

Autumn 1: Pendarren

Week	Unit	National Curriculum objectives Possible lesson objectives	White Rose Maths (WRM) 'small steps'	Models and images representing number Key vocabulary	Reasoning (in addition to WRM questions)	Fluency
1	Number Place value to 10 million					
		<ul style="list-style-type: none"> read, write, order and compare numbers up to 10,000,000 and determine the value of each digit Solve number and practical problems that involve the above 	<ul style="list-style-type: none"> Numbers to 1,000,000 Numbers to 10,000,000 Read and write numbers to 10,000,000 	Base-10, place value counters, part-whole model, empty number line	<p>Do, then explain Find out the populations in five countries. Order the populations starting with the largest. Explain how you ordered the countries and their populations.</p> <p>Do, then explain Show the value of the digit 6 in these numbers? 6787555 95467754 Explain how you know.</p> <p>The sum of the digits for a whole-number is 11. <u>All the digits are different.</u> What is the smallest that the number could be? What is the largest that the number could be? Example: the sum of the digits for 214 is 7 ($2+1+4=7$)</p>	Arithmetic Practice
2		<ul style="list-style-type: none"> read, write, order and compare numbers up to 10,000,000 and determine the value of each digit Solve number and practical problems that involve the above round any whole number to a required degree of accuracy use negative numbers in context, and calculate intervals across 0 	<ul style="list-style-type: none"> Powers of 10 Number line to 10,000,000 Compare and order any integers Round any integer Negative numbers 	Base-10, place value counters, part-whole model, empty number line	<p>True or false? When I count backwards in 50s from 10 I will say -200</p> <p>What do you notice? Give an example of a six digit number which rounds to the same number when rounded to the nearest 10000 and 100000.</p> <p>Odd one out 4832 6400 8934 10000 14999 Your answer must involve rounding!</p>	Arithmetic Practice

3	<div data-bbox="199 78 763 150"> Number Calculation: Addition and subtraction </div> <div data-bbox="199 158 824 472"> <ul style="list-style-type: none"> • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Identify common factors, common multiples and prime numbers • Solve problems involving addition, subtraction, multiplication and division </div> <div data-bbox="835 158 1070 347"> <ul style="list-style-type: none"> • Add and subtract integers • Common factors • Common multiples • Rules of divisibility • Primes to 100 </div> <div data-bbox="1093 158 1290 464"> Place value grid, place value counters, column layout, empty number line, bar model <i>Interval, multi-step, common factors, common multiples</i> </div> <div data-bbox="1317 158 1989 1086"> Hard and easy questions Which questions are easy / hard? $213323 - 70 =$ $512893 + 37 =$ $8193.54 - 5.9 =$ Explain why you think the hard questions are hard? Prove it Which numbers cannot be the answer to 314×61? 19154 18214 18926 Explain how you know Approximate For each question, the answer has how many digits? $576 \div 6 =$ ___ digit(s) $5880 \div 7 =$ ___ digit(s) $2076 \div 3 =$ ___ digit(s) $920 \div 8 =$ ___ digit(s) Convince me Three four digit numbers total 12435. What could they be? Convince me. Always, sometimes, never? Is it always, sometimes or never true that when you square an even number, the result is divisible by 4? Is it always, sometimes or never true that multiples of 7 are 1 more or 1 less than prime numbers? NRICH Mystery Matrix NRICH Factor Lines NRICH Factor-Multiple Chains NRICH Two Primes Make One Square NRICH Always, Sometimes or Never? Number NRICH Dicey Operations </div> <div data-bbox="2011 158 2145 213"> Arithmetic Practice </div>
4	<div data-bbox="199 1212 779 1284"> Number Calculation: Multiplication and division </div> <div data-bbox="199 1292 797 1449"> <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 number using the formal written method of short division </div> <div data-bbox="835 1292 1061 1477"> <ul style="list-style-type: none"> • Multiply up to a 4-digit number by a 2-digit number • Short division • Division using factors </div> <div data-bbox="1093 1292 1290 1477"> Base-10, Numicon <i>Interval, multi-step, common factors, common multiples</i> </div> <div data-bbox="1317 1292 1989 1477"> I know... so... $32 \times 13 = 416$ $32 \times 15 =$ $42 \times 12 = 504$ $45 \times 12 =$ $26 \times 24 = 624$ </div> <div data-bbox="2011 1292 2145 1348"> Arithmetic Practice </div>

