

Year 5 Maths Medium Term Plan

National Curriculum

Number - 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 powers of 10 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 all of the above
Read Roman numerals to 1000 (M) and recognise years written in Roman numerals

Number – Addition and Subtraction

Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
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

Number – Multiplication and Division

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers
Establish whether a number up to 100 is prime and recall prime numbers up to 19
Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
Multiply and divide numbers mentally drawing upon known facts
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
Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
Recognise and use square numbers and cube numbers, and the notation for squared and cubed
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

Number – Fractions (including decimals and percentages)

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 [for example, $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$]
Add and subtract fractions with the same denominator and denominators that are multiples of the same number
Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
Read and write decimal numbers as fractions [for example, $0.71 = 71/100$]
Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
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
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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ 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
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
Estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
Solve problems involving converting between units of time
Use all four operations to solve problems involving measure [for example, 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
Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
Draw given angles, and measure them in degrees
Identify:
-angles at a point and one whole turn (total 360°)
-angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°)
-other multiples of 90°
Use the properties of rectangles to deduce related facts and find missing lengths and angles
Distinguish between regular and irregular polygons based on reasoning about equal sides and angles

Geometry – Position and Direction

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

Solve comparison, sum and difference problems using information presented in a line graph
Complete, read and interpret information in tables, including timetables

Term	Counting in steps of...	Times table(s)	Essential Maths (31 steps)
1	Count forwards in negative numbers	All up to 12x12 (use MTC A4L)	5LS1 – Number, place value, multiplication and division: Place value and rounding of larger numbers Step 1: Value of digits within large numbers Step 2: Number magnitude and conservation of a million Step 3: Comparing numbers Step 4: Ordering numbers Step 5: Counting in steps of powers of 10 Step 6: Rounding numbers 5LS2 – Number, place value, multiplication and division: Interpret negative numbers Step 1: Counting forwards and backwards across zero Step 2: Reading scales involving negative numbers Step 3: Application in context 5LS3 – Number, place value, multiplication and division: Place value of numbers with up to 3 decimal places Step 1: Recognising and comparing tenths and hundredths Step 2: Comparing numbers with up to 2 decimal places Step 3: Read, write and compare numbers with up to 3 decimal places Step 4: Ordering numbers with up to 3 decimal places Step 5: Rounding decimals (2 decimal places to the nearest whole number and to 1 decimal place) 5LS4 – Number, place value, multiplication and division: Multiply and divide by 10, 100 and 1000 Step 1: Multiplying by 10, 100 and 1000 Step 2: Multiplying by 10, 100 and 1000 (including decimals) Step 3: Dividing by 10, 100 and 1000 (including decimals) Step 4: Multiplying and dividing by 10, 100 and 1000 5LS5 – Number, place value, multiplication and division: Properties of number – multiples, factors and common factors Step 1: Identifying multiples Step 2: Comparing multiples and factors Step 3: Identifying all factors of a number Step 4: Identifying common factors 5LS6 – Number, place value, multiplication and division: Prime and composite numbers Step 1: Identifying what makes a number prime Step 2: Prime or composite? Step 3: Building composite numbers from prime factors 5LS7 – Four operations – mental calculations: Multiply and divide mentally Step 1: Revisit strategies for recalling known facts Step 2: Use known multiplication facts to derive others Step 3: Doubling and halving to use known facts Step 4: Divisibility rules Step 5: Regrouping to support division Step 6: Select an appropriate strategy for mental multiplication or division

