



# St. Mary's R.C. Primary School, Radcliffe

## Mathematics end of year expectations

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Number</b> <b>Counting &amp; Ordering</b>	Count reliably to 20  Order numbers 1-20	Count to & across 100, forwards & backwards from any number.  Count, read and write numbers to 100 in numerals  Count in 2, 5 or 10.	Compare & order numbers up to 100 and use $< > =$ .	Compare & order numbers up to 1,000.	Count backwards through zero to include negative numbers  Compare & order numbers beyond 1,000  Compare & order numbers with up to 2 decimal places.  Read Roman numerals to 100.	Count forwards & backwards with positive & negative numbers through zero.  Count forwards/backwards in steps of powers of 10 for any given number up to 1,000,000.  Compare & order numbers up to 1,000,000  Compare & order numbers with 3 decimal places.  Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Solve number and practical problems that involve large numbers, rounding and negative numbers.  Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.  Use negative numbers in context and calculate intervals across zero.
<b>Numbers &amp; more/less</b>	Say 1 more/1 less to 20.	Read & write numbers to 20 in numerals & words.	Read & write all numbers to 100 in digits & words.	Read & write all numbers to 1,000 in digits & words.	Find 1,000 more/less than a given number.	Interpret negative numbers in context, count	Round any whole number to required degree of accuracy.

		<p>Read &amp; write numbers to 100 in numerals.</p> <p>Say 1 more/1 less to 100</p>	<p>Say 10 more/less than any number to 100.</p>	<p>Find 10 or 100 more/less than a given number.</p>		<p>forwards and backwards with positive and negative whole numbers, including through zero.</p>	
<b>Tables &amp; Multiple</b>		<p>Count in multiples of 1, 2, 5 &amp; 10.</p>	<p>Count in steps of 2, 3 &amp; 5 from any number up to 100 and in 10s from any number (forward/backward).</p> <p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.</p>	<p>Count from 0 in multiples of 4, 8, 50 &amp; 100.</p> <p>Recall &amp; use multiplication &amp; division facts for 3, 4, 8 tables.</p>	<p>Count in multiples of 6, 7, 9, 25 &amp; 1000.</p> <p>Recall &amp; use multiplication &amp; division facts all tables to 12x12.</p>	<p>Identify all multiples &amp; factors, including finding all factor pairs.</p>	<p>Identify common factors, common multiples &amp; prime numbers.</p>
<b>Bonds &amp; Facts</b>		<p>Use bonds &amp; subtraction facts to 20.</p>	<p>Recall &amp; use +/- facts to 20. Derive &amp; use related facts to 100.</p>			<p>Recall prime numbers up to 19.</p> <p>Recognise &amp; use square numbers &amp; cube numbers.</p>	<p>Use simple formulae.</p> <p>Generate and describe linear number sequences.</p> <p>Express missing number problems algebraically.</p> <p>Find pairs of numbers that satisfy an equation</p>

							with two unknowns.
<b>Place Value &amp; Rounding</b>			Recognise PV of any 2-digit number.	Recognise PV of any 3-digit number.  Solve number problems and practical problems involving working with and estimating numbers up to 1000 in a variety of units.	Recognise PV of any 4-digit number.  Round any number to the nearest 10, 100 or 1000.  Round decimals with 1dp to nearest whole number.	Recognise PV of any number up to 1,000,000.  Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 or 100,000.  Round decimals with 2dp to nearest whole number & 1dp.	Round any whole number to a required degree of accuracy.
<b>Number Calculations</b> +/-	Add & subtract two single digit numbers.  Count on/back to find the answer.	Know and use the symbols for addition and subtraction correctly in a number sentence  Add & subtract: ▪ 1-digit & 2-digit numbers to 20, including zero.  Solve missing number problems eg. $7 = ? - 3$	Add & subtract: ▪ 2-digit numbers & ones ▪ 2-digit numbers & tens ▪ Two 2-digit numbers ▪ Three 1-digit numbers  Solve problems with addition and subtraction applying their increasing knowledge of	Add & subtract: ▪ 3-digit numbers & ones ▪ 3-digit numbers & tens ▪ 3-digit numbers & hundreds  Add & subtract: ▪ Numbers with up to 3-digits using formal written methods of calculation	Add & subtract: ▪ Numbers with up to 4-digits using written columnar method. ▪ Numbers with up to 1dp.  Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.  Estimate and use inverse to check.	Add & subtract: ▪ Numbers with more than 4-digits using formal written method. ▪ Numbers mentally with increasingly large numbers. ▪ Numbers with up to 2dp.  Solve addition and subtraction multi-step problems in contexts, deciding which	Add and subtract whole numbers with more than 4 digits, including using formal written methods.  Add and subtract numbers mentally with increasingly large numbers.  Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

