Mathematics Long Term Plan

Nightingale 2022-2023

Autumn

	National Curriculum Objectives	Small Steps
Number: Place Value **3 weeks**	• Read, write, order and compare numbers to at least 1000000 and determine the value of each digit. • Count forwards or backwards in steps of powers of 10 for any given number up to 1000000. • Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000 • 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.	• Roman numerals to 1,000 • Number to 10,000 • Numbers to 100,000 • Numbers to 1,000,000 • Read and write numbers to 1,000,000 • Powers of 10 • 10/100/1,000/10,000/100,000 more or less • Partition numbers to 1,000,000 • Number line to 1,000,000 • Compare and order numbers to 100,000 • Compare and order numbers to 1,000,000 • Round to the nearest 10, 100 and 1,000 • Round within 100,000 • Round within 1,000,000
Number: Addition and Subtraction **2 weeks**	• Add and subtract numbers mentally with increasingly large numbers. • Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) 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.	• Mental strategies • Add whole numbers with more than four digits • Subtract whole numbers with more than four digits • Round to check answers • Inverse operations (addition and subtraction) • Multi-step addition and subtraction problems • Compare calculations • Find missing numbers
Number: Multiplication and Division A **3 weeks**	• Multiply and divide numbers mentally drawing upon known facts. • Multiply and divide whole numbers by 10, 100 and 1000.	• Multiples • Common multiples • Factors • Common factors • Prime numbers

	• Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • 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. • 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	• Square numbers • Cube numbers • Multiply by 10, 100 and 1,000 • Divide by 10, 100 and 1,000 • Multiples of 10, 100 and 1,000
Number: Fractions A **4 weeks**	• Compare and order fractions whose denominators are 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 $^2/_5 + {}^4/_5 = {}^6/_5 = 1\ {}^1/_5$] • Add and subtract fractions with the same denominator and denominators that are multiples of the same number.	• Find fractions equivalent to a unit fraction • Find fractions equivalent to a non-unit fraction • Recognise equivalent fractions • Convert improper fractions to mixed numbers • Convert mixed numbers to improper fractions • Compare fractions less than 1 • Order fractions less than 1 • Compare and order fractions greater than 1 • Add and subtract fractions with the same denominator • Add fractions within 1 • Add fractions with total greater than 1 • Add to a mixed number • Add two mixed numbers • Subtract fractions • Subtract from a mixed number • Subtract from a mixed number – breaking the whole • Subtract two mixed numbers

Spring

	National Curriculum Objectives	Small Steps
Number: Multiplication and Division B **3 weeks**	• Multiply and divide numbers mentally drawing upon known facts. • Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers. • 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. • Solve problems involving addition and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.	• Multiply 2-digits by 1-digit • Multiply 3-digits by 1-digit • Multiply 4-digits by 1-digit • Multiply 2-digits (area model) • Multiply 2-digits by 2-digits • Multiply 3-digits by 2-digits • Multiply 4-digits by 2-digits • Divide 2-digits by 1-digit (1) • Divide 2-digits by 1-digit (2) • Divide 3-digits by 1-digit • Divide 4-digits by 1-digit • Divide with remainders
Number: Fractions B **2 weeks**	• 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 = $^{71}/_{100}$] • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	• Multiply unit fractions by an integer • Multiply non-unit fractions by an integer • Multiply mixed numbers by integers • Calculate fractions of a quantity • Fraction of an amount • Using fractions as operators
Number: Decimals and Percentages **3 weeks**	• Read, write, order and compare numbers with up to three decimal places. • 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. • 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	• Decimals up to 2 d.p. • Decimals as fractions (1) • Decimals as fractions (2) • Understand thousandths • Thousands as decimals • Rounding decimals • Order and compare decimals • Understand percentages • Percentages as fractions and decimals • Equivalent F.D.P

	denominator 100, and as a decimal. • Solve problems which require knowing percentage and decimal equivalents of ½,¼ $^1/_5$, $^2/_5$, $^4/_5$ and those fractions with a denominator of a multiple of 10 or 25.	
Measurement: Perimeter and Area **2 weeks**	• Measure and calculate the perimeter of composite rectilinear shapes in cm and m. • Calculate and compare the area of rectangles (including squares), and including using standard units, cm^2, m^2 estimate the area of irregular shapes.	• Measure perimeter • Perimeter on a grid • Perimeter of rectangles • Perimeter of rectilinear shapes • Calculate perimeter • Counting squares • Area of rectangles • Area of compound shapes • Area of irregular shapes
Statistics **2 weeks**	• Solve comparison, sum and difference problems using information presented in a line graph. • Complete, read and interpret information in tables including timetables.	• Interpret charts • Comparison, sum and difference • Introduce line graphs • Read and interpret line graphs • Draw line graphs • Use line graphs to solve problems • Read and interpret tables • Two way tables • Timetables

Summer

	National Curriculum Objectives	Small Steps
Geometry: Shape **3 weeks**	• Identify 3D shapes, including cubes and other cuboids, from 2D representations. • 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. • 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 ½ a turn (total 180°) other multiples of 90°	• Identify angles • Compare and order angles • Measuring angles in degrees • Measuring with a protractor (1) • Measuring with a protractor (2) • Drawing lines and angles accurately • Calculating angles on a straight line • Calculating angles around a point • Triangles • Quadrilaterals • Calculating lengths and angles in shapes • Regular and irregular polygons • Reasoning about 3D shapes
Geometry: Position and Direction **2 weeks**	• 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.	• Describe position • Draw on a grid • Position in the first quadrant • Translation • Translation with coordinates • Lines of symmetry • Complete a symmetric figure • Reflection • Reflection with coordinates
Number: Decimals **3 weeks**	• Solve problems involving number up to three decimal places. • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	• Adding decimals within 1 • Subtracting decimals within 1 • Complements to 1 • Adding decimals – crossing the whole • Adding decimals with the same number of decimal places • Subtracting decimals with the same number of decimal places • Adding decimals with a different number of decimal places • Subtracting decimals with a different number of decimal places • Adding and subtracting wholes and decimals • Decimal sequences • Multiplying decimals by 10, 100 and 1,000

		• Dividing decimals by 10, 100 and 1,000
Number: Negative Numbers	• Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero. • Solve number problems and practical problems	• Negative numbers
Measurement: Converting Units **2 weeks**	• Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml] • Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. • Solve problems involving converting between units of time.	• Kilometres • Kilograms and kilometres • Milligrams and millilitres • Metric units • Imperial units • Converting units of time • Timetables
Measurement: Volume **1 week**	• Estimate volume [for example using 1cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water] • Use all four operations to solve problems involving measure.	• What is volume? • Compare volume • Estimate volume • Estimate capacity