	<p>where appropriate, interpreting remainders according to the context</p> <ul style="list-style-type: none"> perform mental calculations, including with mixed operations and large numbers use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 			<p>$36 \times 24 =$ Prove it Which numbers cannot be the answer to 314×61? 19154 18214 18926 Explain how you know Approximate For each question, the answer has how many digits? $576 \div 6 =$ ___ digit(s) $5880 \div 7 =$ ___ digit(s) $2076 \div 3 =$ ___ digit(s) $920 \div 8 =$ ___ digit(s) NRICH Dickey Operations</p>	
5	<ul style="list-style-type: none"> divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division solve problems involving addition, subtraction, multiplication and division perform mental calculations, including with mixed operations and large numbers 	<ul style="list-style-type: none"> Long division Solve problems involving addition, subtraction, multiplication and division 	<p>Base-10, Numicon</p> <p><i>Interval, multi-step, common factors, common multiples, long division</i></p>	<p>Practical 'The 4, 5 and 6 keys on my calculator are broken!' How can I use my calculator to work out: $1350 \div 15 =$ $624 \div 16 =$ Finding possibilities I divide a 4 digit number by 24. The ones digit of the answer is 3. What could my 4-digit number be? Have you found all the possibilities? How do you know?</p>	Arithmetic Practice
6	<ul style="list-style-type: none"> identify common factors, common multiples and prime numbers 	<ul style="list-style-type: none"> Common factors Common multiples Primes to 100 Square and cubed numbers 	<p>Cuisenaire, 100 square, base-10</p> <p><i>Interval, multi-step, common factors, common multiples</i></p>	<p>Always, sometimes, never? Is it always, sometimes or never true that when you square an even number, the result is divisible by 4? Is it always, sometimes or never true that multiples of 7 are 1 more or 1 less than prime numbers? NRICH Mystery Matrix NRICH Factor Lines NRICH Factor-Multiple Chains NRICH Two Primes Make One Square</p>	Arithmetic Practice
7	<ul style="list-style-type: none"> use knowledge of the order of operations to carry out calculations for the four operations 	<ul style="list-style-type: none"> Order of operations Mental calculations Reason from known facts 	-	<p>Missing symbols Write the missing signs (+ - \times \div) in this number sentence: $612.3 = 61.911.9$ What else do you know? If you know this: $86.7 + 13.3 = 100$ what other facts do you know? Which is correct? Which of these number sentences is correct? $3 + 6 \times 2 = 15$ $6 \times 5 - 7 \times 4 = 92$ $8 \times 20 \div 4 \times 3 = 37$ NRICH Four Goodness Sake</p>	Arithmetic Practice

Autumn 2: Our Island History

Week	Unit	National Curriculum objectives Possible lesson objectives	White Rose Maths (WRM) 'small steps'	Models and images representing number Key vocabulary	Reasoning (in addition to WRM questions)	Fluency
1	Number Fractions	<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 	<ul style="list-style-type: none"> • Equivalent fractions and simplifying • Equivalent fractions on a number line • Compare and order (denominator) 	Fraction wall, number line <i>Simplify, degrees of accuracy</i>	Which is larger... $1/3$ or $2/5$? Explain how you know. Odd one out. Which is the odd one out in each of these collections of 4 fractions $3/4$ $9/12$ $26/36$ $18/24$ $4/20$ $1/5$ $6/25$ $6/30$ Why? Always, sometimes, never true that: 20ths can be simplified to 8ths Halves can't be simplified Tenths can be simplified to fifths Fifteenths can be simplified to quarters? Use examples to prove your answers.	Arithmetic Practice
2		<ul style="list-style-type: none"> • add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • Identify common factors, common multiples and prime numbers 	<ul style="list-style-type: none"> • Compare and order (numerator) • Add and subtract fractions • Add and subtract any two fractions • Add mixed numbers 	Cuisenaire rods <i>Simplify, degrees of accuracy</i>	Ordering Sam put these fractions in order starting with the smallest. Are they in the correct order? Thirty-three fifths Twenty-three thirds Forty-five sevenths How do you know? Another and another Write down two fractions which have a difference of $1/2$... and another, ... and another, ... Write down 2 fractions with a total of $3\frac{4}{5}$ and another, ... and another, ... Odd one out $1/3 + 1/8$ $1/2 + 3/4$ $3/5 + 3/10$ $3/4 + 5/12$ Explain your answer. On Monday I ran $1\frac{2}{3}$ km and on Tuesday I ran $2\frac{2}{5}$ km. How far did I run altogether on these two days?	Arithmetic Practice

