoning and algebra; Measurement Understand what a polygon is; draw polygons using dotted square and isometric paper; revise terms obtuse, acute and reflex angles, perpendicular and parallel sides; recognise quadrilaterals as polygons and identify their properties; classify quadrilaterals; draw regular polygons and explore their properties; revise metric units of weight, capacity and length; understand that we can measure in imperial units and relate these to their instances in daily life</p> <p>Fractions, ratio and proportion; Problem solving, reasoning and algebra Place mixed numbers on lines; count up in fractions using equivalence; convert improper fractions to mixed numbers and vice versa; write improper fractions as mixed numbers and vice versa; multiply proper fractions by whole numbers</p> <p>Written Addition and Subtraction; Problem Solving, reasoning and algebra Solve subtraction of 4-digit numbers using written column subtraction; add several numbers using written column addition; use column to solve problems</p>
Summer	Class 4 Year 5	<p>Mental addition and subtraction; Decimals, percentages and their equivalence to fractions; Problem solving, reasoning and algebra Add mentally 2-place decimal numbers in the context of money using rounding; add several small amounts of money using mental methods; mentally subtract amounts of money including giving change; calculate the difference between two amounts using counting up; solve word problems, including 2-step problems, choosing an appropriate method</p> <p>Fractions, ratio and proportion; Problem solving, reasoning and algebra; Written multiplication and division Multiply fractions less than 1 by whole numbers, convert improper fractions to whole numbers; use short multiplication to multiply 3-digit and 4-digit numbers by 1-digit numbers; use long multiplication to multiply 2-digit and 3-digit numbers by teens numbers</p>

		<p>Decimals, percentages and their equivalence to fractions; Problem solving, reasoning and algebra; Number and place value  Read, write and compare decimals to three decimal places, understanding that the third decimal place represents thousandths; multiply and divide numbers by 10, 100 and 1000 using 3-place decimal numbers in the calculations; place 2-place decimals on a number line and round them to the nearest tenth and whole number; read, write, order and compare 3-place decimal numbers; understand and use negative numbers in the context of temperature</p> <p>Geometry: position and direction; Problem solving, reasoning and algebra; Geometry: properties of shapes  Read and mark co-ordinates in the first two quadrants; draw simple polygons using co-ordinates; translate simple polygons by adding to and subtracting from the co-ordinates; reflect simple shapes in the y axis or in a line, noting the effect on the co-ordinates; translate simple shapes and note what happens to the co-ordinates; draw regular and irregular 2D shapes using given dimensions and angles; use the properties of 2D shapes, including rectangles, to derive related facts; identify 3D shapes from 2D representations; create 3D shapes using 2D nets and draw 3D shapes</p> <p>Written Addition and Subtraction; Problem Solving, reasoning and algebra  Add 5-digit numbers using written column addition; subtract 5-digit numbers using written method (decomposition); check answers to subtractions using written column addition; solve subtractions of 4- and 5-digit numbers using written column subtraction or number line counting up</p> <p>Mental Multiplication and division; Problem Solving, reasoning and algebra; Fractions, ratio and proportion  Identify factors and multiples, find factor pairs; revise equivalent fractions; compare and order fractions with related denominators; add fractions with same or related denominators, then convert answer into a mixed number; subtract fractions with same and related denominators, revise multiplying fractions by whole numbers</p> <p>Written Multiplication and Division  Use short division to divide 3-digit numbers by 1-digit numbers and 4-digit numbers by 1-digit numbers, including those which leave a remainder; express a remainder as a fraction; use long multiplication to multiply 3-digit and 4-digit numbers by teens numbers</p> <p>Problem Solving. Reasoning and algebra; Measurement  Find the area and perimeter of squares and rectangles by calculation and pursue a line of enquiry; estimate and find the area of irregular shapes; calculate the perimeter and area of composite shapes; use the relations of area and perimeter to find unknown lengths; begin to understand the concept of volume; find the volume of a cube or cuboid by counting cubes; understand volume as measurement in three dimensions; relate volume to capacity; recognise and estimate volumes</p> <p>Decimals, percentages and their equivalence to fractions; Fractions, ratio and proportion; Number and place value  Understand what percentages are, relating them to hundredths; know key equivalences between percentages and fractions, finding percentages of amounts of money; find equivalent fractions, decimals and percentages; solve problems involving fraction and percentage equivalents; write dates using Roman numerals</p> <p>Number and Place Value; Statistics; Measurement; Written multiplication and division; Problem solving, reasoning and algebra  Find cubes of numbers to 10; draw and interpret line graphs showing change in temperature over time; begin to understand rate; use timetables using the 24-hour clock and use counting up to find time intervals of several hours and minutes; solve problems involving scaling by simple fractions; use factors to multiply; solve scaling problems involving measure</p>
Autumn	Class 5 Year 6	<p>Number and place value  - Read, write and compare 6-digit numbers and know what each digit represents  - read, write and compare 1-, 2- and 3-place decimal numbers</p> <p>Mental multiplication and division  - multiply and divide by 10, 100 and 1000</p>

