



Mathematics Long Term Plan

Goldcrest 2021-2022

Autumn

	National Curriculum Objectives	Small Steps
<p>Number: Place Value</p> <p>2 weeks</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Numbers to 10,000 • Numbers to 100,000 • Numbers to a million • Numbers to ten million • Compare and order any number • Round numbers to 10, 100 and 1,000 • Round any numbers • Negative numbers
<p>Number: Addition, Subtraction, Multiplication and Division</p> <p>5 weeks</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Add whole numbers with more than 4 digits • Subtract whole numbers with more than 4 digits • Inverse operations (addition and subtraction) • Multi-step addition and subtraction problems • Add and subtract integers • Multiply 4-digits by 1-digit • Multiply 2-digits (area model) • Multiply 2-digits by 2-digits • Multiply 3-digits by 2-digits • Multiply up to a 4-digit by 2-digit number • Divide 4-digits by 1-digit • Divide with remainders • Short division • Division using factors • Long division (1) • Long division (2) • Long division (3) • Long division (4) • Factors • Common factors • Common multiples • Primes to 100 • Squares and cubes

	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Order of operations • Mental calculations and estimation • Reason from known facts
Number: Fractions 4 weeks	<ul style="list-style-type: none"> • 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. • Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example $14 \times 12 = 18$] • Divide proper fractions by whole numbers [for example $13 \div 2 = 16$] • 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. 	<ul style="list-style-type: none"> • Equivalent fractions • Simplify fractions • Improper fractions to mixed numbers • Mixed numbers to improper fractions • Fractions on a number line • Compare and order (denominator) • Compare and order (numerator) • Add and subtract fractions (1) • Add and subtract fractions (2) • Add mixed numbers • Add fractions • Subtract mixed numbers • Subtract fractions • Mixed addition and subtraction • Multiply fractions by integers • Multiply fractions by fractions • Divide fractions by integers (1) • Divide fractions by integers (2) • Four rules with fractions • Fraction of an amount • Fraction of an amount - find the whole
Geometry: Position and Direction 1 week	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • The first quadrant • Four quadrants • Translations • Reflections

Spring

	National Curriculum Objectives	Small Steps
Number: Decimals 2 weeks	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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: Percentages 2 weeks	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Understand percentages Fractions to percentages Equivalent FDP Order FDP Percentage of an amount (1) Percentage of an amount (2) Percentages – missing values
Number: Algebra 2 weeks	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
Measurement: Converting Units 1 week	<ul style="list-style-type: none"> 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. Convert between miles and kilometres. 	<ul style="list-style-type: none"> Metric measures Convert metric measures Calculate with metric measures Miles and kilometres Imperial measures
Measurement: Perimeter, Area and Volume	<ul style="list-style-type: none"> Recognise that shapes with the same areas can have different perimeters and vice versa. 	<ul style="list-style-type: none"> Shapes – same area Area and perimeter Area of a triangle (1)

<p>2 weeks</p>	<ul style="list-style-type: none"> • 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 cm^3, m^3 and extending to other units (mm^3, km^3) 	<ul style="list-style-type: none"> • Area of a triangle (2) • Area of a triangle (3) • Area of a parallelogram • What is volume? • Volume – counting cubes • Volume of a cuboid
<p>Number: Ratio</p> <p>2 weeks</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Using ratio language • Ratio and fractions • Introducing the ratio symbol • Calculating ratio • Using scale factors • Calculating scale factors • Ratio and proportion problems

Summer

	National Curriculum Objectives	Small Steps
Statistics 2 weeks	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
Geometry: Properties of Shapes 3 weeks	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
Consolidation and Investigations 7 weeks		