Year 6 Maths Medium Term Plan

National Curriculum

Number - 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 all of the above.

Number – Addition, Subtraction, Multiplication and Division
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
Perform mental calculations, including with mixed operations and large numbers
Identify common factors, common multiples and prime numbers
Use their knowledge of the order of operations to carry out calculations involving the four operations
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

Number – Fractions (including decimals and percentages)
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 [for example, ¼ x ½ = 1/8]
Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]
Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 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

Number – 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 [for example, 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

Number - Algebra
Use simple formulae
Generate and describe linear number sequences
Express missing number problems algebraically
Find pairs of numbers that satisfy an equation with two unknowns
Enumerate possibilities of combinations of two variables

Measurement
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
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 (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3]

Geometry – Properties of Shape
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
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
Describe positions on the full coordinate grid (all four quadrants)
Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics
Interpret and construct pie charts and line graphs and use these to solve problems
Calculate and interpret the mean as an average

Term	Counting in steps of…	Times table(s)	Essential Maths (30 steps)
1	Count forward and backward through extremely large positive and negative numbers up to 10,000,000	Related facts and links to division	6LS1 – Number and place value: Place value Step 1: Read and write large numbers Step 2: Counting and regrouping large numbers Step 3: Comparing and ordering numbers Step 4: Comparing numbers including to 3 decimal places Step 5: Negative numbers Step 6: Rounding numbers 6LS2 – Number and place value: Multiply and divide by 10, 100, 1000 Step 1: Develop fluency of multiplying and dividing by 10, 100 and 1000 Step 2: Application in the context of measure 6LS3 – Addition, subtraction, multiplication and division: Choosing effective mental calculation strategies Step 1: Reasoning the efficiency of mental strategy Step 2: Using estimation to check mental calculations Step 3: Applying and combining mental strategies to solve problems 6LS4 – Addition, subtraction, multiplication and division: Problem solving with four operations Step 1: Using a bar model to solve multi-step problems Step 2: Solve problems by working backwards Step 3: Finding a starting point / prioritising Step 4: Select an appropriate problem solving strategy 6LS5 – Multiplication, division and measurement: Application of factors, multiples and primes (AMALGAMATE STEP 1 AND 2) Step 1: Clarify terminology relating to properties of number Step 2: Recognise common multiples Step 3: Apply knowledge of common multiples ***Step 4 (optional):*** Apply knowledge of factors and multiples 6LS6 – Multiplication, division and measurement: Formal written method of short division Step 1 (revision): Short multiplication for a 3- or 4-digit number by a 1-digit number Step 2 (revision): Expanded vertical method for a 3- or 4-digit number by a 2-digit number Step 3 (revision): Long multiplication for a 3- or 4-digit number by a 2-digit number Step 4: Generating new facts from known facts Step 5: Long multiplication involving numbers with up to 2 decimal places multiplied by a 1-digit number Step 6: Application of short multiplication 6LS7 – Multiplication, division and measurement: Area of parallelograms and triangles Step 1: Calculating the area of rectilinear and composite shapes (Year 5 revision) Step 2: Finding the area of right-angled triangles Step 3: Calculating the area of triangles Step 4: Calculating the area of parallelograms Step 5: Solving problems involving area of rectangles, triangles and parallelograms

