

Exbourne C of E Primary School Maths curriculum

We believe children need to basic mathematical operational skills at an early age to develop their conceptional knowledge as they progress through the school. We aim for all children to be confident mathematicians who are able to apply their knowledge and skills to a range of situations. Children should be fluent in mathematical concepts and be able to apply their knowledge in both written and mental calculations.

Upon leaving our school, we want our children to be confident mathematicians in the world around them, to be able to explore and make the most of their daily experience of maths. Through maths children can find joy in patterns, shape and calculations as well as its practical applications.

Our maths curriculum broadly follows the 'White Rose' maths schemes of work. Our approach meets the needs of many types of learner - we use manipulatives to physically show mathematics, images to show how maths can be represented, calculations and explanations. Children are challenged to experiment, explore and investigate mathematical theories and principles to further their understanding. Mental arithmetic is practised daily as part of our maths lessons. As a school we encourage children to make connections across the curriculum, maths is a vital skill throughout their learning, including science, computing, geography and others.

Every maths unit has an elicitation and application task which clearly shows misconceptions and progress respectively. This data is inputted to our online data management system, Classroom Monitor. In addition, we apply nationally standardised tests 3 times a year to ensure progress.

Programme of study

We use the National Curriculum 2014 for our programme of study in Maths.

Progression of maths

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	count to and across	count in steps of 2, 3,	count from 0 in	count in multiples of	count forwards or	
	100, forwards and	and 5 from 0, and	multiples of 4, 8, 50	6, 7, 9, 25 and 100	backwards in steps of	
	backwards, beginning	count in tens from	and 100; finding 10 or		powers of 10 for any	
	with 0 or 1, or from	any number, forward	100 more than a	count backwards	given number up to 1	
	any given number	or backward	given number	through zero to	000 000	
				include negative		
O	count numbers to			numbers	count forwards and	
alu ng	100, count in				backwards with	
Place Value Counting	different multiples				positive and negative	
lac	including ones, twos,				whole numbers	
<u> </u>	fives and tens				through zero	
	identify and	read and write	identify, represent	identify, represent	read, write numbers	read, write, numbers
	represent numbers	numbers to at least	and estimate	and estimate	to at least 1 000 000	up to 10 000 000 and
	using concrete	100 in numerals and	numbers using	numbers using	and determine the	determine the value
	objects and pictorial	in words	different	different	value of each digit	of each digit
	representations		representations	representations		
	including the number	identify, represent		1.0	read Roman	
	line, and use the	and estimate	read and write	read Roman	numerals to 1000 (M)	
	language of: equal to,	numbers using	numbers to at least	numerals to 100 (I to	and recognise years	
	more than, less than	different	1000 in numerals and	C) and understand	written in Roman	
	(fewer), most, least	representation,	in words	how, over time, the	numerals	
	and and the	including the number		numeral system		
	read and write	line		changed to include		
	numbers to 100 in			the concept of zero		
ue t	numerals			and place value		
Place Value Represent	read and write					
ce)	numbers 1 to 20 in					
Pla	numerals and words					

	given a number,	recognise the value	recognise the place	find 1000 more or	order and compare	order and compare
	identify one more	of each digit in a two-	value of each digit in	less than a given	numbers to at least 1	numbers up to 10
	and one less	digit number (tens,	a three-digit number	number	000 000 and	000 000 and
		ones)	(hundreds, tens,		determine the value	determine the value
			ones)	recognise the place	of each digit	of each digit
		compare and order		value of each digit in		
ഉ		numbers from 0 up to	compare and order	a four-digit number		
Compare		100; use <, > and =	numbers up to 1000	(thousands,		
υo		signs		hundreds, tens and		
e e				ones)		
/alt						
6 P				order and compare		
Place Value Use PV and C				numbers beyond 1000		
		use place value and	solve number	round any number to	interpret negative	round any whole
		number facts to solve	problems and	the nearest 10, 100	numbers in context,	number to a required
		problems	practical problems	or 1000	Trambers in context,	degree of accuracy
		p. co.co.	involving these ideas	0. 2000	round any number up	acg. co or accaracy
			0	solve number and	to 1 000 000 to the	use negative
				practical problems	nearest 10, 100,	numbers in context,
ing in				that involve all of the	1000, 10 000 and 100	and calculate
oun				above and with	000	intervals across zero
2				increasingly large		
e and				positive numbers	solve number	solve number
Place Value Problems and rounding					problems and	problems and
e V.					practical problems	practical problems
lac					that involve all of the	that involve all of the
Д Д					above	above