			mental and written methods.	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.		operations and methods to use and why.	
<b>Number Calculations</b> x/÷	Solve a range of problems, including doubling, halving and sharing.	Solve one-step multiplication & division using objects, pictorial representations and arrays.	<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>	<p>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.</p> <p>Solve more complex problems and missing number questions involving multiplication and division.</p>	<p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Solve problems involving multiplying and adding, including multiplying two digit numbers by one digit, scaling problems and harder correspondence problems such as n objects are connected to m objects.</p>	<p>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>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.</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</p> <p>Recognise and use square numbers and cube numbers,</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</p> <p>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 the context.</p> <p>Perform mental calculations, including with mixed operations and large numbers.</p> <p>Use their knowledge of the</p>

						<p>and the notation for squared (2) and cubed (3).</p> <p>Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.</p>	<p>order of operations to carry out calculations involving the four operations. Solve problems involving addition, subtraction, multiplication and division, deciding which operations and methods to use.</p>
<p><b>Number Fractions, Decimals and Percentages</b></p>		<p>Know that <math>\frac{1}{2}</math> is one of two equal parts.</p> <p>Recognise half and quarter of an object, a shape or a quantity.</p>	<p>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity.</p> <p>Write simple fractions e.g. <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of two quarters and one half.</p>	<p>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.</p> <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</p> <p>Compare and order unit fractions, and fractions with the same</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions.</p> <p>Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</p> <p>Round decimals with one decimal place to the nearest whole number. Compare numbers with the same number of decimal</p>	<p>Compare and order fractions whose denominators are all multiples of the same number. Read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>].</p> <p>Read, write, order and compare numbers with up to three decimal places.</p> <p>Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages</p>	<p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>].</p> <p>Associate a fraction with division and calculate decimal fraction equivalents [for example, <math>0.375</math>] for a simple fraction</p>

				<p>denominators.</p> <p>Add and subtract fractions with the same denominator within one whole</p>	<p>places up to two decimal places.</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>as a fraction with denominator 100, and as a decimal.</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</p> <p>Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</p> <p>Solve problems, which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25</p>	<p>[for example, <math>\frac{3}{8}</math>].</p> <p>Multiply one-digit numbers with up to two decimal places by whole numbers.</p> <p>Use written division methods in cases where the answer has up to two decimal places.</p> <p>Solve problems, which require answers to be rounded to specified degrees of accuracy.</p> <p>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p> <p>Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages</p>
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							for comparison.  Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
<b>Geometry</b>  <b>Shape</b>	Recognise, create and describe patterns.  Explore the characteristics of everyday objects and shapes and use mathematical language to describe them.	Recognise and name common 2d and 3d shapes	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  Compare and sort common 2-D and 3-	Recall properties of 2-D and 3-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.	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.

