



# Gladstone Road Primary School MATHS (STEM TEAM)

## Progression of skills 2020/2021

### PROGRESSION DOCUMENT

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Number and Place Value</b>							
COUNTING	<p>Counts reliably and creates groups of numbers to 10 using a range of objects</p> <p>Is able to place numerals to 10 in order.</p> <p>Count up to 10 forwards and backwards including from any given number.</p> <p>Accurately counts fixed objects to 10 and recognises numerals to 10 out of sequence.</p> <p>Verbally counts beyond 20.</p>	<p>count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</p> <hr/> <p>count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens</p> <hr/> <p>given a number, identify one more and one less</p>	<p>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</p>	<p>count from 0 in multiples of 4, 8, 50 and 100;</p> <hr/> <p>find 10 or 100 more or less than a given number</p>	<p>count backwards through zero to include negative numbers</p> <hr/> <p>count in multiples of 6, 7, 9, 25 and 1000</p> <hr/> <p>find 1000 more or less than a given number</p>	<p>interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</p> <hr/> <p>count forwards or backwards in steps of powers of 10 for any given number up to 1000 000</p>	<p>use negative numbers in context, and calculate intervals across zero</p>
<b>Number and Place Value</b>							
COMPARING NUMBERS	In everyday contexts children are able to demonstrate through talk or when responding to questions an understanding of the number	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1000	order and compare numbers beyond 1 000	<p>read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p> <p>(appears also in Reading and Writing Numbers)</p>	<p>read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)</p>



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	<p>sequence, values, greater and less than, odd and even.</p> <p>Use and understand what 'more than' and 'less than' mean in the context of comparing objects.</p> <p>Understand when groups consist of an equal number of things.</p> <p>Know what one more and one less of any given number up to 20 is.</p>				<p><i>places up to two decimal places (copied from Fractions)</i></p>		
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### Number and Place Value

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
REPRESENTING AND ESTIMATING NUMBERS	<p>Uses a range of objects to create 5 in different ways and recognises up to 5 objects (without counting) in a range of orientations.</p> <p>Uses resources to create parts of a whole, to partition pairs of numbers up to 10, to distribute quantities equally and represent double facts.</p>	<p>identify and represent numbers using objects and pictorial representations including the number line</p>	<p>identify, represent and estimate numbers using different representations, including the number line</p>	<p>identify, represent and estimate numbers using different representations</p>	<p>identify, represent and estimate numbers using different representations</p>		



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	Will demonstrate thinking through use of verbal number sentences / number stories and may choose to record these.							
<b>Number and Place Value</b>								
READING AND WRITING NUMBERS (including Roman Numerals)	Read and write numbers from 1 to 10 in numerals and read numbers up to 20.	read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1000 in numerals and in word  <i>tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)</i>	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.	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers)  <i>read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</i>	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)	
<b>Number and Place Value</b>								
UNDERSTANDING PLACE VALUE			recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)  <i>find the effect of dividing a one- or two-digit number by</i>	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)  <i>recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)</i>	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)  <i>identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and</i>	



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					<i>10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths (copied from Fractions)</i>		<i>1000 where the answers are up to three decimal places (copied from Fractions)</i>
<b>Number and Place value</b>							
ROUNDING					<i>round any number to the nearest 10, 100 or 1 000</i> <hr/> <i>round decimals with one decimal place to the nearest whole number (copied from Fractions)</i>	<i>round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000</i> <hr/> <i>round decimals with two decimal places to the nearest whole number and to one decimal place (copied from Fractions)</i>	<i>round any whole number to a required degree of accuracy</i> <hr/> <i>solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)</i>
<b>Number and Place Value</b>							
PROBLEM SOLVING					<i>use place value and number facts to solve problems</i>	<i>solve number problems and practical problems involving these ideas.</i>	<i>solve number and practical problems that involve all of the above and with increasingly large positive numbers</i>
<b>Number: Addition and Subtraction</b>							
NUMBER BONDS	<i>Is able to recall number bonds to 5 and knows some number pairs to 10,</i>	<i>represent and use number bonds and related subtraction facts within 20</i>	<i>recall and use addition and subtraction facts to 20 fluently, and derive and use</i>				



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	including double facts.  Uses manipulatives to demonstrate some number bonds within 10.		related facts up to 100				
<b>Number: Addition and Subtraction</b>							
MENTAL CALCULATIONS	Add and subtract in ones to find a total.  Recognise the symbols for addition (+), subtraction (-) and equals (=)	add and subtract one-digit and two-digit numbers to 20, including zero  read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers adding three one-digit numbers  show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers  use their knowledge of the order of operations to carry out calculations involving the four operations