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	read, write and	recall and use	estimate the answer	estimate and use	use rounding to	
	interpret	addition and	to a calculation and	inverse operations to	check answers to	
	mathematical	subtraction facts to	use inverse	check answers to a	calculations and	
	statements involving	20 fluently, and	operations to check	calculation	determine, in the	
	addition (+),	derive and use	answers		context of a problem,	
	subtraction (-), and	related facts up to			levels of accuracy	
	equals (=) signs	100				
	represent and use	show that addition of				
	number bonds and	two numbers can be				
	related subtraction	done in any order				
	facts within 20	(commutative) and				
		subtraction of one				
		number from				
		another cannot				
_		recognise and use				
tion		the inverse				
raci		relationship between				
ıbtı ıt,		addition and				
d su		subtraction and use				
and		this to check				
on , re		calculations and				
Addition and subtraction Recall, represent, use		missing number				
Ad		problems				

	add and subtract	add and subtract	add and subtract	add and subtract	add and subtract	
	one-digit and two-	numbers using	numbers mentally,	numbers with up to 4	whole numbers with	
	digit numbers to 20,	concrete objects,	including:	digits using the	more than 4 digits,	
	including zero	pictorial	o a three-digit	formal written	including using	
	Ŭ	representations, and	number and	methods of columnar	formal written	
		mentally, including:	ones	addition and	methods (columnar	
		o a two-digit	o a three-digit	subtraction where	addition and	
		number and ones	number and tens	appropriate	subtraction)	
		o a two-digit	o a three-digit	' '	,	
		number and tens	number and		add and subtract	
<u> </u>		o two two-digit	hundreds		numbers mentally	
l ig		numbers			with increasingly	
tra		adding three	add and subtract		large numbers	
qn		one-digit	numbers with up to			
S S		numbers	three digits, using			
ar ion			formal written			
lat			methods of columnar			
Addition and subtraction Calculations			addition and			
ĕΰ			subtraction			
	solve one-step	solve simple one-	solve problems,	solve addition and	solve addition and	solve addition and
	problems that	step problems with	including missing	subtraction two-step	subtraction multi-	subtraction multi-
	involve addition and	addition and	number problems,	problems in contexts,	step problems in	step problems in
	subtraction, using	subtraction:	using number facts,	deciding which	contexts, deciding	contexts, deciding
	concrete objects and	- using concrete	place value, and	operations and	which operations	which operations
	pictorial	objects and pictorial	more complex	methods to use and	and methods to use	and methods to use
E C	representations, and	representations,	addition and	why	and why	and why
ij	missing number	including those	subtraction			
) tra	problems such as 7	involving numbers,				
suk ns	=□ - 9	quantities and				
nd Je		measures				
Addition and subtraction Solve problems		- applying their				
itio e p		increasing knowledge				
pp /o		of mental and				
A S		written methods				

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and division Recall, represent, use	Year 1	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even number show that multiplications of two numbers can be done in any order (commutative) and division of one number by another cannot	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 x 12 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 commutatively in mental calculations	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. know and use the vocabulary of prime numbers, prime factors and composite (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	identify common factors, common multiples and prime numbers use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
Multiplication and div Recall, represent, use					cube numbers, and the notations, (²) (³)	
Multiplication and division Calculations		calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including two-digit numbers times one-digit numbers, using	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 efficient written method of long multiplication divide numbers up to 4 digits by a two-digit

			mental and progressing to formal		multiply and divide numbers mentally	whole number using the formal written
			written methods		drawing upon known	method of long
					facts	division, and
						interpret remainders
					divide numbers up to	as whole number
					4 digits by a one-digit	remainders,
					number using the	fractions, or by
					formal written	rounding, as
					method of short	appropriate for the
					division and interpret	context
					remainders	
					appropriately for the	divide numbers up to
					context	4 digits by a two-digit
						number using the
					multiply and divide	formal written
					whole numbers and	method of short
					those Involving	division where
					decimals by 10, 100	appropriate,
					and 1000	interpreting
						remainders
						according to context
						perform mental
						calculations,
						including with mixed
						operations and large
						numbers
_	solve one step	solve problems	solve problems,	solve problems	solve problems	solve problems
isio	problems involving	involving	including missing	involving multiplying	involving	involving addition,
di≤	multiplication and	multiplication and	number problems,	and adding, including	multiplication and	subtraction,
pu	division, calculating	division, using	involving	using the distributive	division including	multiplication and
Multiplication and division Solve problems	the answer using	materials arrays,	multiplication and	law to multiply two-	using their	division
Multiplication a Solve problems	concrete objects,	repeated addition,	division, including	digit numbers by one	knowledge of factors	
olica	pictorial	mental methods, and	integer scaling	digit, integer scaling	and multiples,	
ltip ve p	representations and	multiplication and	problems and	problems and harder	squares and cubes	
Mu	arrays with the	division facts,	correspondence problems in which n	correspondence problems such as		
			problems in which h	problems such as		

	support of the teacher	including problems in contexts	objects are connected to m objects	which n objects are connected to m objects	solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	
Multiplication and division Combined Operations					solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	using their knowledge of the order of operations to carry out calculations involving the four operations

