

## Year 5 learning overview

Autumn	1	2	3	4	5	6	7	8	9	10	11	12
White Rose	<u>Number Place Value</u> Step 1 Roman numerals to 1,000 Step 2 Numbers to 10,000 Step 3 Numbers to 100,000 Step 4 Numbers to 1,000,000 Step 5 Read and write numbers to 1,000,000 Step 6 Powers of 10 Step 7 10/100/1,000/10,000/100,000 more or less Step 8 Partition numbers to 1,000,000 Step 9 Number line to 1,000,000 Step 10 Compare and order numbers to 100,000 Step 11 Compare and order numbers to 1,000,000 Step 12 Round to the nearest 10, 100 or 1,000 Step 13 Round within 100,000 Step 14 Round within 1,000,000			<u>Number Addition and Subtraction</u> Step 1 Mental strategies Step 2 Add whole numbers with more than four digits Step 3 Subtract whole numbers with more than four digits Step 4 Round to check answers Step 5 Inverse operations (addition and subtraction) Step 6 Multi-step addition and subtraction problems Step 7 Compare calculations Step 8 Find missing numbers		<u>Number Multiplication and Division A</u> Step 1 Multiples Step 2 Common multiples Step 3 Factors Step 4 Common factors Step 5 Prime numbers Step 6 Square numbers Step 7 Cube numbers Step 8 Multiply by 10, 100 and 1,000 Step 9 Divide by 10, 100 and 1,000 Step 10 Multiples of 10, 100 and 1,000			<u>Fractions A</u> Step 1 Find fractions equivalent to a unit fraction Step 2 Find fractions equivalent to a non-unit fraction Step 3 Recognise equivalent fractions Step 4 Convert improper fractions to mixed numbers Step 5 Convert mixed numbers to improper fractions Step 6 Compare fractions less than 1 Step 7 Order fractions less than 1 Step 8 Compare and order fractions greater than 1 Step 9 Add and subtract fractions with the same denominator Step 10 Add fractions within 1 Step 11 Add fractions with total greater than 1 Step 12 Add to a mixed number Step 13 Add two mixed numbers Step 14 Subtract fractions Step 15 Subtract from a mixed number Step 16 Subtract from a mixed number – breaking the whole			
Links to National Curriculum	Read, write, order and compare numbers to at least 1000000 and determine the value of each digit. Count forwards or backwards in steps of powers of 10 for any given number up to 1000000. Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero. Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000. Solve number problems and practical problems that involve all of the above. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.			Add and subtract numbers mentally with increasingly large numbers. 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. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.		Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19. 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. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000. Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³). Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes.			Compare and order fractions whose denominators are multiples of the same number. 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 ⅔ + ¼ = ⁶⁄₅ = 1½]. Add and subtract fractions with the same denominator and denominators that are multiples of the same number. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Read and write decimal numbers as fractions [ for example 0.71 = ⁷¹⁄₁₀₀ ]. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.			

						Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.						
Spring	1	2	3	4	5	6	7	8	9	10	11	12
White Rose	<u>Number Multiplication and Division B</u> Step 1 Multiply up to a 4-digit number by a 1-digit number Step 2 Multiply a 2-digit number by a 2-digit number (area model) Step 3 Multiply a 2-digit number by a 2-digit number Step 4 Multiply a 3-digit number by a 2-digit number Step 5 Multiply a 4-digit number by a 2-digit number Step 6 Solve problems with multiplication Step 7 Short division Step 8 Divide a 4-digit number by a 1-digit number Step 9 Divide with remainders Step 10 Efficient division Step 11 Solve problems with multiplication and division			<u>Number Fractions B</u> Step 1 Multiply a unit fraction by an integer Step 2 Multiply a non-unit fraction by an integer Step 3 Multiply a mixed number by an integer Step 4 Calculate a fraction of a quantity Step 5 Fraction of an amount Step 6 Find the whole Step 7 Use fractions as operators		<u>Number Decimals and Percentages</u> Step 1 Decimals up to 2 decimal places Step 2 Equivalent fractions and decimals (tenths) Step 3 Equivalent fractions and decimals (hundredths) Step 4 Equivalent fractions and decimals Step 5 Thousandths as fractions Step 6 Thousandths as decimals Step 7 Thousandths on a place value chart Step 8 Order and compare decimals (same number of decimal places) Step 9 Order and compare any decimals with up to 3 decimal places Step 10 Round to the nearest whole number Step 11 Round to 1 decimal place Step 12 Understand percentages Step 13 Percentages as fractions Step 14 Percentages as decimals			<u>Measurement Perimeter and area</u> Step 1 Perimeter of rectangles Step 2 Perimeter of rectilinear shapes Step 3 Perimeter of polygons Step 4 Area of rectangles Step 5 Area of compound shapes Step 6 Estimate area		<u>Statistics</u> Step 1 Draw line graphs Step 2 Read and interpret line graphs Step 3 Read and interpret tables Step 4 Two-way tables Step 5 Read and interpret timetables	
Links to National Curriculum	Identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19. 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. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000.			Compare and order fractions whose denominators are multiples of the same number. 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 $\frac{2}{5} + \frac{1}{5} = \frac{6}{5} = 1\frac{1}{5}$ ]. Add and subtract fractions with the same denominator and denominators that are multiples of the same		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. Round decimals with two decimal places to the nearest whole number and to one decimal place. Solve problems involving number up to three decimal places. 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 $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{5}$ , $\frac{3}{5}$ , $\frac{2}{5}$ and those fractions with a denominator of a multiple of 10 or 25.			Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ), and estimate the area of irregular shapes.		Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information in tables including timetables.	