- Use mental multiplication strategies to multiply by numbers such as 4, 8, 5, 25, 19, 29 and 99
- Use mental strategies to divide by 2, 4, 8, 5, 20 and 25

#### Decimals, percentages and their equivalence to fractions

- round decimals to nearest tenth and whole number and place on a number line
- convert decimals (up to 3 places) to fractions and vice-versa
- solve problems involving number up to 3 decimal places
- choose an appropriate method to solve decimal addition
- Word problems
- use mental strategies to find simple percentages of amounts, including money
- Finding percentages

#### Fractions, ratio and proportion

- Word problems
- comparing, ordering, adding and subtracting fractions, incl. mixed numbers
- compare fractions with unlike, but related, denominators
- correctly use the terms fraction, denominator and numerator
- understand what improper fractions and mixed numbers are
- add fractions with the same denominator, writing the answer as a mixed number
- Multiply fractions less than 1 by whole numbers, converting improper fractions to whole numbers
- divide unit and non-unit fractions by whole numbers
- giving remainders as fractions, simplifying where possible
- fractions are added, subtracted, multiplied and divided;
- finding percentages is also covered.
- find non-unit fractions of amounts

#### Mental addition and subtraction

- Use mental addition strategies to solve additions incl decimal numbers
- Word problems

#### Written addition, subtraction, multiplication and division

- use column addition to add 5-digit numbers, decimal numbers and amounts of money
- Word problems
- revise using short multiplication to multiply 4-digit numbers by 1-digit numbers and use this to multiply amounts of money
- use long multiplication to multiply 3-digit and 4-digit numbers by teens numbers.
- use short division to divide 3-and 4-digit numbers by 1-digit numbers, including those which leave a remainder

#### Problem solving, reasoning and algebra

- Express missing number problems algebraically and find pairs of numbers that satisfy equations involving two unknowns
- Use mathematical reasoning to investigate

#### Geometry and Measurement

- find missing lengths and angles;
- measurement in and conversion of SI and imperial units;
- the use of 24-hour clock and calculation of time intervals
- Convert between grams and kilograms, millilitres and litres, millimetres and centimetres, centimetres and metres, metres and kilometres, and miles and kilometres
- revise reading the 24-hour clock and convert 12-hour times to 24-hour
- read and write Roman numerals
- 2D shapes, their properties
- areas, and perimeters
- 3D shapes, their nets, volumes and properties

