Planning for Progression in Maths

The 2014 National Curriculum for Maths aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

At Lady Bay Primary School, these skills are embedded within maths lessons and developed consistently over time. We believe in the importance of providing varied opportunities for children to learn and practise new skills in order to build fluency and confidence in mathematical concepts. We believe in the importance of allowing children to use this fluency in context to embed learning, and aim to provide Reasoning and Problem-Solving opportunities in teaching and independent learning. We are committed to ensuring that children are able to recognise the importance of Maths in the wider world and that they are also able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts. We want all children to enjoy Mathematics and to experience success in the subject, with the ability to reason mathematically. In line with our school values, we are committed to developing children's curiosity about the subject, creating opportunities for enjoyment of mathematics and fostering the determination to succeed.

	FS **(Early Learning Goals)**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	Number and Place Value						
Counting	To verbally count beyond 20 recognising the pattern of the counting system	To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number To read and write numbers to 20 in numerals and words, To count, read and write numbers up to 100 in numerals; To count in multiples of twos, fives and tens	To count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	To count from 0 in multiples of 4, 8, 50 and 100; To find 10 or 100 more or less than a given number.	To count in multiples of 6, 7, 9, 25 and 1000 To find 1000 more or less than a given number count backwards through zero to include negative numbers	To count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	To use negative numbers in context, and calculate intervals across zero

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Place Value	To have a deep understanding of number to 10, including the composition of each number To compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity		To recognise the place value of each digit in a two-digit number To compare and order numbers from 0 up to 100; use <, > and = signs	To recognise the place value of each digit in a three-digit number To compare and order numbers up to 1000	To recognise the place value of each digit in a four-digit number To order and compare numbers beyond 1000 To round any number to the nearest 10, 100 or 1000	To read, write, order and compare numbers up to 1 000 000 and determine the value of each digit To round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	To read, write, order and compare numbers up to 10 000 000 and determine the value of each digit To round any whole number to a required degree of accuracy

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Representing number	To Subitise (recognise quantities without counting) up to 5	To identify and represent numbers using objects and pictorial representations including the number line, & use language of: equal to, more than, less than (fewer), most, least To read and write numbers from 1 to 20 in numerals and words To read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs	To identify, represent and estimate numbers using different representations, including the number line To read and write numbers to at least 100 in numerals and in words	To identify, represent and estimate numbers using different representations To read and write numbers up to 1000 in numerals and in words	To identify, represent and estimate numbers using different representations To 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	To read Roman numerals to 1000 (M) and recognise years written in Roman numerals To recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	
	Addition and Subtraction						
Number facts (+/-)	To Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10 including double facts	To a given number, identify one more and one less To represent and use number bonds and related subtraction facts within 20	To use place value and number facts to solve problems To recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				

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Mental +/-		To add and subtract one-digit and two-digit numbers to 20, including zero	To add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U To show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	To add and subtract numbers mentally, including: HTU+U, HTU+T and HTU+H		To add and subtract numbers mentally with increasingly large numbers	To perform mental calculations, including with mixed operations and large numbers
Written +/-				To add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	To add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	To add and subtract whole numbers with more than 4 digits, including using formal written methods	
Problems +/-	To explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ – 9.	To solve problems with addition and subtraction, using concrete, pictorial and abstract representations To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	To estimate the answer to a calculation and use inverse operations to check answers To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	To estimate and use inverse operations to check answers to a calculation To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	
	Multiplication and Division						

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	FS (Early Learning Goals)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number facts (x/÷)	To Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly. To Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.		To recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	To recall multiplication and division facts for multiplication tables up to 12 × 12	To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers To establish whether a number up to 100 is prime and recall prime numbers up to 19	To identify common factors, common multiples and prime numbers
Mental (x/÷)			To calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs To show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	To 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 methods	To use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers To recognise and use factor pairs and commutativity in mental calculations	To multiply and divide numbers mentally drawing upon known facts To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	To perform mental calculations, including with mixed operations and large numbers

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Written (x/÷)				To Progress to formal written methods calculations as above	To multiply two-digit and three-digit numbers by a one-digit number using formal written layout	To 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 To 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	To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication To 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 To 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 context

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Problems (x/÷)	To explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	To solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	To solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	To 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.	To solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	To solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	To use their knowledge of the order of operations to carry out calculations involving the four operations To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why To solve problems involving addition, subtraction, multiplication and division To use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
	Fractions Decimals and Percentages						
Recognising fractions		To recognise, find and name a half as one of two equal parts of an object, shape or quantity To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	To recognise, find, name and write fractions 1/3, 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity	To count up and down in tenths; To recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	To count up and down in hundredths; To recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	To recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number	

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Comparing fractions				To compare and order unit fractions, and fractions with the same denominators To recognise and show, using diagrams, equivalent fractions with small denominators	To recognise and show, using diagrams, families of common equivalent fractions	To compare and order fractions whose denominators are all multiples of the same number To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	To use common factors to simplify fractions To use common multiples to express fractions in the same denomination To compare and order fractions, including fractions > 1
Finding fractions of quantities				To recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators To recognise and use fractions as numbers: unit fractions and non-unit fractions with small	To 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		
Fraction calculations			To write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2.	To add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	To add and subtract fractions with the same denominator	To add and subtract fractions with the same denominator and denominators that are multiples of the same number To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions To multiply simple pairs of proper fractions, writing the answer in its simplest form To divide proper fractions by whole numbers