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<b>Number: Addition And Subtraction</b>							
WRITTEN METHODS		read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
<b>Number: Addition and Subtraction</b>							
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS	.	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	
<b>Number: Addition and Subtraction</b>							
PROBLEM SOLVING	Solve problems that involve adding and subtracting, using concrete objects and pictorial representations.	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why  Solve problems involving addition, subtraction,



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			applying their increasing knowledge of mental and written methods  <i>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)</i>				multiplication and division
<b>Number: Multiplication and Division</b>							
	EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
MULTIPLICATION AND DIVISION FACTS		<i>count in multiples of twos, fives and tens (copied from Number and Place Value)</i>	<i>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)</i>  <i>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</i>	<i>count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)</i>  <i>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</i>	<i>count in multiples of 6, 7, 9, 25 and 1000 (copied from Number and Place Value)</i>  <i>recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></i>	<i>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)</i>	
<b>Number: Multiplication and Division</b>							
MENTAL CALCULATIONS			show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	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	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers  recognise and use factor pairs and commutativity in mental calculations (appears)	multiply and divide numbers mentally drawing upon known facts  multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	perform mental calculations, including with mixed operations and large numbers  <i>associate a fraction with division and calculate decimal fraction equivalents</i>



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				mental and progressing to formal written methods (appears also in Written Methods)	also in Properties of Numbers)		(e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$ ) (copied from Fractions)
<b>Number: Multiplication and Division</b>							
WRITTEN CALCULATIONS			calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs	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 (appears also in Mental Methods)	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	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 multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication



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PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS					recognise and use factor pairs and commutativity in mental calculations (repeated)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	identify common factors, common multiples and prime numbers  <i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i> (copied from Fractions)
					Know and use vocabulary of prime numbers, prime factors and composite (non-prime) numbers  establish whether a number up to 100 is prime and recall prime numbers up to 19  recognise and use square numbers and cube numbers, and the notation for squared ( <sup>2</sup> ) and cubed ( <sup>3</sup> )	<i>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units such as mm<sup>3</sup> and km<sup>3</sup></i> (copied from Measures)	
<b>Number: Multiplication and Division</b>							
ORDER OF OPERATIONS							use their knowledge of the order of operations to carry out calculations involving the four operations
<b>Number: Multiplication and Division</b>							
INVERSE OPERATIONS,					<i>estimate the answer to a calculation and use inverse operations to check answers (copied</i>	<i>estimate and use inverse operations to check answers to a calculation</i>	use estimation to check answers to calculations and determine, in the



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ESTIMATING AND CHECKING ANSWER				from Addition and Subtraction)	(copied from Addition and Subtraction)		context of a problem, levels of accuracy
<b>Number: Multiplication and Division</b>							
PROBLEM SLOVING		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	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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	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	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	
						solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	solve problems involving addition, subtraction, multiplication and division
						solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	<i>solve problems involving similar shapes where the scale factor is known or can be found</i> (copied from Ratio and Proportion)
<b>Number: Fractions (including Decimals and Percentages)</b>							
COUNTING IN FRACTIONAL STEPS			<i>Pupils should count in fractions up to 10, starting from any number and using the 1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)</i>	count up and down in tenths	count up and down in hundredths		
<b>Number: Fractions (including decimals and Percentages)</b>							
RECOGNISING FRACTIONS	recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find, name and write fractions $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	



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						(appears also in Equivalence)	
		recognise, find and name a quarter as one of four equal parts of an object, shape or quantity		recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
<b>Number: Fractions (including Decimals and Percentages)</b>							
COMPARING FRACTIONS				compare and order unit fractions, and fractions with the same denominators		compare and order fractions whose denominators are all multiples of the same number	compare and order fractions, including fractions $>1$
<b>Number: Fractions (including Decimals and Percentages)</b>							
COMPARING DECIMALS					compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
<b>Number: Fractions (including Decimals and Percentages)</b>							
ROUNDING INCLUDING DECIMALS					round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy
<b>Number: Fractions (including Decimals and Percentages)</b>							
EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)			write simple fractions e.g. $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ .	recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	use common factors to simplify fractions; use common multiples to express fractions in the same denomination