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions Recognise and write	recognise, find and name a half as one of two equal parts of an object, shape or quantity recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	recognise, find name and write fractions 1/3, 1/4, 2/4, and 3/4 of a length, shape, set of objects or quantity write simple fractions e.g. 1/2 of 6 = 3	count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 recognise, find and write fractions of a discrete set of objects; unit fractions and non-unit fractions with small denominators recognise and use fractions as numbers; unit fractions and non-unit fractions with small denominators	count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths recognise mixed numbers and improper fractions and convert from one to the other and write mathematical statements >1 as a mixed number (e.g. 2/5 + 4/5 = 6/5 = 1 1/5)	Year 6
Fractions						
Fractions Compare		recognise the equivalent of two quarters and one half	recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	compare and order fractions whose denominators are all multiples of the same number	use common factors to simplify fractions; use common multiples to express fractions in the same denomination

		compare and order unit fractions with the same denominators			compare and order fractions including fractions >1
Fractions Calculations	write simple fractions e.g. 1/2 of 6 = 3	add and subtract fractions with the same denominator within one whole (e.g. 5/7 + 1/7 = 6/7)	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and denominators that are multiples of the same number multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. ½ x ½ = 1/8) divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6)
Fractions Solve problems		solve problems that involve all of the above	solve simple measures and money problems involving fractions and decimals to two decimal places		

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
te				recognise and write decimal equivalents of any number of tenths or hundredths	read and write decimal numbers as fractions (e.g. 0.71 = 71/100)	identify the value of each digit in numbers given to three decimal places
Decimals Recognise and write				recognise and write decimal equivalents to 1/4; 1/2, 3/4	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	places
Decimals Compare				round decimals with one decimal place to the nearest whole number compare numbers with the same number of decimal places up to two decimal places	round decimals with two decimal places to the nearest whole number and to one decimal place read, write, order and compare numbers with up to 3 decimal places	
Decimals Calculations and problems				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	solve problems involving numbers up to 3 decimal places	multiply one-digit numbers with up to two decimal places by whole numbers multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places use written division methods in cases where the answer has up to two decimal places

			solve problems which
			require answers to be
			rounded to specified
			degrees of accuracy

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				solve simple measures	recognise the per cent	associate a fraction
				and money problems	symbol (%) and	with division and
				involving fractions	understand that per	calculate decimal
				and decimals to two	cent relates to	fraction equivalents
				decimal places	'number of parts per	(e.g. 0.375) for a
					hundred', and write	simple fraction (e.g.
es					percentages as a	3/8)
Percentages					fraction with	
en j					denominator 100, and	recall and use
erc					as a decimal	equivalences between
						simple fractions,
and					solve problems which	decimals and
als					require knowing	percentages, including
E.					percentage and	in different contexts
Decimals					decimal equivalents of	
					1/2, 1/4, 1/+, 2/+, 4/+	
Fractions,					and those frac- tions	
raci					with a denominator of	
正					a multiple of 10 or 25	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						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 (e.g of
						measures, and such as 15% of 360) and the
						use of percentages for
						comparison
						companison
						solve problems
						involving similar
						shapes where the
						scale factor is known
_						or can be found
ţi						
por						solve problems
Pro						involving unequal
Ratio and Proportion						sharing and grouping
o al						using knowledge of
ati						fractions and
8						multiples

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						use simple formulae
						generate and describe linear number sequences
						express missing number problems algebraically
						find pairs of numbers that satisfy an equation with two unknowns
Algebra						enumerate possibilities of combinations of two variables

