Living our learning

Year 6 Expectations in Maths

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

Number and Place Value
Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit
Round any whole number to a required degree of accuracy
Use negative numbers in context, and calculate intervals across zero
Solve number and practical problems that involve ordering and comparing numbers to 10,000,000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero.

Addition, Subtraction, Multiplication and division	
Add numbers with more than four digits using formal column written methods.	47823 + 24657 72480 1 1 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
Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication	2307 x 24 9228 1 2 46140 1 55368 1
Divide numbers up to 4 digits by a two-digit whole number using the formal written method and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context	4231 ÷ 13 = 0325 r6 or $\frac{6}{13}$ 13) 4 4 2 3 3 7 1
Recall **multiplication facts** for multiplication tables up to 12 × 12	
Perform **mental calculations**, including with **mixed operations** and large numbers	
Identify common factors, common multiples and prime numbers	
Use his/her knowledge of the **order of operations to carry out calculations** involving the four operations BIDMAS	
Solve **addition and subtraction multi-step problems in contexts**, deciding which operations and methods to use and why	
Solve **problems involving addition, subtraction, multiplication and division**	
Use **estimation** to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	

Fractions
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 mixed numbers and fractions where denominators are within the same fraction families and conversion to like denominators is obvious.
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. 1/4 × 1/2 = 1/8
Divide proper fractions by whole numbers e.g. 1/3 ÷ 2 = 1/6
Associate a fraction with division and calculate decimal fraction equivalents e.g. 0.375 for a simple fraction e.g. 3/8
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
Multiply one-digit numbers with up to two decimal places by whole numbers
Use written **division methods** in cases where the answer has up to two decimal places
Solve problems which require answers to be rounded to specified degrees of accuracy
Recall and **use equivalences between simple fractions, decimals and percentages**, including in different contexts

Ratio and Proportion
Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
Solve problems involving the calculation of percentages e.g. of measures, and such as 15% of 360 and the use of percentages for comparison
Solve problems involving similar shapes where the scale factor is known or can be found
Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

Algebra
Use simple formulae expressed in words that are provided e.g. when given the formula for the area of a triangle as being the same as the height multiplied by half the base, children use/deploy.
Begin to develop and usesome simple formulae expressed in word from their own exploration.
Continue **linear sequences when given the rule** to continue the sequence by.
Identify the general rule that linear sequences are constructed on by **describing the intervals between terms**, for example, numbers increase by two each time.
Generate and describe linear number sequences
Recognise that **a letter can be used in place of an empty box** in a calculation and derive its value e.g. x + 5 = 9.
Express **missing number problems algebraically**
Suggest possibilities for values in an **empty box** question where there are two unknown values, e.g. find two numbers that multiply together to give an identified product.
Find **pairs of numbers that satisfy an equation** with two unknowns
Enumerate possibilities of combinations of two variables.

Measurement
Understand **decimal notation to three decimal places** in the context of measures e.g. litres and ml, kg and g, km and m, m and mm
Understand that a yard is 3 feet and that a yard is roughly 90 cm. Convert lengths **between metric and imperial.**
Solve problems involving the calculation and **conversion of units of measure**, using decimal notation up to three decimal places where appropriate.
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 decimal notation to up to three decimal places
Convert between miles and kilometres, pupils connect conversion to a graphical representation as preparation for understanding linear graphs.
Recognise that **shapes with the same areas can have different perimeters** and vice versa
Recognise when it is **possible to use formulae for area and volume of shapes**
Calculate the **area** of parallelograms and triangles
Calculate, **estimate and compare volume of cubes and cuboids using** standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units e.g. mm^3 and km^3

Properties of Shape
Draw **2-D shapes** using given dimensions and angles
Recognise, describe and **build simple 3-D shapes**, including making nets
Know the totals of **internal angles of triangles and quadrilaterals** and use these to find missing angles.
Know the **totals of internal angles of other polygons** e.g. pentagons, hexagons, octagons) and use these to find missing angles.
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**
Recognise **angles where they meet at a point, are on a straight line, or are vertically opposite,** and find missing angles

Geometry – position and direction
Plot points and describe positions **using co-ordinates** within the second quadrant as the **vertices of polygons**
Reflect shapes in the y axis from the first to second quadrant and vice versa, using co-ordinates to describe the points of the vertices.
Describe **positions on the full coordinate grid** (all four quadrants)
Reflect shapes on grids where the axis of symmetry is horizontal and **along one side of the shape.**
Reflect shapes on grids where the axis of symmetry is horizontal and **is parallel to one side of the shape.**
Draw and **translate simple shapes** on the coordinate plane, and **reflect them in the axis**.

Statistics
Extend understanding of **line graphs to interpret conversion graphs**
Interpret and construct **simple pie charts where fractions are easily identifiable** e.g. segments that represent halves, quarters and eighths.
Interpret and construct **more complex pie charts where percentages are linked to the size of segments.**
Interpret and construct **pie charts and line graphs** and use these to solve problems
Begin to understand the purpose of **calculation of the mean** and the process for calculation of the mean.
Calculate and interpret the **mean as an average**