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					recognise and write decimal equivalents of any number of tenths or hundredths  (e.g. $0.71 = \frac{71}{100}$ )	read and write decimal numbers as fractions  (e.g. $0.71 = \frac{71}{100}$ )	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$ )
					recognise and write decimal equivalents to $\frac{1}{4}$ ; $\frac{1}{2}$ ; $\frac{3}{4}$	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 as a decimal fraction	recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

### Number: Fractions (including Decimals and Percentages)

ADDITION AND SUBTRACTION OF FRACTIONS				add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ )	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
					recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements $> 1$ as a mixed number (e.g. $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$ )		

### Number: Fractions (including Decimals and Percentages)

MULTIPLICATION OF AND DIVISION OF FRACTIONS						multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ )
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								<p><b>Number: Fractions (including Decimals and Percentages)</b></p> <p>MULTIPLICATION AND DIVISION OF DECIMALS</p>
					<p>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</p>			<p>multiply one-digit numbers with up to two decimal places by whole numbers</p>
							<p>multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</p>	
							<p>identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places</p>	
							<p>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. <math>\frac{3}{8}</math>)</p>	
							<p>use written division methods in cases where the answer has up to two decimal places</p>	



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				solve problems that involve all of the above	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	solve problems involving numbers up to three decimal places	
				solve simple measure and money problems involving fractions and decimals to two decimal places.	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 with a denominator of a multiple of 10 or 25.		
<b>Ratio and Proportion</b>							
					solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts		
					solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison		
					solve problems involving similar shapes where the scale factor is known or can be found		
					solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.		



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<b>Algebra</b> EQUATIONS	Solve problems that involve adding and subtracting, using concrete objects and pictorial representations. (copied from addition and subtraction)	<p><i>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math> (copied from Addition and Subtraction)</i></p>	<p><i>recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems.</i> (copied from Addition and Subtraction)</p>	<p><i>solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</i> (copied from Addition and Subtraction)</p>		<p><i>use the properties of rectangles to deduce related facts and find missing lengths and angles</i> (copied from Geometry: Properties of Shapes)</p>	express missing number problems algebraically
		<p><i>represent and use number bonds and related subtraction facts within 20</i> (copied from Addition and Subtraction)</p>	<p><i>recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</i> (copied from Addition and Subtraction)</p>	<p><i>solve problems, including missing number problems, involving multiplication and division, including integer scaling</i> (copied from Multiplication and Division)</p>			<p>find pairs of numbers that satisfy number sentences involving two unknowns</p> <p>enumerate all possibilities of combinations of two variables</p>
<b>Algebra</b>							
FORMULAE					<p><i>Perimeter can be expressed algebraically as <math>2(a + b)</math> where <math>a</math> and <math>b</math> are the dimensions in the same unit.</i> (Copied from NSG measurement)</p>		use simple formulae
							<p><i>recognise when it is possible to use formulae for area and volume of shapes</i> (copied from Measurement)</p>



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SEQUENCES	<p><i>sequence events in chronological order using language such as: before and after, next, first.</i> <i>(copied from Measurement)</i></p>	<p><i>sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening</i> <i>(copied from Measurement)</i></p>	<p><i>compare and sequence intervals of time</i> <i>(copied from Measurement)</i></p> <p><i>order and arrange combinations of mathematical objects in patterns</i> <i>(copied from Geometry: position and direction)</i></p>				<p>generate and describe linear number sequences</p>
<b>Measurement</b>							
COMPARING AND ESTIMATING	<p>Use every day language of measure (size, weight, capacity) when solving and comparing problems. E.g. Longer/shorter Heaviest/lightest</p> <p><i>sequence events in chronological order using language such as: before and after, next, first.</i></p>	<p>compare, describe and solve practical problems for:</p> <ul style="list-style-type: none"><li>* lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]</li><li>* mass/weight [e.g. heavy/light, heavier than, lighter than]</li><li>* capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]</li></ul> <p>time [e.g. quicker, slower, earlier, later]</p>	<p>compare and order lengths, mass, volume/capacity and record the results using &gt;, &lt; and =</p>	<p>compare durations of events, for example to calculate the time taken by particular events or tasks</p>	<p>estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)</p>	<p>calculate and compare the area of squares and rectangles including using standard units, square centimetres (<math>\text{cm}^2</math>) and square metres (<math>\text{m}^2</math>) and estimate the area of irregular shapes (also included in measuring)</p>	<p>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (<math>\text{cm}^3</math>) and cubic metres (<math>\text{m}^3</math>), and extending to other units such as <math>\text{mm}^3</math> and <math>\text{km}^3</math>.</p>
		<p>sequence events in chronological order using language [e.g. before and after, next, first, today,</p>	<p>compare and sequence intervals of time</p>	<p>estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms</p>			<p>estimate volume (e.g. using <math>1 \text{ cm}^3</math> blocks to build cubes and cuboids)</p>