Term	Counting in steps of...	Times table(s)	Essential Maths (30 steps, 2 diagnostic papers)
2	Count backwards in negative numbers	All up to 12x12: link to dividing	5LS8 – Four operations – mental calculations: Solve problems involving knowledge of key facts Step 1: Working backwards Step 2: Find a starting point 5LS9 – Four operations – mental calculations: Add and subtract using a range of strategies Step 1: Using rounding for estimation Step 2: Using place value to add and subtract Step 3: Regrouping to add and subtract Step 4: Using equal sum for addition Step 5: Using equal difference for subtraction Step 6: Selecting an appropriate strategy 5LS10 – Four operations – formal written methods: Add and subtract using formal written methods Step 1: Using rounding for estimation Step 2: Column addition Step 3: Column subtraction Step 4: Reasoning about column addition and subtraction 5LS11 – Four operations – formal written methods: Formal written method for multiplication Step 1: Revision of short written method for a 2 or 3-digit number by a 1-digit number extending to a 4-digit number by a 1-digit number Step 2: Using grid method and expanded vertical method to solve a 2-digit number by a 2-digit number multiplication Step 3: Long multiplication of a 2-digit number by a 2-digit number Step 4: Long multiplication of a 3-digit number by a 2-digit number Step 5: Rehearsal of short and long multiplication 5LS12 – Four operations – formal written methods: Formal written method of short division Step 1: Division as sharing Step 2: Sharing and grouping Step 3: Short division for numbers up to 4-digits Step 4: Expressing quotients with fractions Step 5: Expressing quotients with decimals Step 6: Interpreting remainders 5LS13 – Fractions: Equivalent fractions Step 1: Identify and name fractions Step 2: Recognise and create equivalent fractions Step 3: Improper fractions and mixed numbers Step 4: Convert improper fractions to mixed numbers Step 5: Application of mixed numbers and improper fractions Step 6: Equivalence of tenths and hundredths Step 7: Match equivalent fractions in a range of contexts Diagnostic assessment paper 1: arithmetic Diagnostic assessment paper 2: reasoning

Term	Counting in steps of...	Times table(s)	Essential Maths (27 steps)
3	Count forwards in steps of powers of 10 up to 1,000,000 (see 5LS5)	Related facts e.g. $0.7 \times (2/5/10)$	5LS14 – Fractions: Compare and order fractions Step 1: Compare fractions to $\frac{1}{2}$ Step 2: Compare fractions using visual representations Step 3: Identify equivalent fractions where denominators are all multiples of the same number Step 4: Compare fractions whose denominators are all multiples of the same number Step 5: Order fractions whose denominators are all multiples of the same number Step 6: Order fractions whose denominators are all multiples of the same number where simplification can be used Step 7: Order fractions of amounts 5LS15 – Fractions: Adding and subtracting fractions Step 1: Add and subtract fractions with the same denominator Step 2: Add and subtract fractions whose denominators are all multiples of the same number Step 3: Add and subtract fractions >1 whose denominators are all multiples of the same number Step 4: Application of adding and subtracting fractions 5LS16 – Addition, subtraction, multiplication and division: Problem solving – all operations Step 1: Drawing a model to support reasoning Step 2: Interpreting statistical information Step 3: Working backwards as a strategy Step 4: Select an appropriate strategy to solve a problem Step 5: Apply an appropriate strategy to solve a problem 5LS17 – Fractions: Multiply fractions by whole numbers Step 1: Multiply unit fractions by a whole number where the answer is <1 Step 2: Multiply fractions by whole numbers where the answer is >1 Step 3: Evaluate the effectiveness of representations to solve problems Step 4: Multiply mixed numbers by whole numbers Step 5: Multiply fractions by whole numbers in a range of contexts 5LS18 – Fractions: Fraction problem solving Step 1: Combining learning about fractions to solve a problem Step 2: Using bar modelling to represent a problem involving fractions 5LS19 – Measurement: Measure – converting units of measure Step 1: Decimal and fraction equivalences of metric measure Step 2: Converting from a larger unit to a smaller unit Step 3: Converting from a smaller unit to a larger unit Step 4: Mixed conversion practice Step 5: Scaling measures

Term	Counting in steps of...	Times table(s)	Essential Maths (22 steps, 2 diagnostic papers)
4	Count backwards in steps of powers of 10 up to 1,000,000	Related facts e.g. $0.7 \times (3/4/6/8)$	5LS20 – Measurement: Area Step 1: Develop strategies to estimate the area of irregular shapes Step 2: Estimate area using standard units Step 3: Calculate and compare the area of rectangles Step 4: Find unknown measures when calculating area Step 5: Work backwards to calculate measures from a given area 5LS21 – Measurement: Volume and capacity Step 1: Square numbers and area Step 2: Build cube numbers Step 3: Investigate the volume of cuboids Step 4: Estimating volume and capacity 5LS22 – Fractions (including decimals and percentages): Percentages Step 1: Understand that per cent relates to the number of parts per hundred Step 2: Express parts per hundred as fractions, decimals and percentages Step 3: Use scaling to identify percentages Step 4: Identify common equivalent fractions, decimals and percentages Step 5: Calculate percentages by finding fractions of Step 6: Develop strategies to calculate percentages 5LS23 – Fractions (including decimals and percentages): Problem solving – percentages Step 1: Convert between fractions, decimals and percentages Step 2: Draw a model to calculate a percentage Step 3: Draw a model to calculate the whole Step 4: Solve a range of percentage problems 5LS24 – Geometry: 3D shapes from 2D representations Step 1: Define cuboids and cubes Step 2: Understand nets Step 3: Draw nets using given measurements Diagnostic assessment paper 1: arithmetic Diagnostic assessment paper 2: reasoning