Term	Counting in steps of…	Times table(s)	Essential Maths (29 steps, 3 days for SATs past papers during Terms 1 and 2)
2	Count forwards and backwards in fractions (e.g. 3/4)	Related facts and links to division	6LS8 – Multiplication, division and measurement: Formal written method of short division Step 1: Understanding short division Step 2: Short division where answers have up to 2 decimal places Step 3: Short division with decimal remainders up to 2 decimal places Step 4: Prove decimal fraction equivalents using short division 6LS9 – Fractions: Equivalent fractions Step 1: Create equivalent fractions in their simplest form Step 2: Simplify fractions Step 3: Identify common multiples Step 4: Change fractions to have common denominators 6LS10 – Fractions: Comparing and ordering fractions Step 1: Reasoning about ordering fractions Step 2: Compare fractions using visual representations Step 3: Compare fractions with consideration of their proximity to 0, half or 1 Step 4: Compare fractions by changing to a common denominator Step 5: Order fractions Step 6: Order fractions in a range of contexts 6LS11 – Fractions: Adding and subtracting fractions Step 1: Use pictorial representations to show addition and subtraction of fractions Step 2: Application of adding and subtracting fractions 6LS12 – Fractions: Fraction and decimal equivalents Step 1: Associate fractions with division Step 2: Decimal and fraction equivalents 6LS13 – Fractions: Fractions, decimals and percentages Step 1: Making connections between fractions, decimals and percentages Step 2: Recall and use equivalences 6LS14 – Fractions: Calculating percentages Step 1: Explore a range of strategies to calculate percentages Step 2: Solve problems involving the calculation of percentages 6LS15 – Geometry: Properties of shape Step 1: Using the language of 2-D shapes Step 2: Classifying 2-D shapes – triangles Step 3: Classifying 2-D shapes – quadrilaterals Step 4: Parts of circles Step 5: Using the relationship between radius and diameter to solve problems Step 6: Naming and identifying the properties of 3-D shapes Step 7: Building 3-D shapes from nets

Term	Counting in steps of…	Times table(s)	Essential Maths (30 steps)
3	Count forwards and backwards in decimals (e.g. 0.75)	Related facts and links to division	6LS16 – Algebra: Order of operations and algebra (AMALGAMTE STEPS 1 AND 2, STEPS 3 AND 4, STEPS 5 AND 6) Step 1: Why we need the order of operations Step 2: Develop order of operations and start to write formulas Step 3: Deepen understanding of order of operations – abstract calculations Step 4: Considering division and indices (powers) in order of operations Step 5: Connecting algebraic equations to known models (addition and subtraction) Step 6: Connecting algebraic equations to known models (multiplication and division) Step 7: Simplifying equations to find the unknown Step 8: Solving word problems involving algebra Step 9: Solving problems involving algebra – abstract calculations 6LS17 – Multiplication, division and measurement: Formal written method for long division Step 1: Comparing short and long division layout Step 2: Long division for numbers up to 4 digits Step 3: Interpreting remainders as whole numbers Step 4: Expressing quotients with fractions Step 5: Expressing quotients with decimals 6LS18 – Multiplication, division and measurement: Exploring relationships between perimeter and area Step 1: Consolidate understanding of perimeter Step 2: Consolidate finding the area of rectilinear shapes, parallelograms and triangles Step 3: Investigate shapes with the same area but different perimeters and vice-versa Step 4: Solve problems involving area and perimeter 6LS19 – Geometry: Recognise and find angles (AMALGAMATE STEPS 1 AND 2) Step 1: Recognise and name angles Step 2: Investigate vertically opposite angles Step 3: Find missing angles from known facts 6LS20 – Geometry: Reflection and translation (AMALGAMATE STEPS 1 AND 2) Step 1: Draw and label axes in all four quadrants Step 2: Plot positions on the full coordinate grid Step 3: Draw and label shapes in all four quadrants Step 4: Translate shapes in all four quadrants Step 5: Reflect shapes in all four quadrants 6LS21 – Fractions (including decimals and percentages): Multiplying fractions (AMALGAMATE STEPS 1 AND 2) Step 1: Understand the effect of multiplying with proper fractions Step 2: Represent multiplication with simple pairs of proper fractions Step 3: Multiply simple pairs of proper fractions Step 4: Apply multiplication of fractions in a range of contexts

