### **Green Lane Church of England Primary School**

### Maths Learning Plan **Term 1**

### Year 6

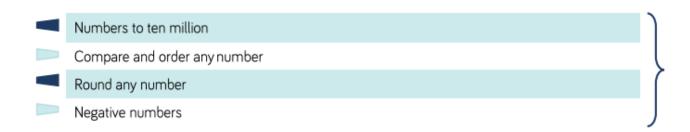
Topic or Activity	Year 6 Term 1 Knowledge Based Learning Objectives
Number: Place Value	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
	Round any whole number to a required degree of accuracy
	Use negative numbers in context, and calculate intervals across zero
	Solve number and practical problems that involve all of the above
Number: Four Operations	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
	Divide numbers up to 4 digits by a two-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 two-digit whole number using the formal written method of short division where appropriate for the context
	Perform mental calculations, including with mixed operations and large numbers
	Identify common factors, common multiples and prime numbers
	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, levels of accuracy
Number: Fractions	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
Number: Fractions	Multiply simple pairs of proper fractions, writing the answer in its simplest form [e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]

	Divide proper fractions by whole numbers [e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$ ]
	Associate a fraction with division and calculate decimal fraction equivalents [e.g. 0.375] for a simple fraction [e.g. $^{3}/_{8}$ ]
	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
	Generate and describe linear number sequences (with fractions) Algebra objective
Geometry: Position & Direction	Describe positions on the full coordinate grid (all four quadrants)
Division	Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

### Year 6 | Autumn Term | Week 1 to 2 - Number: Place Value



# Overview Small Steps



## **NC** Objectives

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.

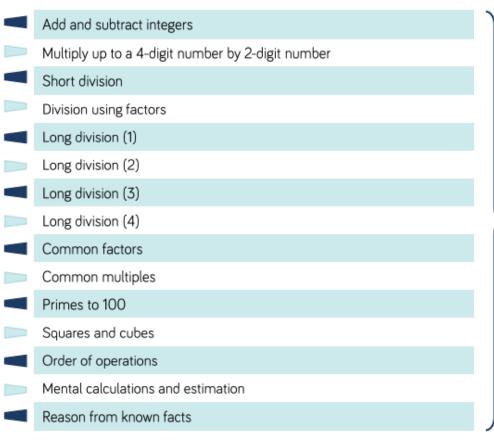
Use negative numbers in context, and calculate intervals across zero.

Solve number and practical problems that involve all of the above.

### Year 6 | Autumn Term | Week 3 to 6 – Number: Four Operations



# Overview Small Steps



### **NC** Objectives

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

Multiply multi-digit numbers 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.

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.

### Year 6 | Autumn Term | Week 7 to 10 - Number: Fractions



## **Overview**

### **Small Steps**

- Simplify 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 fractions
- 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

### NC Objectives

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  $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]

Divide proper fractions by whole numbers [for example  $\frac{1}{3} \div 2 = \frac{1}{6}$ ]

Associate a fraction with division and calculate decimal fraction equivalents [ for example, 0.375] for a simple fraction [for example  $\frac{1}{8}$ ]

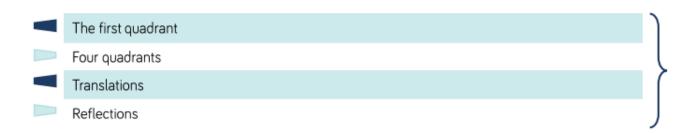
Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

### Year 6 | Autumn Term | Week 11 - Geometry: Position and Direction



# Overview

# Small Steps



# **NC** Objectives

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.

### **Green Lane Church of England Primary School**

### Maths Learning Plan **Term 2**

### Year 6

Topic or Activity	Year 6 Term 2 Knowledge Based Learning Objectives
Number: Decimals	Identify the value of each digit in numbers given to three decimal places
	Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
	Multiply one-digit numbers with up to two decimal places by whole numbers
	Use written division methods in cases where the answer has up to two decimal places
	Solve problems which require answers to be rounded to specified degrees of accuracy
Number: Percentages	Solve problems involving the calculation of percentages [for example, of measures, and such as 15%
	of 360] and the use of percentages for comparison Ratio objective
	Recall and use equivalences between simple fractions, decimals and percentages, including in
	different contexts
Number: Algebra	Use simple formulae
	Generate and describe linear number sequences
	Express missing number problems algebraically
	Find pairs of numbers that satisfy number sentences involving two unknowns
	Enumerate all possibilities of combinations of two variables
Measurement: Converting Units	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 three decimal places
	Convert between miles and kilometres
	Convert between miles and kilometres

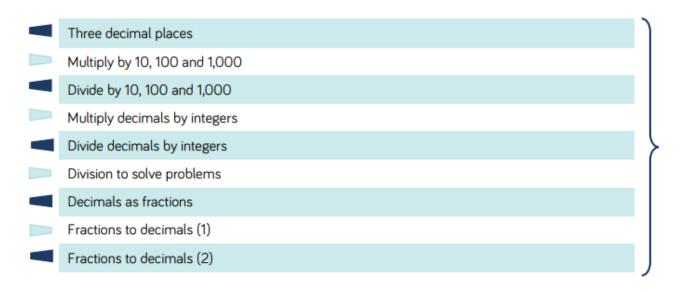
Measurement: Perimeter, Area &	Recognise that shapes with the same areas can have different perimeters and vice versa
Volume	Recognise when it is possible to use formulae for area and volume of shapes
	Calculate the area of parallelograms and triangles
	Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic
	centimetres (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [e.g. mm <sup>3</sup> and km <sup>3</sup> ]
Number: 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 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

### Year 6 | Spring Term | Week 1 to 2 - Number: Decimals



# Overview

# Small Steps



## **NC** Objectives

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 1-digit numbers with up to 2 decimal places by whole numbers.

