Mathematics Long Term Plan

Goldcrest 2022-2023

Autumn

	National Curriculum Objectives	Small Steps
Number: Place Value **2 weeks**	• 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.	• Numbers to 1,000,000 • Numbers to 10,000,000 • Read and write numbers to 10,000,000 • Powers of 10 • Number line to 10,000,000 • Compare and order any integers • Round any integer • Negative numbers
Number: Addition, Subtraction, Multiplication and Division **5 weeks**	• Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. • Multiply multi-digit number up to 4 digits by a 2-digit number using the formal written method of long multiplication. • Divide numbers up to 4 digits by a 2-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 2-digit number using the formal written method of short division, interpreting remainders according to the context. • Perform mental calculations, including with mixed operations and large numbers. • Identify common factors, common multiples and prime numbers.	• Add and subtract integers • Common factors • Common multiples • Rules of divisibility • Primes to 100 • Square and cube numbers • Multiply up to a 4-digit number by a 2-digit number • Solve problems with multiplication • Short division • Division using factors • Introduction to long division • Long division with remainders • Solve problems with division • Solve multi-step problems • Order of operations • Mental calculations and estimation • Reason from known facts

	• Use their knowledge of the order of operations to carry out calculations involving the four operations. • 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 A **2 weeks**	• Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. • Compare and order fractions, including fractions > 1 • Generate and describe linear number sequences (with fractions) • Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions.	• Equivalent fractions and simplifying • Equivalent fractions on a number line • Compare and order (denominator) • Compare and order (numerator) • Add and subtract simple fractions • Add and subtract and two fractions • Add mixed numbers • Subtract mixed numbers • Multi-step problems
Number: Fractions B **2 weeks**	• Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example 14 x 12 = 18] • Divide proper fractions by whole numbers [for example 13 ÷ 2 = 16] • Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example 38] • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.	• Multiply fractions by integers • Multiply fractions by fractions • Divide a fraction by an integer • Divide any fraction by an integer • Mixed questions with fractions • Fraction of an amount • Fraction of an amount - find the whole
Measurement: Converting Units **1 week**	• 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 3dp.	• Metric measures • Convert metric measures • Calculate with metric measures • Miles and kilometres • Imperial measures

	• Convert between miles and kilometres.	

Spring

	National Curriculum Objectives	Small Steps
Number: Ratio **2 weeks**	• 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 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.	• Using ratio language • Ratio and fractions • Introducing the ratio symbol • Calculating ratio • Using scale factors • Calculating scale factors • Ratio and proportion problems
Number: Algebra **2 weeks**	• 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.	• Find a rule – one step • Find a rule – two step • Forming expressions • Substitution • Formulae • Forming equations • Solve simple one step equations • Solve two step equations • Find pairs of values • Enumerate possibilities
Number: Decimals **2 weeks**	• Identify the value of each digit in numbers given to 3 decimal places and multiply numbers by 10, 100 and 1,000 giving answers up to 3 decimal places. • Multiply one-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. • Solve problems which require answers to be rounded to specified degrees of accuracy.	• Decimals up to 2 decimal places • Understand thousandths • Three decimal places • Multiply by 10, 100 and 1,000 • Divide by 10, 100 and 1,000 • Multiply decimals by integers • Divide decimals by integers • Division to solve problems • Decimals as fractions • Fractions to decimals (1) • Fractions to decimals (2)
Number: Fractions, Decimals and Percentages **2 weeks**	• Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison. • Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.	• Understand percentages • Fractions to percentages • Equivalent FDP • Order FDP • Percentage of an amount (1) • Percentage of an amount (2) • Percentages – missing values
Measurement: Area, Perimeter and Volume **2 weeks**	• 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.	• Shapes – same area • Area and perimeter • Area of a triangle (1) • Area of a triangle (2) • Area of a triangle (3) • Area of a parallelogram

	• Calculate the area of parallelograms and triangles. • Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm^3, m^3 and extending to other units (mm^3, km^3)	• What is volume? • Volume – counting cubes • Volume of a cuboid
Statistics **2 weeks**	• Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. • Interpret and construct pie charts and line graphs and use these to solve problems. • Calculate the mean as an average.	• Read and interpret line graphs • Draw line graphs • Use line graphs to solve problems • Circles • Read and interpret pie charts • Pie charts with percentages • Draw pie charts • The mean

Summer

	National Curriculum Objectives	Small Steps
Geometry: Shape **3 weeks**	• Draw 2-D shapes using given dimensions and angles. • Compare and classify geometric shapes based on their properties and sizes and 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.	• Measure with a protractor • Draw lines and angles accurately • Introduce angles • Angles on a straight line • Angles around a point • Calculate angles • Vertically opposite angles • Angles in a triangle • Angles in a triangle – special cases • Angles in a triangle – missing angles • Angles in special quadrilaterals • Angles in regular polygons • Draw shapes accurately • Nets of 3D shapes
Geometry: Position and Direction **1 week**	• 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.	• The first quadrant • Four quadrants • Translations • Reflections
Consolidation and Investigations **8 weeks**		