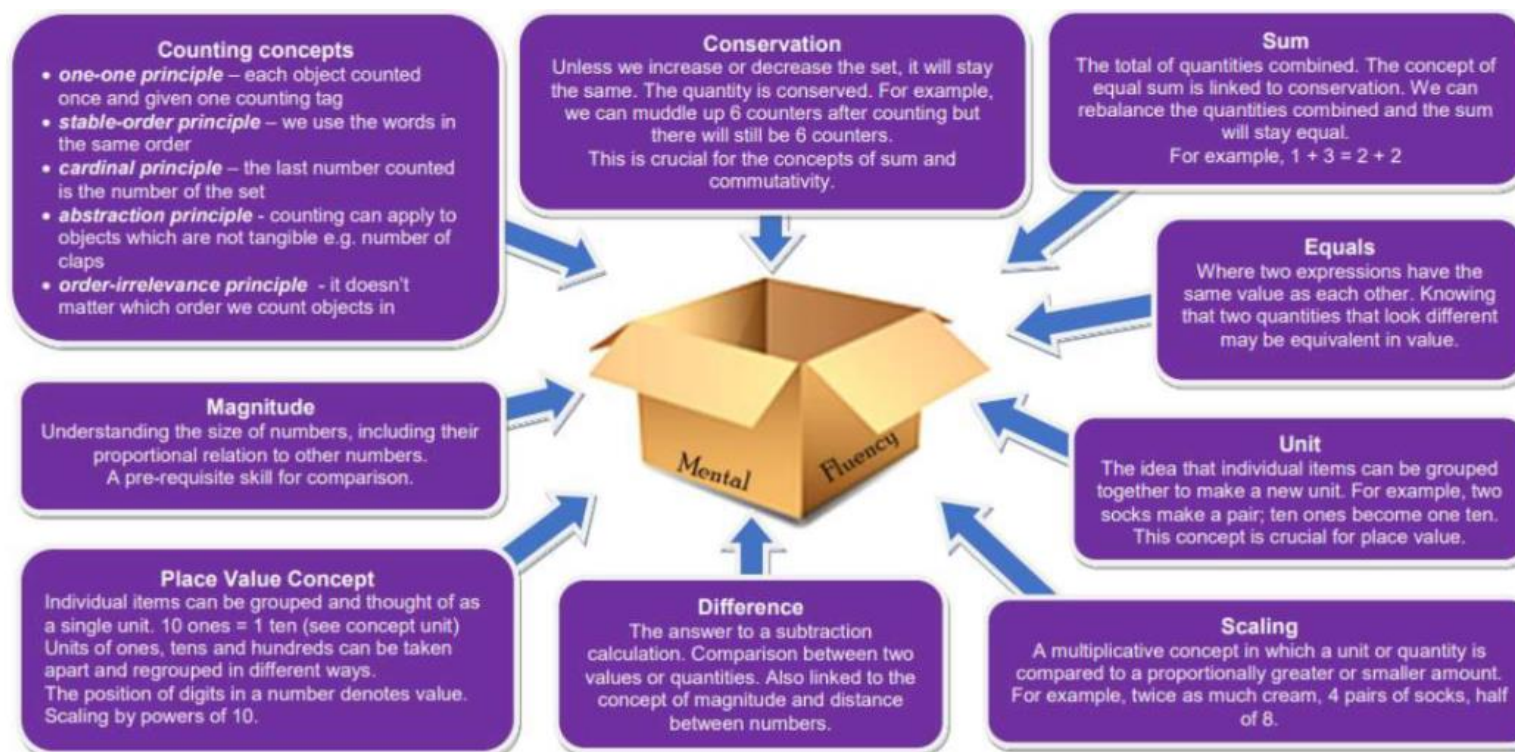




Bromesberrow St Mary's C of E Primary School Progression in Mathematical Fluency.

The NCETM set out 5 big ideas for mastery. These include coherence, representations, variation, mathematical thinking and fluency. They state that fluency demands more of students than memorisation of a single procedure or collection of facts. It encompasses a mixture of efficiency, accuracy and flexibility. Quick and efficient recall of facts and procedures is important in order for students to keep track of sub-problems, think strategically and solve problems. Fluency also demands the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to make appropriate choices from a whole toolkit of methods, strategies and approaches. This document aims to provide a structure in which teachers will explicitly teach these in a coherent and well thought out manner. The core mathematical concepts children need to become fluent are:





In order to achieve these, the children will have to master the skills below.

These skills are broken down into skills in which each year group will focus on. These Skills are methods and/or strategies to help aid and support fluency within the children and not a specific part of the curriculum.