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Decimals as fractional amounts					To recognise and write decimal equivalents of any number of tenths or hundredths To recognise and write decimal equivalents to ¼, ½ and ¾ To 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	To read and write decimal numbers as fractions	To associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction To identify the value of each digit in numbers given to three decimal places
Ordering decimals					To round decimals with one decimal place to the nearest whole number To compare numbers with the same number of decimal places up to two decimal places	To recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents To round decimals with two decimal places to the nearest whole number and to one decimal place To read, write, order and compare numbers with up to three decimal places	

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Calculating with decimals							To multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places To multiply one-digit number with up to two decimal places by whole numbers To use written division methods in cases where the answer has up to two decimal places
Percentages						To 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	To solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

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Fraction problems				To solve problems using all fraction knowledge	To solve simple measure and money problems involving fractions and decimals to two decimal places	To solve problems involving number up to three decimal places To solve problems which require knowing percentage and decimal equivalents of ½ , ¼ , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25	To solve problems which require answers to be rounded to specified degrees of accuracy To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
	Ratio and Proportion						
Ratio & Proportion							To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts To solve problems involving similar shapes where the scale factor is known or can be found To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

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Algebra							To use simple formulae To generate and describe linear number sequences To express missing number problems algebraically To find pairs of numbers that satisfy an equation with two unknowns To enumerate possibilities of combinations of two variables.
	Measurement						
Measures		To compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time To measure and begin to record length/height, weight/mass, capacity/volume & time	To choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels To compare and order lengths, mass, volume/capacity and record the results using >, < and =	To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	To Convert between different units of measure estimate, compare and calculate different measures, including money in pounds and pence	To convert between different units of metric measure To understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints To estimate volume and capacity	To solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate To 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 convert between miles and kilometres

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Mensuration				To measure the perimeter of simple 2-D shapes	To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares	To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres To calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes	To recognise that shapes with the same areas can have different perimeters and vice versa To recognise when it is possible to use formulae for area and volume of shapes To calculate the area of parallelograms and triangles To calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units.
Money		To recognise and know the value of different denominations of coins and notes	To recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value To find different combinations of coins that equal the same amounts of money To solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	To add and subtract amounts of money to give change, using both £ and p in practical contexts		To use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling	

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Time		To sequence events in chronological order using language recognise and use language relating to dates, including days of the week, weeks, months and years To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	To compare and sequence intervals of time To tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times To know the number of minutes in an hour and the number of hours in a day	To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks To 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 To know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events	To Convert between different units of measure (e.g. Hours to minutes) To read, write and convert time between analogue and digital 12- and 24-hour clocks To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	To solve problems involving converting between units of time	
	Properties of Shape						
Shape vocabulary		To recognise and name common 2-D shapes (e.g. Square, circle, triangle) To recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres)	To handle, identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.	To identify horizontal and vertical lines and pairs of perpendicular and parallel lines			To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

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Properties of 2-d shape			To identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. To compare and sort common 2-D and 3-D shapes and everyday objects.	To draw 2-D shapes	To compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes To identify lines of symmetry in 2-D shapes presented in different orientations To complete a simple symmetric figure with respect to a specific line of symmetry.	To use the properties of rectangles to deduce related facts and find missing lengths and angles To distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	To draw 2-D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes
Properties of 3-d shape			To identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces To identify 2-D shapes on the surface of 3-D shapes. To compare and sort common 2-D and 3-D shapes and everyday objects.	To make 3-D shapes using modelling materials To recognise 3-D shapes in different orientations and describe them		To identify 3-D shapes, including cubes and other cuboids, from 2-D representations	To recognise, describe and build simple 3-D shapes, including making nets To find unknown angles in any triangles, quadrilaterals, and regular polygons

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Angles				To recognise angles as a property of shape or a description of a turn To identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn To identify whether angles are greater or less than right angle	To identify acute and obtuse angles and compare and order angles up to two right angles by size	To know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles To draw given angles, and measure them in degrees (°) To identify angles at a point and one whole turn (total 360°); at a point on a straight line and ½ a turn (total 180°) To identify other multiples of 90°	To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
	Position and Direction						
Position & Direction		To describe position, direction and movement, including whole, half, quarter and three-quarter turns.	To order and arrange combinations of mathematical objects in patterns and sequences. To 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 ¾ turns		To describe positions on a 2-D grid as coordinates in the first quadrant To describe movements between positions as translations of a given unit to the left/right and up/down To plot specified points and draw sides to complete a given polygon	To 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	To describe positions on the full coordinate grid (all four quadrants) To draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
	Statistics						
Interpreting data			To interpret and construct simple pictograms, tally charts, block diagrams and simple tables	To interpret and present data using bar charts, pictograms and tables	To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	To complete, read and interpret information in tables, including timetables	To interpret and construct pie charts and line graphs calculate and interpret the mean as an average

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Extract info from data			To ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity To ask and answer questions about totalling and comparing categorical data	To 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	To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	To solve comparison, sum and difference problems using information presented in a line graph	To use pie charts and line graphs to solve problems