

Ox Close Federation

Maths Medium Term Planning

Year 6



Autumn					
Topic	Suggested teaching weeks	White Rose Small Steps	Link to National Curriculum and NRICH Problem Solving	Link to Ready to Progress documents	Vocabulary
Number Place Value	2 weeks	Step 1 Numbers to 1,000,000 Step 2 Numbers to 10,000,000 Step 3 Read and write numbers to 10,000,000 Step 4 Powers of 10 Step 5 Number line to 10,000,000 Step 6 Compare and order any integers Step 7 Round any integer Step 8 Negative numbers	<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. <p style="color: blue; text-decoration: underline;">Round the Three Dice *</p>	6NPV-1 Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000). 6NPV-2 Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and nonstandard partitioning.	1-10,000,000
Number Addition, subtraction, multiplication and division	5 weeks	Step 1 Add and subtract integers Step 2 Common factors Step 3 Common multiples Step 4 Rules of divisibility Step 5 Primes to 100 Step 6 Square and cube numbers Step 7 Multiply up to a 4-digit number by a 2-digit number Step 8 Solve problems with multiplication Step 9 Short division	<ul style="list-style-type: none"> ▪ 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 	6AS/MD-1 Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number). 6AS/MD-2 Use a given additive or multiplicative calculation to	Order of operations, equation Order of operations, common factors, common multiples, long division

		<p>Step 10 Division using factors Step 11 Introduction to long division Step 12 Long division with remainders Step 13 Solve problems with division Step 14 Solve multi-step problems Step 15 Order of operations Step 16 Mental calculations and estimation Step 17 Reason from known facts</p>	<p>remainders, fractions, or by rounding, as appropriate for the context</p> <ul style="list-style-type: none"> ▪ divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, 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 addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ▪ 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. <p><u>Four Go (G) **</u> <u>Reach 100 **</u></p>	<p>derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.</p> <p>6NPV-4 Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.</p>	
<p>Number Fractions A</p>	<p>2 weeks</p>	<p>Step 1 Equivalent fractions and simplifying Step 2 Equivalent fractions on a number line</p>	<ul style="list-style-type: none"> ▪ use common factors to simplify fractions; use common multiples to express 	<p>6F-1 Recognise when fractions can be simplified, and use common factors to simplify fractions</p>	<p>Degree of accuracy, simplify, % of quantities</p>

		<p>Step 3 Compare and order (denominator)</p> <p>Step 4 Compare and order (numerator)</p> <p>Step 5 Add and subtract simple fractions</p> <p>Step 6 Add and subtract any two fractions</p> <p>Step 7 Add mixed numbers</p> <p>Step 8 Subtract mixed numbers</p> <p>Step 9 Multi-step problems</p>	<p>fractions in the same denomination</p> <ul style="list-style-type: none"> compare and order fractions, including fractions > 1 add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $4 \frac{1}{2} \times 2 \frac{1}{3} = 8 \frac{1}{3}$] divide proper fractions by whole numbers [for example, $3 \frac{1}{2} \div 2 = 6 \frac{1}{4}$] associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $8 \frac{3}{4}$] 	<p>6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.</p> <p>6F–3 Compare fractions with different denominators, including fractions greater than 1, using reasoning, and between reasoning and common denomination as a comparison strategy.</p>	
<p>Number</p> <p>Fractions B</p>	2 weeks	<p>Step 1 Multiply fractions by integers</p> <p>Step 2 Multiply fractions by fractions</p> <p>Step 3 Divide a fraction by an integer</p> <p>Step 4 Divide any fraction by an integer</p> <p>Step 5 Mixed questions with fractions</p> <p>Step 6 Fraction of an amount</p> <p>Step 7 Fraction of an amount – find the whole</p>			
<p>Measurement</p> <p>Converting Units</p>	1 week	<p>Step 1 Metric measures</p> <p>Step 2 Convert metric measures</p> <p>Step 3 Calculate with metric measures</p> <p>Step 4 Miles and kilometres</p> <p>Step 5 Imperial measures</p>	<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 three decimal places convert between miles and kilometres 		<p>Units of measure</p> <p>Miles</p> <p>Decimal places, convert,</p>

