

# Colwich CE Primary School Curriculum Statement

## Maths Progression Grid (2)

*God is love, so we: Learn to Love, Love to Learn, Learn for Life*

The progression grid outlines the specific knowledge which pupils are expected to learn in each phase, over a two year cycle, along with the specific vocabulary which supports this understanding.

### Threshold Concepts

	To Multiply and Divide	To use Fractions	To understand the properties of shape
<b>At EYFS</b>	n/a	n/a	<b>Shape, Space and Measures</b> <ul style="list-style-type: none"> <li>Is able to name 2D and 3D shapes and describe them using informal and mathematical language.</li> <li>Measures and compares length, weight and capacity.</li> <li>Create more complex repeating patterns and spot mistakes in them.</li> <li>Names and orders the days of the week. Understand and use a clock to learn time to o'clock.</li> </ul>
<b>At Key Stage 1</b>	<b>Year 1</b> <ul style="list-style-type: none"> <li>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.</li> </ul> <b>Year 2</b> <ul style="list-style-type: none"> <li>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> <li>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs</li> <li>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li> <li>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li> </ul>	<b>Year 1</b> <ul style="list-style-type: none"> <li>Recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul> <b>Year 2</b> <ul style="list-style-type: none"> <li>Recognise, find, name and write fractions <math>1/3</math>, <math>1/4</math>, <math>2/4</math>, <math>3/4</math> of a length, shape, set of objects or quantity</li> <li>Write simple fractions for example, <math>1/2</math> of <math>6 = 3</math> and recognise the equivalence of <math>2/4</math> and <math>1/2</math>.</li> </ul>	<b>Year 1</b> <ul style="list-style-type: none"> <li>Recognise and name common 2-D shapes, e.g. rectangles, squares, circles and triangles</li> <li>Recognise and name common 3-D shapes [e.g. cuboids, cubes, pyramids and spheres].</li> </ul> <b>Year 2</b> <ul style="list-style-type: none"> <li>Identify and describe properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>Identify and describe properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>Identify 2-D shapes on the surface of 3-D shapes, [e.g. a circle on a cylinder and a triangle on a pyramid]</li> <li>Compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>

<b>At lower Key Stage 2</b>	<b>Year 3</b> <ul style="list-style-type: none"> <li>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> <li>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</li> <li>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.</li> </ul>	<b>Year 3</b> <ul style="list-style-type: none"> <li>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</li> <li>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</li> <li>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominator</li> <li>Recognise and show, using diagrams, equivalent fractions with small denominators</li> <li>Add and subtract fractions with the same denominator within one whole [e.g. <math>\frac{7}{7} + \frac{1}{7} = \frac{6}{7}</math>]</li> <li>Compare and order unit fractions, and fractions with the same denominators</li> <li>Solve problems that involve all of the above.</li> </ul>	<b>Year 3</b> <ul style="list-style-type: none"> <li>Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</li> <li>Recognise angles as a property of shape or a description of a turn</li> <li>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</li> <li>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> </ul>
	<b>Year 4</b> <ul style="list-style-type: none"> <li>Recall multiplication and division facts for tables up to <math>12 \times 12</math></li> <li>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</li> <li>Recognise and use factor pairs and commutativity in mental calculations</li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> <li>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. D</li> </ul>	<b>Year 4</b> <ul style="list-style-type: none"> <li>Recognise and show, using diagrams, families of common equivalent fractions</li> <li>Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> <li>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</li> <li>Add and subtract fractions with the same denominator</li> <li>Recognise and write decimal equivalents of any number of tenths or hundredths</li> <li>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math></li> <li>Find the effect of dividing a 1- or 2-digit number by 10 and 100, and identify the value of digits in the answer as ones, tenths, hundredths</li> <li>Round decimals with one decimal place to the nearest whole number</li> <li>Compare numbers with the same number of decimal places up to two decimal places</li> <li>Solve simple measure and money problems involving fractions and decimals to two decimal places.</li> </ul>	<b>Year 4</b> <ul style="list-style-type: none"> <li>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</li> <li>Identify acute and obtuse angles and compare and order angles up to two right angles by size</li> <li>Identify lines of symmetry in 2-D shapes presented in different orientations</li> <li>Complete a simple symmetric figure with respect to a specific line of symmetry. D</li> </ul>

**At upper  
Key  
Stage 2**

**Year 5**

- *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
- 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 and divide numbers mentally drawing upon known facts
- 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
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- Recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)
- *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 multiplication and division, including scaling by simple fractions and problems involving simple rates.*

**Year 6**

- *Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication*
- *Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context*
- 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

**Year 5**

- *Compare and order fractions whose denominators are all multiples of the same number*
- 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 form to the other and write mathematical statements  $> 1$  as a mixed number [e.g.  $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$  ]
- 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
- *Read and write decimal numbers as fractions [e.g.  $0.71=71/100$  ]*
- Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- 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 three decimal places*
- Solve problems involving number up to three decimal places
- Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- *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 fractions with a denominator of a multiple of 10 or 25.*

