Living our learning

Year 5 Expectations in Maths

Throughout the year your child will be working towards these expectations.

Number and Place Value
Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.
Count forwards or backwards in steps of 1000, 10,000, 100,000s for any given number up to 1, 000, 000
Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero
Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
Solve number problems and practical problems that involve ordering and comparing numbers to 1 000 000, counting forwards or backwards in steps, interpreting negative numbers and rounding
Read Roman numerals to 1000 (M) and **recognise years** written in Roman numerals

Addition and Subtraction	
Add numbers with more than four digits using formal column written methods.	47823 + 24657 72480 11 1
Subtract numbers with more than four digits using formal column written methods.	3 4 5 1 3 2 6 - 1 2 4 0 3 2 2 9 2 3
Add and subtract numbers mentally with increasingly large numbers	
Use **rounding to check answers** to calculations and determine, in the context of a problem, levels of accuracy	
Solve **addition and subtraction multi-step problems** in contexts, deciding which operations and methods to use and why	

Multiplication and Division	
Recall **multiplication facts** for multiplication tables up to 12 × 12	
Multiply numbers with up to 4 digits numbers by a one-digit number using formal written methods	2307 X 4 9 228 1 2
Multiply numbers with up to 4 digits by a 2 digit number.	2307 24 9228 46140 55368 1
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.	4231 ÷ 3 = 1 4 1 0 r1 or 1/3 3) 4 1 2 3 1

Secure understanding of **multiplication of whole numbers** by 10, 100 or 1000
Identify **multiples and factors**, including finding all factor pairs of a number, and common factors of two numbers
Know what is meant by a **prime number** and identify prime numbers up to 19 through practical working
Begin to **identify prime numbers** beyond 19
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 and divide numbers **mentally** drawing upon known facts
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
Know what is meant by a **square number**
Identify square numbers to 100
Know what is meant by a **cube number**
Identify cube numbers to 100
Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).
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
Fractions
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. for example, 2/5 + 4/5 = 5/6 = 1 1/5
Add fractions with the **same denominator and denominators that are multiples of the same number**
Subtract fractions with the **same denominator** and denominators that are multiples of the same number
Multiply unit and non-unit fractions by whole numbers where the solution is less than one whole
Multiply non-unit fractions by whole numbers where solutions are greater than one whole and express the solution as mixed numbers
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagram.
Read and write **decimal numbers as fractions** e.g. 0.71 = 71/100
Understand **one thousandth as a whole divided in to 1000 parts. Recognise the decimal notation for one thousandth**
Recognise the decimal notation to thousandths for equivalence to tenths and hundredths
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
Understand **per cent as meaning number of parts per hundred**. Relate **simple percentages to hundredths and find such percentages of quantities with and understanding of fractions** e.g. know that 50% is equivalent to half, so find 50% of a quantity by finding a half.
Relate simple percentages to hundredths and **find** such **percentages of quantities** such as 10%, 40%, 60% etc.
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 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25

Measurement
Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
Calculate **missing lengths** from rectilinear shapes and composite rectilinear shapes **when some measurements are known.**
Calculate **perimeter from known area** of rectilinear shapes
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
Calculate area of squares and rectangles in cm^2
Calculate area of composite rectilinear shapes
Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and **estimate the area of irregular shapes**
Understand volume being measured in cm cubed. **Measure volume** in cm cubed to nearest cm^3
Estimate volume e.g. using 1 cm^3 blocks to build cuboids (including cubes) **and capacity** e.g. using water
Solve problems involving **converting between units of time**
Use all four operations to solve problems involving measure e.g. length, mass, volume, money using decimal notation, including scaling

Geometry - Properties of Shape
Identify **3-D shapes, including cubes and other cuboids, from 2-D representations**
Measure and construct angles with increasing accuracy (within 2 degrees)
Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
Draw given angles, and measure them in degrees (°)
Know, in degrees, the size of angles at the corner of some regular polygons e.g. equilateral triangles, squares,
Identify angles at a point and understand that angles must add up to 360° to make one whole turn.
Identify angles at a point on a straight line and 1/2 a turn (total 180°)
Identify **other multiples of 90°**
Use the **properties of rectangles to deduce related facts** and find missing lengths and angles. E.g. use the term diagonal and make conjectures about angles formed between sides, diagonals and parallel sides
Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Geometry – position and direction
Recognise shapes in **different orientations (congruence)**
Draw shapes on grids and **translate** these shapes by given number of spaces either left, right, up or down the grid. .
Reflect shapes on grids in a vertical axis of symmetry where the axis of reflection is along one of the sides of the shape
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.

Statistics
Interpret **simple line graphs**
Construct simple line graphs. Understand that intermediate points on a line graph can have meaning and interpret graphs accordingly
Solve comparison, sum and difference problems using information presented in a line graph.
Complete, read and interpret information in tables, including timetables.