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Spring					
Topic	Suggested teaching weeks	White Rose Small Steps	Link to National Curriculum and NRICH Problem Solving	Link to Ready to Progress documents	Vocabulary
Number Ratio	2 weeks	Step 1 Add or multiply Step 2 Use ratio language Step 3 Introduction to the ratio symbol Step 4 Ratio and fractions Step 5 Scale drawing Step 6 Use scale factors Step 7 Similar shapes Step 8 Ratio problems Step 9 Proportion problems Step 10 Recipes	<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 the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison • 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. <p><u>Doughnut Percents **</u> <u>Would You Rather? *</u></p>	6AS/MD–3 Solve problems involving ratio relationships.	Ratio and Proportion Scale factor
Number Algebra	2 weeks	Step 1 1-step function machines Step 2 2-step function machines Step 3 Form expressions Step 4 Substitution Step 5 Formulae Step 6 Form equations Step 7 Solve 1-step equations Step 8 Solve 2-step equations Step 9 Find pairs of values Step 10 Solve problems with two unknowns	<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. <p><u>Button-up Some More **</u></p>	6AS/MD–4 Solve problems with 2 unknowns.	Algebra Linear number sequence, substitute, variables, symbol, known values, formula, formulae, algebraically
Number Decimals	2 weeks	Step 1 Place value within 1 Step 2 Place value – integers and decimals Step 3 Round decimals	<ul style="list-style-type: none"> • identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 	6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number	

		<p>Step 4 Add and subtract decimals</p> <p>Step 5 Multiply by 10, 100 and 1,000</p> <p>Step 6 Divide by 10, 100 and 1,000</p> <p>Step 7 Multiply decimals by integers</p> <p>Step 8 Divide decimals by integers</p> <p>Step 9 Multiply and divide decimals in context</p>	<p>1000 giving answers up to three decimal places M</p> <ul style="list-style-type: none"> 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 recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. <p>Plenty of Pens *</p>	<p>system, and round numbers, as appropriate, including in contexts.</p>	
<p>Number</p> <p>Fractions, decimals and percentages</p>	<p>2 weeks</p>	<p>Step 1 Decimal and fraction equivalents</p> <p>Step 2 Fractions as division</p> <p>Step 3 Understand percentages</p> <p>Step 4 Fractions to percentages</p> <p>Step 5 Equivalent fractions, decimals and percentages</p> <p>Step 6 Order fractions, decimals and percentages</p> <p>Step 7 Percentage of an amount – one step</p> <p>Step 8 Percentage of an amount – multi-step</p> <p>Step 9 Percentages – missing values</p>	<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 add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $4 \frac{1}{2} \times 1 \frac{1}{8} = 8 \frac{1}{4}$] divide proper fractions by whole numbers [for example, $3 \frac{1}{2} \div 2 = 6 \frac{1}{4}$] associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $8 \frac{3}{4}$] <p>Fraction Lengths **</p>	<p>6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.</p> <p>6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.</p> <p>6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.</p>	

<p>Measurement Area, perimeter and volume</p>	<p>2 weeks</p>	<p>Step 1 Shapes – same area Step 2 Area and perimeter Step 3 Area of a triangle – counting squares Step 4 Area of a right-angled triangle Step 5 Area of any triangle Step 6 Area of a parallelogram Step 7 Volume – counting cubes Step 8 Volume of a cuboid</p>	<ul style="list-style-type: none"> ▪ 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 cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]. 	<p>6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.</p>	<p>Area, perimeter, volume, four quadrants, vertically opposite</p>
<p>Statistics</p>	<p>2 weeks</p>	<p>Step 1 Line graphs Step 2 Dual bar charts Step 3 Read and interpret pie charts Step 4 Pie charts with percentages Step 5 Draw pie charts Step 6 The mean</p>	<ul style="list-style-type: none"> ▪ interpret and construct pie charts and line graphs and use these to solve problems ▪ calculate and interpret the mean as an average. <p><u>Birdwatch</u> *</p>		<p>Mean, average, pie chart, construct,</p>

Summer					
Topic	Suggested teaching weeks	White Rose Small Steps	Link to National Curriculum and NRICH Problem Solving	Link to Ready to Progress documents	Vocabulary
Geometry Shape	3 weeks	Step 1 Measure and classify angles Step 2 Calculate angles Step 3 Vertically opposite angles Step 4 Angles in a triangle Step 5 Angles in a triangle – special cases Step 6 Angles in a triangle – missing angles Step 7 Angles in a quadrilateral Step 8 Angles in polygons S Step 9 Circles Step 10 Draw shapes accurately Step 11 Nets of 3-D shapes	<ul style="list-style-type: none"> ▪ draw 2-D shapes using given dimensions and angles ▪ recognise, describe and build simple 3-D shapes, including making nets ▪ compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons ▪ illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius ▪ recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. <p><u>Making Cuboids **</u> <u>Cut Nets **</u></p>	6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.	Circumference, radius, diameter Four quadrants, vertically opposite
Geometry Position and direction	1 week	Step 1 The first quadrant Step 2 Read and plot points in four quadrants Step 3 Solve problems with coordinates Step 4 Translations Step 5 Reflections	<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. 		