Year 6 Mathematics Teaching Sequence

Autumn term		
Unit & N.C. links	**Small steps**	**Vocabulary**
Place Value Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit Solve number and practical problems that involve the above Round any whole number to a required degree of accuracy Solve number and practical problems that involve the above Use negative numbers in context, and calculate intervals across zero Solve number and practical problems that involve the above	Step 1: Numbers to 1,000,000 Step 2 Numbers to 10,000,000 Step 3 Read and write numbers to 10,000,000 Step 4 Powers of 10 Step 5 Number line to 10,000,000 Step 6 Compare and order any integers Step 7 Round any integer Step 8 Negative numbers	Millions Thousands Hundreds Tens Ones Place holder Greater than Less than Equals to Ascending Descending Positive Negative

Year 6 Mathematics Teaching Sequence

Addition, Subtraction, Multiplication and Division 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 Identify common factors, common multiples and prime numbers Multiply multi-digit numbers up to four digits by a 2-digit whole number using the formal written method of long multiplication Perform mental calculations, including with mixed operations and large numbers Divide numbers up to four digits by a 2-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 Use their knowledge of the order of operations to carry out calculations involving the four operations	Step 1 Add and subtract integers Step 2 Common factors Step 3 Common multiples Step 4 Rules of divisibility Step 5 Primes to 100 Step 6 Square and cube numbers Step 7 Multiply up to a 4-digit number by a 2-digit number Step 8 Solve problems with multiplication Step 9 Short division Step 10 Division using factors Step 11 Introduction to long division Step 12 Long division with remainders Step 13 Solve problems with division Step 14 Solve multi-step problems Step 15 Order of operations Step 16 Mental calculations and estimation Step 17 Reason from known facts	Multi-step Addition: sum, totals, altogether, combine, plus, more Subtraction: finding the difference, minus, less than, left, take away Crossing the boundary Exchange Multiplication: product, repeated addition, groups/lots of factor pairs	Division: share, split equally, equal groups, dividend, divisor, quotient, division bracket Operations Known facts, Common factor, common multiples Prime number, prime factor Composite number

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Converting Units of Measure 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 of up to three decimal places Convert between miles and kilometres	Step 1 Metric measures Step 2 Convert metric measures Step 3 Calculate with metric measures Step 4 Miles and kilometres Step 5 Imperial measures	Imperial Metric Convert Divide Multiply Miles and km
Fractions A 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 Identify common factors, common multiples and prime numbers 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	Step 1: Equivalent fractions and simplifying Step 2 Equivalent fractions on a number line Step 3 Compare and order (denominator) Step 4 Compare and order (numerator) Step 5 Add and subtract simple fractions Step 6 Add and subtract any two fractions Step 7 Add mixed numbers Step 8 Subtract mixed numbers Step 9 Multi-step problems	Simplify Numerator Denominator LCM (lowest common multiple) Factors Highest common factor Mixed numbers Proper fractions Improper fractions Equivalent fractions

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Spring Term		
Unit & N.C. links	**Small steps**	**Vocabulary**
Fractions B Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams (Y5) Multiply simple pairs of proper fractions, writing the answer in its simplest form Divide proper fractions by whole numbers Solve problems involving addition, subtraction, multiplication and division	Step 1 Multiply fractions by integers Step 2 Multiply fractions by fractions Step 3 Divide a fraction by an integer Step 4 Divide any fraction by an integer Step 5 Mixed questions with fractions Step 6 Fraction of an amount Step 7 Fraction of an amount – find the whole	Simplify Numerator Denominator LCM (lowest common multiple) Factors Highest common factor Mixed numbers Proper fractions Improper fractions Equivalent fractions
Decimals Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places Solve problems which require answers to be rounded to specified degrees of accuracy Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Multiply 1-digit numbers with up to 2 decimal places by whole numbers Use written division methods in cases where the answer has up to 2 decimal places	Step 1 Place value within 1 Step 2 Place value – integers and decimals Step 3 Round decimals Step 4 Add and subtract decimals Step 5 Multiply by 10, 100 and 1,000 Step 6 Divide by 10, 100 and 1,000 Step 7 Multiply decimals by integers Step 8 Divide decimals by integers Step 9 Multiply and divide decimals in context	Decimal point Decimal places (dp) Place value Tenths Hundredths Thousandths