Term	Counting in steps of…	Times table(s)	Essential Maths (25 steps, 2 diagnostic papers)
4	Count forwards and backwards in decimals and fractions	Related facts and links to division	6LS22 – Fractions (including decimals and percentages): Dividing fractions Step 1: Understand the relationship between fractions and division Step 2: Understand division of fractions by whole numbers in context Step 3: Unitary fractions divided by whole numbers - word problems Step 4: Non-unitary fractions divided by whole numbers Step 5: Solving mixed problems 6LS23 – Fractions (including decimals and percentages): Fractions, decimals and percentages problem solving (OPTIONAL LEARNING SEQUENCE) Step 1: Reason about fractions in problems Step 2: Solve mixed fraction problems 6LS24 – Ratio and proportion: Ratio and proportion Step 1: Simplifying ratios Step 2: Different types of comparisons: part to part and part to whole Step 3: Solving problems with ratio – given the ratio and one part or the whole Step 4: Solving problems with ratio – given the ratio and the difference Step 5: Solving problems with ratio – given the parts Step 6: Scaling problems Step 7: Scale factors 6LS25 – Measurement: Volume Step 1: Visualise and calculate the volume of cubes Step 2: Calculate and compare volumes Step 3: Estimate volume 6LS26 – Measurement: Measures Step 1: Clarify what is known about measures and converting them Step 2: Apply knowledge of measures and conversions to solving problems Step 3: Explore the link between miles and kilometres (imperial and metric units of length) Step 4: Measures review including area and volume could be used throughout the sequence 6LS27 – Statistics: Statistics – line graphs and pie charts Step 1: Understanding pie charts Step 2: Interpreting a simple pie chart Step 3: Reviewing line graphs Step 4: Interpreting comparison graphs Step 5: Conversion graphs Diagnostic assessment paper 1: arithmetic Diagnostic assessment paper 2: reasoning

Term	Counting in steps of…	Times table(s)	Essential Maths (11 steps)
5	A4L – review any gaps	Related facts and links to division	6LS28 – Algebra and statistics: Algebra and sequences Step 1: Build and describe linear sequences Step 2: Identify missing terms - start and end number given Step 3: Find pairs of numbers that satisfy an equation with two unknown variables 6LS29 – Algebra and statistics: Statistics – calculate and interpret mean average Step 1: Understand and calculate the mean Step 2: Apply understanding of the mean 6LS30 – Review: Application of previous years' learning Step 1: Draw 2-D shapes including scaling Step 2: Revise Roman numerals Step 3: Revise reading, writing, converting and applying understanding of time 6LS31 – Review: Application of known facts and calculation strategies (USE LEARNING SEQUENCE AT ANY POINT IN THE YEAR TO CONSOLIDATE) Step 1: Identifying what we already know and how to use it (arithmetic focus) Step 2: Avoiding common errors when calculating mentally Step 3: Using estimation to check answers are reasonable ANY REMAINING TIME BEFORE SATS SHOULD BE USED TO CONSOLIADTE KEY LEARNING ***SATS REVISION SHEETS AVAILABLE***

Term	Counting in steps of…	Times table(s)	Essential Maths (20 steps)
6	A4L – review any gaps	Related facts and links to division	POST SATS: 6LS32 – Post SATs: Constructing pie charts Step 1: Deciding whether a pie chart is appropriate Step 2: Constructing simple pie charts. Part one – the process and constructing circles Step 3: Constructing simple pie charts. Part two – dividing up a circle into the segments 6LS33 – Post SATs: Statistical representations Step 1: Is all data fair? Step 2: More misleading graphs Step 3: Considering data which distorts Step 4: Applying skills 6LS34 – Post SATs: Further algebra Step 1: Building sequences to generalise Step 2: Linking sequences and algebra Step 3: Describe the relationship between term and term number 6LS35 – Post SATs: Financial maths and enterprise Step 1: Introduction to budgeting ***Enterprise lessons*** Step 2: Introduction to the project Step 3: Initial business ideas and market research Step 4: Product planning Step 5: Creating a business plan and pitching Step 6: Making it, marketing it and selling it Step 7: Evaluation and reflection 6LS36 – Post SATs: Maths preparation for KS3 Step 1: Reflect on what you are like as a mathematician Step 2: Show your calculation strategy choices Step 3: Show connections and depth of understanding