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		yesterday, tomorrow, morning, afternoon and evening]		of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)		and capacity (e.g. using water)	
<b>Measurement</b>							
MEASURING AND CALCULATING	In practical activities, use every day language of measure (size, weight, capacity) when solving and comparing problems. E.g. Longer/shorter Heaviest/lightest	measure and begin to record the following: * <b>lengths and heights</b> * <b>mass/weight</b> * <b>capacity and volume</b> * <b>time</b> (hours, minutes, seconds)	choose and use appropriate standard units to estimate and measure <b>length/height</b> in any direction (m/cm); <b>mass</b> (kg/g); <b>temperature</b> ( $^{\circ}\text{C}$ ); <b>capacity</b> (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	measure, compare, add and subtract: <b>lengths</b> (m/cm/mm); <b>mass</b> (kg/g); <b>volume/capacity</b> (l/ml)	estimate, compare and calculate <b>different measures</b> , including <b>money in pounds and pence</b> (appears also in Comparing)	use all four operations to solve problems involving measure (e.g. <b>length, mass, volume, money</b> ) using decimal notation including scaling.	solve problems involving the calculation and conversion of <b>units of measure</b> , using decimal notation up to three decimal places where appropriate (appears also in Converting)
<b>Measurement</b>							
MEASURING AND CALCULATING		recognise and know the value of different denominations of <b>coins and notes</b>	recognise and use symbols for pounds ( <b>£</b> ) and pence ( <b>p</b> ); combine amounts to make a particular value  find different combinations of coins that equal the same amounts of money	add and subtract amounts of <b>money</b> to give change, using both £ and p in practical contexts	find the area of rectilinear shapes by counting squares	calculate and compare the area of squares and rectangles including using standard units, square centimetres ( $\text{cm}^2$ ) and square metres ( $\text{m}^2$ ) and estimate the area of irregular shapes  <i>recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</i>	calculate the area of parallelograms and triangles  calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres ( $\text{cm}^3$ ) and cubic metres ( $\text{m}^3$ ), and extending to other units [e.g. $\text{mm}^3$ and $\text{km}^3$ ].



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			<b>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</b>			(copied from Multiplication and Division)	recognise when it is possible to use formulae for area and volume of shapes
<b>Measurement</b>							

TELLING THE TIME	tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	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.	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	solve problems involving converting between units of time	
	recognise and use language relating to dates, including days of the week, weeks, months and years	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)	solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)		

CONVERTING			know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	know the number of seconds in a minute and the number of days in each month, year and leap year	convert between different units of measure (e.g. kilometre to metre; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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
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					read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	solve problems involving converting between units of time	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
					solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometers
Geometry: Properties of Shapes							
IDENTIFYING SHAPES AND THEIR PROPERTIES	Can talk about the properties of shape and patterns.	recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line  identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces  identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]		identify lines of symmetry in 2-D shapes presented in different orientations	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)  illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius



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Geometry: Properties of Shapes							
DRAWING AND CONSTRUCTING				draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees ( $^{\circ}$ )	draw 2-D shapes using given dimensions and angles
Geometry: Properties of Shapes							
COMPARING AND CLASSIFYING			compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	use the properties of rectangles to deduce related facts and find missing lengths and angles	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
Geometry: Properties of Shapes							
ANGLES				recognise angles as a property of shape or a description of a turn	identify acute and obtuse angles and compare and order angles up to two right angles by size	know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
				identify right angles, recognise that two right		identify:	



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				angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle  identify horizontal and vertical lines and pairs of perpendicular and parallel lines		* angles at a point and one whole turn ( $360^\circ$ ) * angles at a point on a straight line and $\frac{1}{2}$ a turn ( $180^\circ$ ) * other multiples of $90^\circ$	
<b>Geometry: Position and Direction</b>							
POSITION, DIRECTION AND MOVEMENT	Use vocabulary to describe position, direction and movement.	describe position, direction and movement, including half, quarter and three-quarter turns.	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 anti-clockwise)		describe positions on a 2-D grid as coordinates in the first quadrant	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	describe positions on the full coordinate grid (all four quadrants)  draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
					describe movements between positions as translations of a given unit to the left/right and up/down		
<b>Geometry: Position and Direction</b>							
PATTERN			order and arrange combinations of mathematical objects in patterns and sequences				
<b>Statistics</b>							
INTERPRETING, CONSTRUCTING AND			interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems



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PRESENTING DATA			ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity		methods, including bar charts and time graphs		
			ask and answer questions about totaling and comparing categorical data				
<b>Statistics</b>							
SOLVING PROBLEMS				solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Fluency</b>							
ADDITION AND SUBTRACTION FACTS	<ul style="list-style-type: none"><li>Numbers within 5 and then 10</li><li>Partition single digit numbers using the language part, part and whole (eg, 4 is a part, 2 is a part and 6 is the whole. 4 and 2 is 6)</li><li>Number stories will provide a context for pupils (eg, "1 little pig lives</li></ul>	<ul style="list-style-type: none"><li>Numbers within 20 (including adding 10 to single digit numbers)</li><li>Identify one more and one less</li><li>Teachers should expose the patterns in the number system (eg, that 14 is "ten and four more" and we call this "fourteen").</li></ul>	<ul style="list-style-type: none"><li>Recap number bonds within 20</li><li>Numbers within 100 (including bridging ten with two single digit numbers)</li><li>Teachers should expose the patterns in the number system (eg, that 14 is "ten and four more" and we call this "fourteen").</li></ul>	<ul style="list-style-type: none"><li>Numbers up to 3 digits (999), finding 10 or 100 more or less.</li><li>Mentally add/subtract a 3-digit number and ones, tens or hundreds.</li><li>Add/subtract up to a 3-digit number to a 3-digit number using a written method (teachers should expose the concept of 'exchange' within working out, eg, 7</li></ul>	<ul style="list-style-type: none"><li>Numbers up to 4 digits (9999), finding a 1000 more or less.</li><li>Count backwards through zero.</li><li>Use a written column method to add/subtract up to 4-digit and 4-digit numbers</li></ul> <p>Use the concept of estimation to decide if an answer is appropriate</p>	<ul style="list-style-type: none"><li>Numbers greater than 4-digits (up to 1,000,000)</li><li>Add and subtract large numbers mentally.</li><li>Count forwards and backwards through zero.</li><li>Embed strategies and ensure children choose the MOST efficient method</li></ul>	<ul style="list-style-type: none"><li>Numbers greater than 4-digits (up to 10,000,000)</li><li>Add and subtract large numbers mentally.</li><li>Count forwards and backwards through zero.</li><li>Embed strategies and ensure children choose the MOST efficient method</li></ul>



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	<p>in a house and 2 little pigs come running in for shelter. 3 little pigs are in the house now")</p> <p>Introduce the organisation of discrete objects in to a linear model, based on a five/ten frame/bar model.</p>	<p>This pattern can then be used to identify the relationships between numbers to 100.</p> <ul style="list-style-type: none"><li>Record a number sentence to partition single digit numbers (eg, <math>4 + 2 = 6</math>)</li><li>Add two 1-digit numbers by 'making 10' (eg, <math>8 + 4</math> is <math>8 + 2 = 10</math>, <math>10 + 2 = 12</math>)</li></ul> <p>Number stories will provide a context for pupils (eg, "15 carrots in a bag and I take out 3 carrots, how many are left?" <math>15 - 3 = 12</math>)</p>	<p>we call this "fourteen"). This pattern can then be used to identify the relationships between numbers to 100.</p> <ul style="list-style-type: none"><li>Bridging ten by partitioning one and two-digit numbers, (eg, <math>8 + 6</math>, partition 6 into 2 and 4. <math>8 + 2 = 10</math> then <math>10 + 4 = 14</math>)</li></ul> <p>Record a number sentence using symbols accurately and manipulate these to show the range of applicable known facts.</p>	<p>+ 5 = 1 ten and 2 ones)</p> <p>Use the concept of estimation to decide if an answer is appropriate</p>		<p>addition and subtraction.</p> <p>Use the concept of estimation to decide if an answer is appropriate</p>	<p>addition and subtraction.</p> <p>Use the concept of estimation to decide if an answer is appropriate</p>
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### Fluency

MULTIPLICATION AND DIVISION FCATS		2's, 5's and 10's (summer term)	4's and 8's (2's, 5's and 10's to be consolidated)	3's, 6's, 9's (2's, 4's, 5's, 8's and 10's to be consolidated)	7's, 11's and 12's (2's, 3's, 4's, 5's, 6's, 8's, 9's, 10's to be consolidated)	Application of all multiplication and division facts in a range of contexts	Application of all multiplication and division facts in a range of contexts
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