				Another and another Write down two fractions which have a difference of $1\frac{2}{3}$... and another, ... and another, ...	
3	<ul style="list-style-type: none"> • Use common factors to simplify fractions; use common multiples to express fractions in the same denomination • Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • Identify common factors, common multiples and prime numbers • 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 	<ul style="list-style-type: none"> • Subtract mixed numbers • Multi-Step Problems 	Cuisenaire rods <i>Simplify, degrees of accuracy</i>	On Wednesday I ran $1\frac{2}{3}$ km and my sister ran $2\frac{2}{5}$ km. How much further did my sister run than I did? Another and another Write down two fractions which have a difference of $1\frac{2}{3}$... and another, ... and another, ... Another and another Write down 2 fractions with a total of $3\frac{4}{5}$ and another, ... and another, ...	Arithmetic Practice
4	<ul style="list-style-type: none"> • multiply simple pairs of proper fractions, writing the answer in its simplest form • divide proper fractions by whole number • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams (Y5) • Divide proper fractions by whole numbers 	<ul style="list-style-type: none"> • Multiply fractions by integers • Multiply fractions by fractions • Divide fractions by integers • Divide any fraction by an integer 	Cuisenaire rods <i>Simplify, degrees of accuracy</i>	Continue the pattern $\frac{1}{3} \div 2 = \frac{1}{6}$ $\frac{1}{6} \div 2 = \frac{1}{12}$ $\frac{1}{12} \div 2 = \frac{1}{24}$ What do you notice? $\frac{1}{2} \times \frac{1}{2} =$ $\frac{1}{4} \times \frac{1}{2} =$ $\frac{1}{8} \times \frac{1}{2} =$ What do you notice? Explaining Write a step-by-step guide to multiplying two fractions. Can you write one that covers all possible types of fractions? Now do the same for dividing <u>any</u> fraction by a whole number. Make sure it covers all possibilities.	Arithmetic Practice

5	<ul style="list-style-type: none"> 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 Divide proper fractions by whole numbers Solve problems involving addition, subtraction, multiplication and division Associate a fraction with division and calculate decimal fraction equivalents 	<ul style="list-style-type: none"> Mixed questions with fractions Fraction of an amount Fraction of an amount – Find a whole 	Bar model <i>Simplify, degrees of accuracy</i>	<p>What do you notice? $8/5$ of 25 = 40 $5/4$ of 16 = 20 $7/6$ of 36 = 42 Can you write similar statements?</p> <p>Which question can be answered in more ways?</p> <div> <div> Question A: $\frac{3}{\square}$ of 24 = \square </div> <div> Question B: $\frac{\square}{3}$ of 24 = \square </div> </div> <p><i>The answers are whole numbers.</i></p> <p>I know... so...</p> <p>$\frac{6}{8}$ of 480 = \square $\frac{3}{8}$ of 480 = 180 $\frac{\square}{8}$ of 480 = 60</p> <p>$\frac{3}{4}$ of 480 = \square $\frac{3}{8}$ of \square = 90</p> <p>Extend: Add your own examples.</p>	Arithmetic Practice
7	<p>Measurement Conversion between units of measure</p>				Arithmetic practice
	<ul style="list-style-type: none"> Solve problems involving 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 	<ul style="list-style-type: none"> Metric measures Convert metric measures Calculate with metric measures Miles and kilometres Imperial measures 	Ruler, metre stick, other measuring scales, bar model, number line mm3, km3, speed, mph, m/s, km/h	<p>Top Tips Put these amounts in order starting with the largest. 100 cm3 1000000 mm3 1 m3 Explain your thinking</p> <p>What do you notice? 8 km = 5 miles 16km = miles 4 km = miles Fill in the missing number of miles. Write down some more facts connecting kilometres and miles</p> <p>Would you rather? On a long car journey, of say 200 miles (about 320 kilometres), you keep asking your parent how much further to go. Would you rather they answered in miles or kilometres? Give a reason for your answer.</p>	Arithmetic practice

Spring 1: The Body in Question

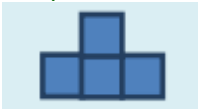
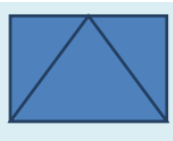
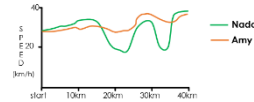
Week	Unit	National Curriculum objectives Possible lesson objectives	White Rose Maths (WRM) 'small steps'	Models and images representing number Key vocabulary	Reasoning (in addition to WRM questions)	Fluency
	Ratio					
1		<ul style="list-style-type: none"> solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts solve problems involving unequal sharing and grouping using knowledge of fractions and multiples 	<ul style="list-style-type: none"> Add or multiply? Use ratio language Introducing the ratio symbol Ratio and fractions Scale drawing 	Counters, bar model, Cuisenaire <i>relative size, scale factor</i> <i>proportion, ratio as a:b</i>	True or false Last season, for every 3 goals that Dan scored, Anil scored 2 goals. For each statement, say if it is possible or impossible: In total, Dan and Anil scored 18 goals. Anil scored 10 goals. Dan scored 15 goals and Anil scored 6 goals. In total, Dan and Anil scored 35 goals. How Many Ways Ben has 3 times as many conkers as Holly. In total, Ben and Holly have less than 25 conkers. Holly has more than 3 conkers. How many conkers does Ben have? How many possible answers are there? NRICH Pumpkin Pie Problem NRICH Orange Drink	Arithmetic practice
3		<ul style="list-style-type: none"> solve problems involving similar shapes where the scale factor is known or can be found solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts 	<ul style="list-style-type: none"> Using scale factors Similar shapes Ratio problems Proportion problems Recipes 	Counters, bar model, Cuisenaire <i>relative size, scale factor</i> <i>proportion, ratio as a:b</i>	Unpicking A recipe needs to include three times as much apple than peach. The total weight of apples and peaches in a recipe is 700 grammes. How much apple do I need? NRICH Mixing Lemonade (online) NRICH Tray Bake	Arithmetic practice
4	Algebra					
		<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 	<ul style="list-style-type: none"> One step function machines Two Step function machines Form Expressions Substitution Formulae 	Bar model <i>Symbol, letter, formula(e), sequence, algebraic(ally), equation, unknown, variable, constant, generalise</i>	Generalising Write a formula for the 10th, 100th and nth terms of the sequences below. 4, 8, 12, 16 0.4, 0.8, 1.2, 1.6 Undoing The diagram below represents two rectangular fields that are next to each other <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">Field A</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Field B</div> </div>	Arithmetic practice