<p><b>Geometry</b></p> <p><b>Position and Direction</b></p>		<p>Describe position, direction and movement, including whole, half, quarter and three-quarter turns.</p>	<p>D shapes and everyday objects.</p> <p>Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).</p>	<p>Identify right angles, recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn.</p> <p>Identify whether angles are greater than or less than a right angle.</p>	<p>Describe positions on a 2-D grid as coordinates in the first quadrant.</p> <p>Plot specified points and draw sides to complete a given shape</p> <p>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</p>	<p>Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.</p> <p>Draw given angles, and measure them in degrees (<math>^{\circ}</math>).</p> <p>Identify angles at a point on a straight line and a turn (total <math>180^{\circ}</math>).</p> <p>Identify angles at a point and one whole turn (total <math>360^{\circ}</math>).</p>	<p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</p> <p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.</p> <p>Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</p> <p>Describe positions on the full coordinate grid (all four quadrants).</p>
<p><b>Statistics</b></p>			<p>Interpret and construct simple pictograms, tally charts,</p>	<p>Interpret and present data using bar charts,</p>	<p>Solve comparison, sum and difference problems using</p>	<p>Solve comparison, sum and difference problems using information</p>	<p>Draw and translate simple shapes on the coordinate plane, and</p>

			<p>block diagrams and simple tables.</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.</p>	<p>pictograms and tables.</p> <p>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.</p>	<p>information presented in bar charts, pictograms, tables and other graphs.</p> <p>Interpret and present data using appropriate graphical methods, including bar charts and time graphs.</p>	<p>presented in a line graph.</p> <p>Complete, read and interpret information in tables, including timetables.</p>	<p>reflect them in the axes.</p> <p>Describe positions on the full coordinate grid (all four quadrants).</p>
<b>Measurement</b>	<p>To use everyday language to talk about size, weight, capacity, position, distance, time and money.</p> <p>Compare quantities, objects and solve problems.</p>	<p>Describe and solve practical problems for: lengths and heights (long/short, tall/short, double/half), mass and weight (heavy/light, heavier than/lighter than), capacity and volume (full/empty, more than/less than) and time (quicker/slower, earlier/later).</p> <p>Measure and begin to record the following: lengths and heights, mass and weight, capacity and</p>	<p>Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.</p> <p>Recognise and use symbols for pounds (£) and pence (p); combine amounts</p>	<p>Measure, compare, add and subtract: lengths (m, cm, mm); mass (kg, g); volume, capacity (l, ml).</p> <p>Add and subtract amounts of money to give change, using both £ and p in practical contexts.</p> <p>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.</p>	<p>Convert between different units of measure [for example, kilometre to metre; hour to minute].</p> <p>Measure and calculate the perimeter and area of a rectilinear figure (including squares).</p> <p>Read, write and convert time between analogue and digital 12- and 24-hour clocks.</p> <p>Solve problems involving converting</p>	<p>Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).</p> <p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.</p> <p>Calculate and compare the area</p>	<p>Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.</p> <p>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</p>

		<p>volume and time (hours, minutes and seconds).</p> <p>Recognise different coins and notes.</p> <p>Tell the time to the hour and half past the hour and can draw the hands on a clock face to show this.</p> <p>Sequence events in chronological order using language (before, after, next, first, today, yesterday, tomorrow and afternoon).</p>	<p>to make a particular value.</p> <p>Find different combinations of coins that equal the same amounts of money.</p> <p>Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.</p> <p>Compare and sequence intervals of time.</p> <p>Tell, write and draw the time to five minutes, including quarter past/to the hour.</p> <p>Know the number of minutes in an hour and the number of hours in a day.</p>	<p>Measure the perimeter of simple 2-D shapes.</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year.</p> <p>Estimate and read time with increasing accuracy to the nearest minute.</p>	<p>from hours to minutes; minutes to seconds; years to months; weeks to days.</p>	<p>of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes.</p> <p>Solve time problems using timetables and converting between different units of time.</p>	<p>decimal notation to up to three decimal places.</p> <p>Calculate the area of parallelograms and triangles.</p> <p>Recognise that shapes with the same areas can have different perimeters and vice versa.</p>
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