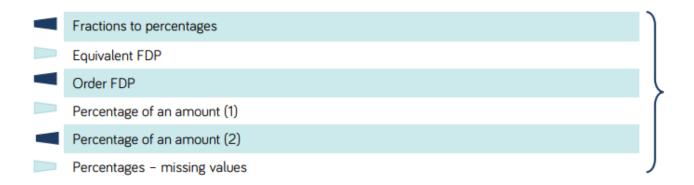
Use written division methods in cases where the answer has up to 2 decimal places.

Solve problems which require answers to be rounded to specified degrees of accuracy.

### Year 6 | Spring Term | Week 3 to 4 - Number: Percentages



# Overview Small Steps



## **NC** Objectives

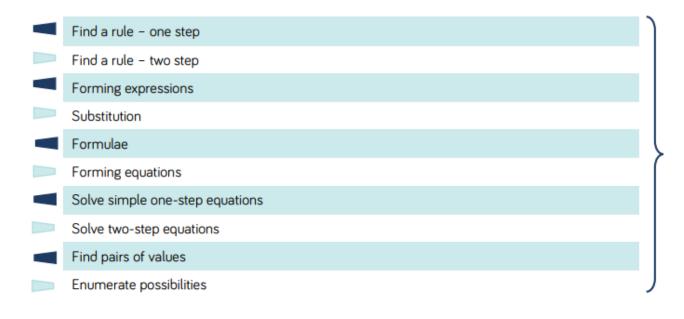
Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison.

Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.

### Year 6 | Spring Term | Week 5 to 6 - Number: Algebra



# Overview Small Steps



## **NC** Objectives

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.

### Year 6 | Spring Term | Week 7 - Measurement: Converting Units



# Overview Small Steps



### **NC** Objectives

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 3 dp.

Convert between miles and kilometres.

### Year 6 | Spring Term | Week 8 to 9 - Measurement: Perimeter, Area & Volume



# Overview

# **Small Steps**



## **NC** Objectives

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 cm<sup>3</sup>, m<sup>3</sup> and extending to other units (mm<sup>3</sup>, km<sup>3</sup>)

### Year 6 | Spring Term | Week 10 to 11 - Number: Ratio



# Overview Small Steps



### **NC** Objectives

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.

### **Green Lane Church of England Primary School**

### Maths Learning Plan **Term 3**

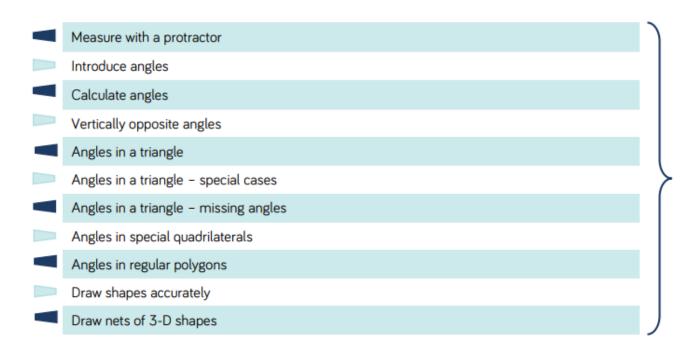
### Year 6

Topic or Activity	Year 6 Term 3 Knowledge Based Learning Objectives
<b>Geometry: Properties of Shape</b>	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
Statistics	Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius <b>Geometry objective</b>
	Interpret and construct pie charts and line graphs and use these to solve problems
	Calculate and interpret the mean as an average

### Year 6 | Summer Term | Week 1 to 2 - Geometry: Properties of Shapes



# Overview Small Steps



### **NC** Objectives

Draw 2-D shapes using given dimensions and angles.

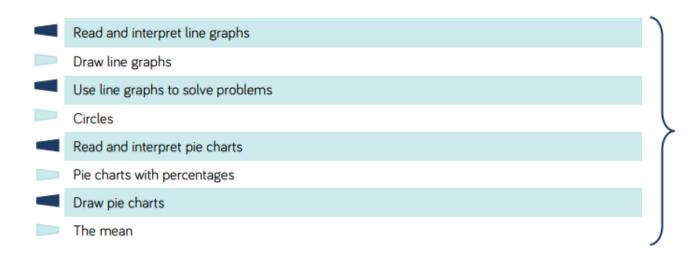
Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.

Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

### Year 6 | Summer Term | Week 6 to 7 - Statistics



# Overview Small Steps



## **NC** Objectives

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.