Mathematics Long Term Plan

Nightingale 2021-2022

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. • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero. • 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.	• 1,000s, 100s, 10s and 1s • Number to 10,000 • Rounding to the nearest 10 • Rounding to the nearest 100 • Round to the nearest 10, 100 and 1,000 • Numbers to 100,000 • Compare and order numbers to 100,000 • Round numbers within 100,000 • Numbers to a million • Counting in 10s, 100s, 1,000s, 10,000s and 100,000s • Compare and order numbers to one million • Round numbers to one million • Negative numbers • Roman numerals to 1,000
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.	• Add two 4-digit numbers - one exchange • Add two 4-digit numbers – more than one exchange • Add whole numbers with more than 4-digits (column method) • Subtract two 4-digit numbers – one exchange • Subtract two 4-digit numbers – more than one exchange • Subtract whole numbers with more than 4-digits (column method) • Round to estimate and approximate • Inverse operations (addition and subtraction) • Multi-step addition and subtraction problems

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
Number: Multiplication and Division **3 weeks**	• Multiply and divide numbers mentally drawing upon known facts. • Multiply and divide whole numbers by 10, 100 and 1000. • 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	• Multiples • Factors • Common factors • Prime numbers • Square numbers • Cube numbers • Multiply by 10 • Multiply by 100 • Multiply by 10, 100 and 1,000 • Divide by 10 • Divide by 100 • Divide by 10, 100 and 1,000 • Multiples of 10, 100 and 1,000
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

Spring

	National Curriculum Objectives	Small Steps
Number: Multiplication and Division **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 **6 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. • 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.	• What is a fraction? • Equivalent fractions • Fractions greater than 1 • Improper fractions to mixed numbers • Mixed numbers to improper fractions • Number sequences • Compare and order fractions less than 1 • Compare and order fractions greater than 1 • Add and subtract fractions • Add fractions within 1 • Add 3 or more fractions • Add fractions • Add mixed numbers • Subtract fractions • Subtract mixed numbers • Subtract – breaking the whole • Subtract 2 mixed numbers • 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 **2 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 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.	• 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
Consolidation **1 week**		

Summer

	National Curriculum Objectives	Small Steps
Consolidation **1 week**		
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
Geometry: Properties of Shapes and Angles **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	• Describe position • Draw on a grid

	translation, using the appropriate language, and know that the shape has not changed.	• Position in the first quadrant • Translation • Translation with coordinates • Lines of symmetry • Complete a symmetric figure • Reflection • Reflection with coordinates
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