**Year 6**

- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination
- Compare and order fractions, including fractions  $> 1$
- 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.  $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]
- Divide proper fractions by whole numbers [e.g.,  $\frac{1}{3} \div 2 = \frac{1}{6}$ ]

**Year 5**

- Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- *Draw given angles, and measure them in degrees (°)*
- Identify the following:
  - angles at a point and one whole turn (total 360°)
  - angles at a point on a straight line and  $\frac{1}{2}$  a turn (total 180°)
  - other multiples of 90°
- Use the properties of rectangles to deduce related facts and find missing lengths and angles
- *Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.*

**Year 6**

- Draw 2-D shapes using given dimensions and angles
- Recognise, describe and build simple 3-D shapes, including making nets
- *Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons*
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

	<ul style="list-style-type: none"> <li>Identify common factors, common multiples and prime numbers</li> <li>Use their knowledge of the order of operations to carry out calculations involving the four operations</li> <li>Solve problems involving all 4 operations</li> <li><i>Use estimation to check answers to calculations and determine an appropriate degree of accuracy for a problem</i></li> </ul>	<ul style="list-style-type: none"> <li>Associate a fraction with division and calculate decimal fraction equivalents [e.g. 0.375] for a simple fraction [e.g. 3/8]</li> <li>Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</li> <li>Multiply one-digit numbers with up to two decimal places by whole numbers</li> <li><b>Use written division methods in cases where the answer has up to two decimal places</b></li> <li><b>Solve problems which require answers to be rounded to specified degrees of accuracy*</b></li> <li><b>Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</b></li> </ul>	<ul style="list-style-type: none"> <li>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.</li> </ul>
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## Vocabulary

<b>EYFS</b>	sharing doubling halving number patterns	parts of a whole half quarter	shape, pattern flat, curved, straight, round hollow, solid sort, make, build, draw, size bigger, larger, smaller symmetrical pattern, repeating pattern match
<b>Year 1</b>	multiplication, multiply, multiplied by, multiple division, dividing, grouping, array	fraction equal part, equal grouping equal sharing one of two equal parts one of four equal parts	symmetry, symmetrical pattern
<b>Year 2</b>	groups of, times once, twice, three times ... ten times repeated addition divide, divided by, divided into share, share equally, left, left over one each, two each, three each... ten each group in pairs, threes ... tens equal groups of row, column multiplication table, multiplication fact, division fact	equivalent fraction mixed number numerator, denominator two halves two quarters, three quarters one third, two thirds one of three equal parts	surface, line symmetry

<b>Year 3</b>	factor, product, remainder	sixths, sevenths, eighths, tenths ...	perimeter
<b>Year 4</b>	inverse, square, squared, cube, cubed	hundredths decimal, decimal fraction, decimal point, decimal place, decimal, equivalent, proportion	line, construct, stretch centre, angle, right-angled, base, square-based reflect, reflection regular, irregular
<b>Year 5</b>	<i>n/a</i>	proper/improper fraction equivalent, reduced to, cancel, thousandths, in every, for every percentage, percent, %	radius, diameter, congruent, axis of symmetry, reflective symmetry
<b>Year 6</b>	<i>n/a</i>	ratio	circumference, concentric, arc net, open, closed, intersecting, intersection plane,



**Knowledge, Context and Vocabulary**

	Multiplication and division	Fractions	Geometry
At EYFS	sharing doubling halving number patterns	parts of a whole half quarter	shape, pattern flat, curved, straight, round hollow, solid sort, make, build, draw, size bigger, larger, smaller symmetrical pattern, repeating pattern match
At Year 1	multiplication, multiply, multiplied by, multiple grouping, array	division, dividing, fraction equal part, equal grouping one of two equal parts one of four equal parts	equal sharing symmetry, symmetrical pattern
At Year 2	groups of, times once, twice, three times ... ten times repeated addition divide, divided by, divided into share, share equally, left, left over two each, three each... ten each group in pairs, threes ... tens row, column multiplication table	one each, equivalent fraction mixed number numerator, denominator two halves two quarters, three quarters one third,two thirds one of three equal parts	equal groups of surface, line symmetry
	multiplication fact, division fact		

**Knowledge, Context and Vocabulary**

	Multiplication and division	Fractions	Geometry
At Year 3	factor, product, remainder	sixths, sevenths, eighths, tenths ...	perimeter
At Year 4	inverse, square, squared, cube, cubed	hundredths decimal, decimal fraction, decimal point, decimal place, decimal, equivalent, proportion	line, construct, stretch angle, right-angled, base, square-based reflection centre, reflect, regular, irregular
At Year 5	N/A	proper/improper fraction equivalent, reduced to, thousandths, for every percentage, cancel, in every, percent, %	radius, diameter, congruent, axis of symmetry, reflective symmetry
At Year 6	N/A	ratio	circumference, concentric, arc net, open, closed, intersecting, intersection plane,