Subitising	the ability to see number as pattern, such as dice patterns. This supports pupils to see numbers within numbers and better regrouping (partitioning).
Regrouping (partitioning)	the ability to break numbers up and recombine them flexibly
Counting on and counting back	in a variety of interval steps
Reordering	knowing when and how to reorder to make calculations easier
Finding complements	links to reordering, identifying useful complements pairs or trios of 1, 10, 60 etc.
Applying the inverse	use of fact family knowledge to 'undo'
Rounding	to a range of benchmark numbers
Estimation	both linear estimation on number lines and scales, and of quantities and calculations to support an increasing sense of what is reasonable
Compensation	to use rounding to add or subtract too much or too little and adjust accordingly
Rebalancing	to adjust the parts of addition and subtraction facts to make a calculation easier
x + by powers of 10	
Doubling and halving	
Rearranging	to adjust the groups in multiplication and division to make a calculation easier



Reception	• Name numbers in order to 10 and compare two numbers by saying which is more or less. • Recognise quantities to 5 without counting up to 5 (subitise). • To say one more than a given number up to 10. • Be able to partition numbers to 5 in different combinations of two groups. • Recall number bonds to 10 including partitioning facts. • To know the days of the week in order. • Recall names of numbers to 20. • Know one more and 1 less for number 0-20 • Identify 2D shapes: circle, square, triangle, rectangle, hexagon, pentagon • Identify 3D shapes: sphere, cylinder, cone, cubes, cuboids • Know number doubles up to 5 + 5.
Year 1	• Recite number names in order to 50 and beyond. • To add one and two to any number. • To know odd and even numbers to 20. • Counts in 2's to 20. · Count in 10's to 100. • Count in 5's to 50. • To know number bonds to 10. • Facts within 10 as above and related subtraction facts • Know o'clock and half past times. • To add 10 to a number. • To know doubles and halves of numbers to 10. • To know near doubles to 5 • Know the seasons in order • Know the months of the year in order • Identify 3D shapes: pyramids,
Year 2	• Recite the number names in order to 100. • To know number bonds to 10 and 20. • To know doubles and halves of numbers to 20.



	• To know near doubles to 10. • Count in 2's • To know multiplication and division facts for the 2 times table. • To use bridging and compensation for addition facts to $10 + 10$. • Count in 5's and 10's. • To know multiplication and division facts for the 5 and 10 times table. • Count in 3's to 36. • To tell the time for o'clock, quarter past, half past and quarter to as well as intervals of 5. • To know multiplication and division facts for the 3 times table. • Facts within 20 as above and related subtraction facts • Number of minutes in an hour; number of hours in a day • Coin recognition up to £2 and note recognition • Know $100p = £1$ • Identify 2D shapes: quadrilaterals, regular and irregular polygons • Identify 3D shapes: cuboids, prisms
Year 3	• To know the number bonds for all numbers up to 20. • Count in 50's and 100's. • Count in 3's. • To know multiplication and division acts for the 3 times table. • Count in 4's. • To know multiplication and division facts for the 4 times table. • Count up and down in tenths. • Recognise decimal equivalents of tenths. • Count in 8's. • To know multiplication and division facts for the 8 times table. • Recall facts about durations of time (seconds in a minute, minutes in an hour, hours in a day). • To multiply and divide 1 digit numbers by 10. • Sums and differences between pairs of numbers which are multiples of 10 and 100. • Doubles and halves of multiples of 10 or 100. • Complements to 100. • Complements to 60 (time).



	• Complements of fractions with the same denominator that make 1 e.g. $\frac{3}{7} + \frac{4}{7} = 1$ • Number of days in each month and in a year including a leap year. • Recognise right angles. • Recognise parallel and perpendicular lines. • Recognise horizontal and vertical.
Year 4	• To know number bonds to 100. • Count in 25's and 1000's. • Count in 6's. • To know multiplication and division facts for the 6 times table. • Count in 9's and 11's. • To know multiplication and division facts for the 9 and 11 times table. • Count in 7's and 12's. • To know multiplication and division facts for the 7 and 12 times table. • To recognise decimal equivalents of fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, tenths and hundredths). • Multiply and divide 1 and 2 digit numbers by 10 and 100. • Doubles and halves of multiples of 10, 100 or 1000 ($6 + 6$, $60 + 60$, $600 + 600$, $6000 + 6000$). • Multiplication and division by zero and one facts. • Conversion of kilometres to metres, hours to minutes, years to months, weeks to days. • Complements of tenths that make 1. • Complements of hundredths that make 1. • Convert between decimals and fractions for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$ and any number of tenths and hundredths. • Read roman numerals to 100. • Know right angles = 90 degrees. • Know the types of triangle (isosceles, equilateral, and scalene).
Year 5	• Identify prime numbers up to 20 (2, 3, 5, 7, 11, 13, 17, 19). • Recall metric conversions (1 kilogram = 1000 grams, 1 kilometre = 1000 metres, 1 metre = 100 centimetres, 1 metre = 1000 millimetres, 1 centimetre = 10 millimetres 1 litre = 1000 millilitres). • Recall square numbers up to 12 squared and their square roots. • Read Roman numerals to 1000. • Know angles on a straight line = 180 degrees.



	• Know angles in a triangle = 180 degrees. • Know angles around a point = 360 degrees.
Year 6	• Convert between decimals, fractions and percentages • Identify prime numbers up to 50 (2, 3, 5, 7, 11, 13, 17, 19, 23, 27, 29, 31, 37, 41, 43, 47). • Illustrate and name parts of a circle: including radius, diameter and circumference. • Know that the radius is half the diameter.

For children to be fluent, they should be able to recall the facts for the current year group and all the previous year groups – Fluency is not just rapid recall of number facts but all mathematical concepts that help them to reason and problem solve.