		<ul style="list-style-type: none"> <li>- Calculate the perimeter, area and volume of shapes, and know their units of measurement;</li> <li>- understand that shapes can have the same perimeters but different areas and vice versa</li> <li>- calculate the area of a triangle using the formula <math>A = \frac{1}{2} b \times h</math></li> <li>- find the area of parallelograms using the formula <math>A = b \times h</math></li> <li>- name and describe properties of 3D shapes</li> <li>- systematically find and compare nets for different 3D shapes.</li> </ul> <p>BIDMAS – Order of Operations</p> <ul style="list-style-type: none"> <li>- understand how brackets can be used in calculation problems</li> <li>- use knowledge of the order of operations to carry out calculations involving the four operations,</li> <li>- solve addition and subtraction multi-step problems using knowledge of the order of operations.</li> </ul> <p>Negative numbers</p> <ul style="list-style-type: none"> <li>- calculate small differences between negative and positive numbers</li> <li>- add and subtract negative numbers</li> </ul>
Spring	Class 5 Year 6	<p>Number and place value</p> <ul style="list-style-type: none"> <li>- Read and write numbers with up to 7-digits, understanding what each digit represents</li> <li>- compare and order numbers with up to three decimal places</li> <li>- work systematically to find out how many numbers round to 5000000</li> <li>- factors and multiples</li> <li>- prime numbers</li> </ul> <p>Written Addition and Subtraction</p> <ul style="list-style-type: none"> <li>- word problems</li> <li>- solve subtraction of 5-and 6-digit numbers using written column method- n method</li> <li>- solve addition of 4-to 7-digit numbers using written column addition;</li> <li>- solve subtraction of 5-, 6-and 7-digit numbers using written column method (decomposition)</li> <li>- Solve addition and subtraction multi-step problems in shopping contexts</li> <li>- Add and subtract money using column addition and counting up</li> </ul> <p>Fractions, ratio and proportion</p> <ul style="list-style-type: none"> <li>- know common fraction / decimal equivalents</li> <li>- multiply pairs of unit fractions and multiply unit fractions by non-unit fractions</li> <li>- Multiplication of decimals and fractions</li> <li>- Calculate and understand the mean average</li> </ul> <p>Mental Multiplication and Division</p> <ul style="list-style-type: none"> <li>- Multiply and divide by 10, 100 and 1000</li> </ul> <p>Written multiplication and division</p> <ul style="list-style-type: none"> <li>- Use partitioning to mentally multiply 2-digit numbers with one decimal place by whole 1-digit numbers</li> <li>- multiply numbers with two decimal places</li> <li>- use short multiplication to multiply amounts of money</li> <li>- use estimation to check answers to calculations</li> <li>- use long multiplication to multiply 3-digit and 4-digit numbers by numbers between 10 and 30</li> <li>- use long division to divide 3-and 4-digit numbers by 2-digit numbers, showing remainders as a fraction</li> </ul> <p>Problem solving, reasoning and algebra</p> <ul style="list-style-type: none"> <li>- identify patterns in the number of steps required to generate palindromic numbers;</li> <li>- Use mathematical reasoning to investigate and solve problems</li> </ul> <p>Geometry</p>