Term	Counting in steps of...	Times table(s)	Essential Maths (23 steps)
5	Count forwards and backwards in fractions	Related facts e.g. $0.7 \times (7/9)$	5LS25 – Geometry: Reflection and translation Step 1: Translate shapes Step 2: Reflect patterns and shapes Step 3: Translate and reflect in the first quadrant 5LS26 – Geometry: Perimeter Step 1: Calculate the perimeter of rectilinear figures (rectangles and squares) Step 2: Calculate the perimeter of composite rectilinear shapes Step 3: Solve problems using knowledge of perimeter and area 5LS27 – Geometry: Estimate, compare, measure and draw angles Step 1: Recap of prior angles learning including right angles and turns Step 2: Name, compare and order acute, obtuse, reflex and right angles Step 3: Measure angles accurately with a protractor Step 4: Estimate angles in degrees and check by measuring Step 5: Draw angles 5LS28 – Geometry: Identify unknown angles Step 1: Angles in a right angle and on a straight line Step 2: Angles around a point or whole turn 5LS29 – Multiplication and division: Formal methods for division and multiplication in increasingly complex problems Step 1: Interpreting remainders Step 2: Creating word problems involving different division contexts Step 3: Applying formal multiplication to solve problems 5LS30 – Multiplication and division: Strategies for multiplication and division (mental and written) Step 1: Revisiting and deepening understanding of remainders Step 2: Solving missing number division problems Step 3: Multiplication and division – developing strategy discussion and operational sense 5LS31 – Multiplication and division: Solving problems involving scaling by simple fractions and rates Step 1: Model scaling and correspondence problems Step 2: Scaling by simple fractions Step 3: Scaling by simple rates Step 4: Scale drawings

Term	Counting in steps of...	Times table(s)	Essential Maths (31 steps, 2 diagnostic papers)
6	Count forwards and backwards in decimals	Related facts e.g. $0.7 \times (11/12)$	5LS32 – Measurement: Conversion of imperial and metric units of measure Step 1: Metric conversion Step 2: Metric scale drawings Step 3: Imperial units of measure – pints Step 4: Imperial units of measure – inches Step 5: Imperial units of measure – pounds 5LS33 – Fractions: Fractions, decimals and percentages – problem solving (OPTIONAL LEARNING SEQUENCE) Step 1: Revising proportions and scaling Step 2: Problem solving using scales Step 3: Comparing proportions represented differently Step 4: Solving multi-step problems 5LS34 – Measurement: Reading timetables and calculating time Step 1: Exploring what we know about telling the time and converting units of time Step 2: Reading and interpreting timetables Step 3: Completing missing information in timetables Step 4: Solving problems involving completing and reading timetables and calculating with time 5LS35 – Addition, subtraction, multiplication and division: Solve problems involving the four operations Step 1: Exploring confusing language – dangers of trigger words and distractors Step 2: Focus on structure – translating language into a mathematical model Step 3: What could the question be? Step 4: Revisiting working backwards 5LS36 – Geometry: Distinguish between regular and irregular polygons Step 1: Classify polygons as regular or irregular Step 2: Revisit 2-D shape vocabulary including regular and irregular Step 3: Construct regular polygons, including using a protractor 5LS37 – Geometry: Use properties of rectangles Step 1: Calculating missing lengths in rectangles and shapes or patterns including rectangles Step 2: Using knowledge of rectangles and angles to calculate missing angles 5LS38 – Number and statistics: Statistics – solve comparison, sum and difference problems using information in a line graph Step 1: Use data to make comparisons and calculate sum or difference Step 2: Use information in a line graph to compare and calculate Step 3: Solve problems using information in line graphs 5LS39 – Number and statistics: Statistics – interpreting and evaluating information presented in charts and tables Step 1: Compare representations of data in text and tables Step 2: Choose appropriate data representations Step 3: Evaluate different data representations 5LS40 – Number and statistics: Roman Numerals Step 1: Read and write Roman numerals to 1000 Step 2: Recognising times and years involving Roman numerals Step 3: Investigating and using Roman numerals in problems Diagnostic assessment paper 1: arithmetic Diagnostic assessment paper 2: reasoning