Year 6 Mathematics Teaching Sequence

Fractions, Decimals and Percentages Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Compare and order fractions, including fractions >1 Solve problems involving the calculation of percentages and the use of percentages for comparison	Step 1 Decimal and fraction equivalents Step 2 Fractions as division Step 3 Understand percentages Step 4 Fractions to percentages Step 5 Equivalent fractions, decimals and percentages Step 6 Order fractions, decimals and percentages Step 7 Percentage of an amount – one step Step 8 Percentage of an amount – multi-step Step 9 Percentages – missing values	Parts Whole Denominator Numerator Unit fraction Non-unit fraction Simplifying Equivalent Specified degrees of accuracy Mixed numbers Proper fractions Improper fractions Convert Greater than 1 Multiples Whole
Ratio 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 unequal sharing and grouping using knowledge of fractions and multiples Solve problems involving similar shapes where the scale factor is known or can be found	Step 1 Add or multiply? Step 2 Use ratio language Step 3 Introduction to the ratio symbol Step 4 Ratio and fractions Step 5 Scale drawing Step 6 Use scale factors Step 7 Similar shapes Step 8 Ratio problems Step 9 Proportion problems Step 10 Recipes	Ratio Integer Relative sizes Quantities Relationships Unequal sharing Equal sharing Percentages Compare Scale factor
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	Step 1 1-step function machines Step 2 2-step function machines Step 3 Form expressions Step 4 Substitution Step 5 Formulae Step 6 Form equations Step 7 Solve 1-step equations Step 8 Solve 2-step equations Step 9: Find pairs of values Step 10 Solve problems with two unknowns	Algebra Letters Value Algebraic rules Substitute Expressions Formulae N = number Linear number sequences

Year 6 Mathematics Teaching Sequence

Statistics Interpret and construct pie charts and line graphs and use these to solve problems Calculate and interpret the mean as an average	Step 1 Line graphs Step 2 Dual bar charts Step 3 Read and interpret pie charts Step 4 Pie charts with percentages Step 5 Draw pie charts Step 6 The mean	Line graph Pie chart Data set Interpret Data representation Construct Comparison Mean Average

Year 6 Mathematics Teaching Sequence

Summer Term		
Unit & N.C. links	**Small steps**	**Vocabulary**
Area, Perimeter and Volume 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),	Step 1 Shapes – same area Step 2 Area and perimeter Step 3 Area of a triangle – counting squares Step 4 Area of a right-angled triangle Step 5 Area of any triangle Step 6 Area of a parallelogram Step 7 Volume – counting cubes Step 8 Volume of a cuboid	Perimeter, 2D shape Parallel sides Sum of sides/lengths Standard measurement units: centimetres, metres. Composite, rectilinear shapes Square centimetres (cm2) Square metres (m2) Area of a rectangle = Length x Width Area of a triangle = Base x perpendicular height x □ Parallelogram Volume Cubic centimetres Cubic metres Cuboid, cubes
Geometry Draw 2-D shapes using given dimensions and angles Compare and classify geometric shapes based on their properties and sizes Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise, describe and build simple 3-D shapes, including making nets Find unknown angles in any triangles, quadrilaterals, and regular polygons Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles	Step 1 Measure and classify angles Step 2 Calculate angles Step 3 Vertically opposite angles Step 4 Angles in a triangle Step 5 Angles in a triangle – special cases Step 6 Angles in a triangle – missing angles Step 7 Angles in a quadrilateral Step 8 Angles in polygons Step 9 Circles Step 10 Draw shapes accurately Step 11 Nets of 3-D shapes	Illustrate Shape properties Angles Classify Equivalences Regular polygon Isosceles triangles Equal angles Equal sides Sum Interior angles Opposite angles Degrees Quadrilateral Unknown angles Angles at a point Straight line Vertically opposite Opposite angles equal Circle Radius Diameter Circumference

Year 6 Mathematics Teaching Sequence

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	Step 1 The first quadrant Step 2 Read and plot points in four quadrants Step 3 Solve problems with coordinates Step 4 Translations Step 5 Reflections	Quadrants Co-ordinates Position Grid Plot data X axis Y axis translate Reflect