



Progression of Knowledge for Mathematics

By the end of Reception, children at the expected level of development will:

Have a deep understanding of number to 10, including the composition of each number;
Subitise (recognise quantities without counting) up to 5;
Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
Verbally count beyond 20, recognising the pattern of the counting system;
Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Key Stage One (Years 1&2)

Pupils develop confidence and mental fluency with whole numbers, counting and place value. This involves working with numerals, words and the 4 operations, including with practical resources [for example, concrete objects and measuring tools].

Pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Learning should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. Practice at this early stage will aid fluency.

Pupils read and spell mathematical vocabulary, consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower key stage 2 - years 3 and 4

Pupils become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. Pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. Pupils develop their ability to solve a range of problems, including with simple fractions and decimal place value. Pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. Pupils can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils read and spell mathematical vocabulary, using their growing word-reading knowledge and their knowledge of spelling.

Upper key stage 2 - years 5 and 6

Pupils extend their understanding of the number system and place value to include larger integers. This develops the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

Pupils develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems.

Learning in geometry and measures consolidates and extends knowledge developed in number. Pupils classify shapes with increasingly complex geometric properties and learn the vocabulary they need to describe them.

By the end of year 6, pupils are fluent in written methods for all 4 operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils read, spell and pronounce mathematical vocabulary correctly.