		<ul style="list-style-type: none"> <li>- 2D shapes (quads and circles) diagonals and interior angles classify and identify properties of quadrilaterals explore how diagonal lines can bisect quadrilaterals understand what an angle is and that it is measured in degrees know what the angles of triangles, quadrilaterals, pentagons, hexagons and octagons add to and use these facts and mathematical reasoning to calculate missing angles recognise and identify the properties of circles and name their parts draw circles using pairs of compasses; draw polygons using a ruler and a protractor</li> <li>- Angles</li> <li>- Read and plot coordinates in all four quadrants</li> <li>- Draw and translate simple polygons using coordinates and find missing coordinates for a vertex on a polygon</li> <li>- Draw and reflect simple polygons in both the x-axis and y-axis using coordinates</li> <li>- Find unknown angles around a point, on a line, in a triangle or vertically opposite and in polygons where diagonals intersect</li> </ul> <p>Statistics</p> <ul style="list-style-type: none"> <li>- Construct and interpret distance/time line graphs where intermediate points have meaning, including conversion line graphs</li> <li>- Understand pie charts are a way of representing data using percentages</li> <li>- Interpret and construct pie charts</li> </ul> <p>Decimals, percentages and their equivalence to fractions</p> <ul style="list-style-type: none"> <li>- Add and subtract decimal numbers choosing an appropriate strategy</li> <li>- Add decimal numbers with different numbers of places using column addition</li> <li>- Solve subtractions of decimal numbers with different numbers of places (2-places) using counting up</li> </ul>
Summer	Class 5 Year 6	<p>Number and place value</p> <ul style="list-style-type: none"> <li>- Revise reading, writing, comparing and ordering numbers with up to seven digits and decimal numbers with up to three decimal places</li> <li>- revise rounding big numbers to the nearest thousand, ten thousand, hundred thousand and million</li> <li>- revise locating a number on a number line marking numbers it lies between</li> </ul> <p>Decimals</p> <ul style="list-style-type: none"> <li>- revise rounding decimal numbers to the nearest tenth and whole number</li> <li>- Multiply 3-digit and 4-digit numbers incl. decimals by whole 1-digit numbers and solve word problems involving multiplication of money and measures;</li> </ul> <p>Percentages and their equivalence to fractions</p> <ul style="list-style-type: none"> <li>- revise finding percentages of numbers, converting fractions, decimals and percentages and making comparisons using percentages</li> </ul> <p>Mental addition and subtraction</p> <p>Mental multiplication and Division</p> <p>Written addition and subtraction</p> <p>Written Multiplication and Division</p> <ul style="list-style-type: none"> <li>- Revise using short division to find unit fractions of amounts, incl. decimals, and round answers to money problems according to the context;</li> <li>- revise using long division to divide 4-digit by 2-digit numbers, giving remainders as a fraction, simplifying where possible;</li> </ul>

- revise using long division to divide 3-digit and 4-digit numbers by numbers between 10 and 30, writing the fractional part of the answer as a decimal where equivalents are known
- Find out about famous mathematicians incl. Brahmagupta and John Napier and use their different methods to multiply
- Use lattice multiplication to solve multiplications of 2-, 3- and 4-digit numbers
- Begin to compare historical multiplication methods

#### Statistics

- Revise reading and interpreting different types of data display

#### Fractions, ratio and proportion

- Revise scaling, using mental strategies for multiplying and dividing;
- Revise solving problems involving rate
- Revise equivalence simplifying fractions and changing improper fractions into mixed numbers and vice versa;
- Revise adding and subtracting fractions with different denominators, incl. those which give answers greater than 1
- Revise multiplying pairs of fractions and multiplying and dividing fractions by whole numbers
- Revise calculating the mean average
- Solving problems involving ratios
- Read intermediate points off scales

#### Problem solving, Reasoning and algebra

- revise solving missing number problems using inverse operations
- revise using trial and improvement to solve
- Use mathematical reasoning to investigate and solve problems, and to estimate and predict
- Solve problems using doubling, solve calculations with enormous numbers
- Explore binary numbers
- Solve mathematical puzzles; incl. using multiplication facts, find digital roots and look for patterns
- Explore Fibonacci sequences and Pythagoras' theorem

#### Geometry

- Revise reading and marking coordinates in all four quadrants, draw simple polygons and find missing coordinates on a polygon or line
- Revise properties and classification of 2D shapes, drawing 2D shapes using ruler, protractor and compasses, parts of a circle and angles in polygons
- Revise calculating missing angles by knowing angle facts
- Use a protractor to measure and draw angles in degrees
- Identify and name acute, right, obtuse and reflex angles; understand perimeter, area and volume
- Find the perimeter of rectangles, find the area of rectangles, parallelograms and triangles, and find the volumes of cubes and cuboids

#### BIDMAS

- revise how brackets can be used in calculation problems, revise the order of operations for calculations involving the four operations

#### Positive and Negative Numbers

- |  |  |   |
|--|--|---|
|  |  | <ul style="list-style-type: none"><li>- revise comparing and ordering negative numbers incl. calculating differences between negative numbers and positive and negative numbers</li></ul> |
|--|--|---|