St Nicolas Cof E Academy

Mathematics – Year Five

Strand	Unit	Lessons	NC Objectives
Number - number and place value	1 Place value within 100,000	Numbers to 10,000 Rounding to the nearest 10, 100 and 1,000 10,000s, 1,000s, 100s, 10s and 1s (1) 10,000s, 1,000s, 100s, 10s and 1s (2) The number line to 100,000 Comparing and ordering numbers to 100,000 Rounding numbers within 100,000 Roman numerals to 10,000	Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 Solve number problems and practical problems that involve all of the above Read roman numerals to 1,000 (m) and recognise years written in roman numerals
Number - number and place value	2 Place value within 1,000,000	100,000s 10,000s, 1,000s, 100s, 10s and 1s (1) 100,000s 10,000s, 1,000s, 100s, 10s and 1s (2) Number line to 1,000,000 Comparing and ordering numbers to 1,000,000 Rounding numbers to a 1,000,000 Negative numbers Counting in 10s, 100s, 1,000s, 10,000s Number sequences	Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit Solve number problems and practical problems that involve all of the above Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000
Number - number and place value	3 Addition and subtraction	Adding whole numbers with more than 4 digits (1) Adding whole numbers with more than 4 digits (2) Subtracting whole numbers with more than 4 digits (1) Subtracting whole numbers with more than 4 digits (2) Using rounding to estimate and check answers Mental addition and subtraction (1) Mental addition and subtraction (2) Using inverse operations Problem solving – addition and subtraction (1) Problem solving – addition and subtraction (2)	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 Add and subtract numbers mentally with increasingly large numbers Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Estimate and use inverse operations to check answers to a calculation
Statistics	4 Graphs and tables	Interpreting tables Two-way tables Interpreting line graphs (1) Interpreting line graphs (2)	Complete, read and interpret information in tables, including timetables Solve comparison, sum and difference problems using information presented in a line graph

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		Drawing line graphs	
Number – multiplication and division	5 Multiplication and division (1)	Factors Prime numbers Using factors Squares Cubes Inverse operations Multiplying whole numbers by 10, 100 and 1,000 Dividing whole numbers by 10, 100 and 1,000 Multiplying and dividing by multiples of 10, 100 and 1,000	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers 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 (nonprime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
Measurement	6 Measure – area and perimeter	Measuring perimeter Calculating perimeter (1) Calculating perimeter (2) Calculating area (1) Calculating area (2) Comparing area Estimating area	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes
Number – multiplication and division	7 Multiplication and division (2)	Multiplying numbers up to 4 digits by a 1-digit number Multiplying 2-digit numbers (1) Multiplying 2-digit numbers (2) Multiplying 2-digit numbers (3) Multiplying a 3-digit number by a 2-digit number Multiplying a 4-digit number by a 2-digit number Dividing up to a 4-digit number by a 1-digit number (1) Dividing up to a 4-digit number by a 1-digit number (2) Division with remainders (1) Division with remainders (2)	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers Multiply and divide numbers mentally drawing upon known facts 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

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		Problem solving – division with remainders	
Number – fractions (including decimals and percentages)	8 Fractions (1)	Equivalent fractions Converting improper fractions to mixed numbers Converting mixed numbers to improper fractions Number sequences Comparing and ordering fractions (1) Comparing and ordering fractions (2) Fractions as division (1) Fractions as division (2)	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, $\frac{2}{5}+\frac{4}{5}=\frac{6}{5}=1\frac{1}{5}$) Compare and order fractions whose denominators are all multiples of the same number
Number – fractions (including decimals and percentages)	9 Fractions (2)	Adding fractions (1) Adding fractions (2) Adding fractions (3) Subtracting fractions (1) Subtracting fractions (2) Subtracting fractions (3) Subtracting fractions (4) Problem solving – mixed word problems (1) Problem solving – mixed word problems (2)	Add and subtract fractions with the same denominator and denominators that are multiples of the same number 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, $\frac{2}{5}+\frac{4}{5}=\frac{6}{5}=1\frac{1}{5}$)
Number – fractions (including decimals and percentages)	10 Fractions (3)	Multiplying fractions (1) Multiplying fractions (2) Multiplying fractions (3) Multiplying fractions (4) Calculating fractions of amounts Using fractions as operators Problem solving – mixed word problems	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams 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, $\frac{2}{5}+\frac{4}{5}=\frac{6}{5}=1\frac{1}{5}$)
Number – fractions (including decimals and percentages)	11 Decimals and percentages	Writing decimals (1) Writing decimals (2) Decimals as fractions (1) Decimals as fractions (2) Understanding thousandths Writing thousandths as decimals Ordering and comparing decimals (1) Ordering and comparing decimals (2) Rounding decimals Understanding percentages Percentages as fractions and decimals Equivalent fractions, decimals and percentages	Read, write, order and compare numbers with up to three decimal places Read and write decimal numbers as fractions [for example, = $\frac{71}{100}$ 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 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 $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25

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			Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
Number – fractions (including decimals and percentages)	12 Decimals	Adding and subtracting decimals (1) Adding and subtracting decimals (2) Adding and subtracting decimals (3) Adding and subtracting decimals (4) Adding and subtracting decimals (5) Adding and subtracting decimals (6) Adding and subtracting decimals (7) Adding and subtracting decimals (8) Decimal sequences Problem solving – decimals (1) Problem solving – decimals (2) Multiplying decimals by 10 Multiplying decimals by 10, 100 and 1,000 Dividing decimals by 10 Dividing decimals by 10, 100 and 1,000	Solve problems involving number up to three decimal places 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
Geometry – properties of shapes	13 Geometry – properties of shapes (1)	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 Calculating lengths and angles in shapes	Identify: –angles at a point and one whole turn (total 360°) –angles at a point on a straight line and 1 2 a turn (total 180°) –other multiples of 90° Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees (°) Use the properties of rectangles to deduce related facts and find missing lengths and angles
Geometry – properties of shapes	14 Geometry – properties of shapes (2)	Recognising and drawing parallel lines Recognising and drawing perpendicular lines Reasoning about parallel and perpendicular lines Regular and irregular polygons Reasoning about 3D shapes	Use the properties of rectangles to deduce related facts and find missing lengths and angles Identify: –angles at a point and one whole turn (total 360°) – angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180°) – other multiples of 90° Draw given angles, and measure them in degrees (o) Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Identify 3D shapes, including cubes and other cuboids, from 2D representations
Geometry – position and direction	15 Geometry – position and direction	Reflection Reflection with coordinates Translation Translation with coordinates	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed

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Measurement	16 Measure – converting units	Metric units (1) Metric units (2) Metric units (3) Metric units (4) Imperial units of length Imperial units of mass Imperial units of capacity Converting units of time Timetables Problem solving – measure	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling 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
Measurement	17 Measure – volume and capacity	What is volume? Comparing volumes Estimating volume Estimating capacity	Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]