Gainford CE Primary and Preschool
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. $\frac{3}{8}$]
	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

White Rose Maths

Overview
Small Steps

- Numbers to ten million
- Compare and order any number
- Round any number
- Negative numbers

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.

White Rose Maths

Overview

Small Steps

- Add and subtract integers
- Multiply up to a 4-digit number by 2-digit number
- Short division
- Division using factors
- Long division (1)
- Long division (2)
- Long division (3)
- Long division (4)
- Common factors
- Common multiples
- Primes to 100
- Squares and cubes
- Order of operations
- Mental calculations and estimation
- Reason from known facts

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.

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.

Overview

Small Steps

- The first quadrant
- Four quadrants
- Translations
- Reflections

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.

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
	Recognise that shapes with the same areas can have different perimeters and vice versa

Measurement: Perimeter, Area & 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^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3]
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

White Rose Maths

Overview

Small Steps

- 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)

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.

Overview
Small Steps

Fractions to percentages

Equivalent FDP

Order FDP

Percentage of an amount (1)

Percentage of an amount (2)

Percentages – missing values

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.

Overview
Small Steps

- 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

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.

Overview
Small Steps

Metric measures

Convert metric measures

Calculate with metric measures

Miles and kilometres

Imperial measures

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.

White Rose Maths

Overview

Small Steps

- Shapes – same area
- Area and perimeter
- Area of a triangle (1)
- Area of a triangle (2)
- Area of a triangle (3)
- Area of parallelogram
- Volume – counting cubes
- Volume of a cuboid

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^3, m^3 and extending to other units (mm^3, km^3)

Overview

Small Steps

- Using ratio language
- Ratio and fractions
- Introducing the ratio symbol
- Calculating ratio
- Using scale factors
- Calculating scale factors
- Ratio and proportion problems

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.

Maths Learning Plan **Term 3**
Year 6

Topic or Activity	*Year 6 Term 3 Knowledge Based Learning Objectives*
Geometry: Properties of Shape	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 **Geometry objective**
	Interpret and construct pie charts and line graphs and use these to solve problems
	Calculate and interpret the mean as an average

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Overview
Small Steps

- Measure with a protractor
- Introduce angles
- 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
- Draw nets of 3-D shapes

NC Objectives

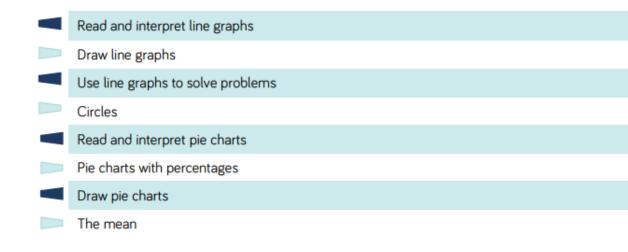Draw 2-D shapes using given dimensions and angles.

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.

Overview

Small Steps

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

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.