	Recognise and use square numbers and cube numbers, and the notation for squared ( <sup>2</sup> ) and cubed ( <sup>3</sup> ). Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.			number. Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. Read and write decimal numbers as fractions [ for example 0.71 = <sup>71</sup> / <sub>100</sub> ]. Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.								
Summer	1	2	3	4	5	6	7	8	9	10	11	12
White Rose	<u>Geometry Shape</u> Step 1 Understand and use degrees Step 2 Classify angles Step 3 Estimate angles Step 4 Measure angles up to 180° Step 5 Draw lines and angles accurately Step 6 Calculate angles around a point Step 7 Calculate angles on a straight line Step 8 Lengths and angles in shapes			<u>Geometry Position and Direction</u> Step 1 Read and plot coordinates Step 2 Problem solving with coordinates Step 3 Translation Step 4 Translation with coordinates Step 5 Lines of symmetry Step 6 Reflection in horizontal and vertical lines		<u>Number Decimals</u> Step 1 Use known facts to add and subtract decimals within 1 Step 2 Complements to 1 Step 3 Add and subtract decimals across 1 Step 4 Add decimals with the same number of decimal places Step 5 Subtract decimals with the same number of decimal places Step 6 Add decimals with different numbers of decimal places Step 7 Subtract decimals with different numbers of decimal places Step 8 Efficient strategies for adding and subtracting decimals Step 9 Decimal sequences Step 10 Multiply by 10, 100 and 1,000 Step 11 Divide by 10, 100 and 1,000 Step 12 Multiply and divide decimals – missing values			<u>Negative Numbers</u> Step 1 Understand negative numbers Step 2 Count through zero in 1s Step 3 Count through zero in multiples Step 4 Compare and order negative numbers Step 5 Find the difference	<u>Measurements Converting Units</u> Step 1 Kilograms and kilometres Step 2 Millimetres and millilitres Step 3 Convert units of length Step 4 Convert between metric and imperial units Step 5 Convert units of time Step 6 Calculate with timetables	<u>Measurements Volume</u> Step 1 Cubic centimetres Step 2 Compare volume Step 3 Estimate volume Step 4 Estimate capacity	
Links to National Curriculum	Identify 3D shapes, including cubes and other cuboids, from 2D representations. Use the properties of rectangles to deduce related facts and find missing lengths and angles. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.			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.		Solve problems involving number up to three decimal places. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Use all four operations to solve problems involving measure [ for example, length, mass, volume, money] using decimal notation, including scaling.				Convert between different units of metric measure [for example, km and m; cm and m; cm and mm; g and kg; l and ml]. Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints. Solve problems involving	Estimate volume [for example using 1cm <sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]. Use all	

	<p>Draw given angles, and measure them in degrees.</p> <p>Identify: angles at a point and one whole turn (total <math>360^\circ</math>), angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total <math>180^\circ</math>) other multiples of <math>90^\circ</math>.</p>				<p>converting between units of time.</p>	<p>four operations to solve problems involving measure.</p>
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