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	 compare, describe 	choose and use	measure, compare,	convert between	convert between	solve problems
	and solve practical	appropriate standard	add and subtract:	different units of	different units of	involving the
	problems for:	units to estimate and	lengths (m/cm/mm);	measure (e.g.	measure (e.g.	calculation and
	 lengths and 	measure	mass (kg/g);	kilometre to metre;	kilometre and metre;	conversion of units of
	heights (e.g.	length/height in any	volume/capacity	hour to minute)	centimetre and	measure, using
	long/short,	direction (m/cm);	(l/ml)		metre; centimetre	decimal notation up
	longer/ shorter,	mass (kg/g);		estimate, compare	and millimetre; gram	to three decimal
	tall/short,	temperature (°C);		and calculate different	and kilogram; litre	places where
es es	double/half)	capacity (litres/ml) to		measures, including	and millilitre)	appropriate
sur	 mass or weight 	the nearest		money in pounds and		
em lea	(e.g. heavy/light,	appropriate unit,		pence	understand and use	use, read, write and
sur g N	heavier than,	using rulers, scales,			approximate	convert between
Measurement Using Measures	lighter than)	thermometers and			equivalences between	standard units,
≥ ⊃		measuring vessels			metric units and	converting

	 capacity/volume (e.g. full/empty, more than, less than, half, half full, quarter) time (e.g. quicker, slower, earlier, later) Measure and begin to record the following: lengths and heights mass/weight capacity and volume time (hours, minutes, seconds) 	compare and order lengths, mass, volume/ capacity and record the results using <, > and =			common imperial units such as inches, pounds and pints use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation, including scaling	measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places convert between miles and kilometres
Measurement Money	recognise and know the value of different denominations of coins and notes	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	add and subtract amounts of money giving change, using both £ and p in practical contexts	estimate, compare and calculate different measures, including money in pounds and pence	use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation	

Measurement Time	sequence events in chronological order using language (e.g. before, after, next, first, today, tomorrow, morning, afternoon and evening) recognise and use the language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face	compare and sequence intervals of time tell and write time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times know the number of minutes in an hour and the number of hours in a day	tell and write the time from an analogue clock, including using Roman numerals from 1 to X11, and 12 hour and 24-hour clocks estimate and read time to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight know the number of seconds in a minute and the number of days in each month, year and leap year	read, write and convert time between analogue and digital 12 and 24-hour clocks solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	solve problems involving converting between units of time	use, read, write and convert between standard units of time

		compare durations of events, for example to calculate the time taken by particular events or tasks.			
Measurement Perimeter, area and volume		measure the perimeter of simple 2-D shapes	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting	measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes estimate volume (e.g. using 1 cm³ blocks to build cuboids (including cubes)) and capacity (e.g. using water)	recognise that shapes with the same areas can have different perimeters and vice versa recognise when it is possible to use formulae for area and volume of shapes calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³) and extending to other units (e.g. mm³ and km³)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry 2D Shapes	recognise and name common 2-D shapes (e.g. rectangles (including squares), circles and triangles)	identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line identify 2-D shapes on the surface of 3-D shapes, for example a circle on a cylinder and a triangle on a pyramid compare and sort common 2-D shapes and everyday objects	draw 2-D shapes	compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes identify lines of symmetry in 2-D shapes presented in different orientations	use the properties of a rectangle to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles Pupils	draw 2D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Geometry G 3D shapes 21	Recognise 3-D shapes (e.g. cuboids (including cubes), pyramids and spheres)	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 compare and sort common 3-D shapes and everyday objects	make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them with increasing accuracy		identify 3-D shapes, including cubes and cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets

Geometry Angles and lines		recognise angles as a property of shape and associate angles with turning identify right angles, recognise that two right angles make a half-turn, three make three- quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	identify acute and obtuse angles and compare and order angels up to two right angles by size identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry	know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles draw given angles, measuring them in degrees (°) identify angles at a point and one whole turn (total 360°) angles at a point on a straight line and ½ a turn (total 180°) other multiples of 90°	find unknown angles in any triangles, quadrilaterals and regular polygons recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

	describe position,	order and arrange	describe positions on	identify, describe and	describe positions on
	directions and	combinations of	a 2-D grid as	represent the position	the full coordinate
	movements, including	mathematical objects	coordinates in the	of a shape following a	grid (all four
	half, quarter and	in patterns	first quadrant	reflection or	quadrants)
	three-quarter turns			translation, using the	
		use mathematical	describe movement	appropriate language,	draw and translate
		vocabulary to	between positions as	and know that the	simple shapes on the
		describe position,	translations of a given	shape has not	coordinate plane, and
		direction and	unit to the left/right	changed	reflect them in the
		movement, including	and up/down		axes
on		distinguishing			
direction		between rotation as a	plot specified points		
Jire		turn and in terms of	and draw sides to		
		right angles for	complete a given		
try n ar		quarter, half and	polygon		
nel tior		three-quarter turns			
Geometry Position and		(clockwise/anti-			
Q q		clockwise)			

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Statistics Present and interpret		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 methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
Statistics Solve problems		ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ask and answer questions about totalling and compare categorical data	solve one-step and two-step questions such as '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