				<p>Field A is twice as long as field B but their widths are the same and are 7.6 metres. If the perimeter of the small field is 23m what is the perimeter of the entire shape containing both fields?</p> <p>Working forwards and backwards If y stands for a number complete the table below</p> <table><tr><td>y</td><td>3y</td><td>3y + 1</td></tr><tr><td>25</td><td></td><td></td></tr><tr><td></td><td></td><td>28</td></tr></table> <p>What is the largest value of y if the greatest number in the table was 163?</p> <p>NRICH Cryptarithms NRICH Different Deductions NRICH Holes</p>	y	3y	3y + 1	25					28	
y	3y	3y + 1												
25														
		28												
5	<ul style="list-style-type: none">find pairs of numbers that satisfy an equation with two unknownsenumerate possibilities of combination of variables	<ul style="list-style-type: none">Form equationsSolve one-step equationsSolve two-step equationsFind pairs of valuesSolve problems with two unknowns	<p>Bar model</p> <p>Symbol, letter, formula(e), sequence, algebraic(ally), equation, unknown, variable, constant, generalise</p>	<p>Do, then explain p and q each stand for whole numbers. $p + q = 1000$ and p is 150 greater than q. Work out the values of p and q. Explain how you did it. If $2a + b = 110$ and $a + 2b = 130$, can you find the values of a and b? Explain how you did it. Can you create a similar puzzle for a partner? NRICH Price Match</p>	Arithmetic practice									
6	Number Decimals													
	<ul style="list-style-type: none">identify the value of each digit in numbers given to three decimal placesSolve problems which require answers to be rounded to specified degrees of accuracySolve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	<ul style="list-style-type: none">Place value within 1Place value – integers and decimalsRound decimalsAdd and subtract decimals	Base 10, Gattegno chart, place value counters	<p>Working backwards What needs to be added to 6.543 to give 7? What needs to be added to 3.582 to give 5? One thousandth of my money is 31p. How much do I have? What do you notice? Circle the two decimals which are closest in value to each other. 0.9 0.09 0.99 0.1 0.01 What do you notice?</p>	Arithmetic practice									
	<ul style="list-style-type: none">Identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places	<ul style="list-style-type: none">Multiply by 10, 100 and 1000	Base 10, Gattegno chart, place value counters	<p>Prove it What goes in the missing box? $18 \underline{\quad} 4 \div 12 = 157$</p>	Arithmetic practice									

	<ul style="list-style-type: none"> • 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 involving addition, subtraction, multiplication and division 	<ul style="list-style-type: none"> • Divide by 10, 100 and 1000 • Multiply decimals by integers • Divide decimals by integers • Multiply and divide decimals in context 		$38 \div 5 = 7.6$ $33 \div 2 = 16.5$ $38 \times 4.7 = 178.6$ Prove it Use a fact $12 \times 1.1 = 13.2$ Use this fact to work out $15.4 \div 1.1 =$ $27.5 \div 1.1 =$	
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Spring 2: The Swinging 60s

Week	Unit	National Curriculum objectives Possible lesson objectives	White Rose Maths (WRM) 'small steps'	Models and images representing number Key vocabulary	Reasoning (in addition to WRM questions)	Fluency							
	Fractions, Decimals and Percentages												
1	<ul style="list-style-type: none">associate a fraction with division and calculate decimal fraction equivalentsrecall and use equivalences between simple fractions, decimals and percentages, including in different contextsUse common factors to simplify fractions; use common multiples to express fractions in the same denomination <p>WALT find decimal and fraction equivalents WALT understand fractions as division WALT understand percentages WALT find fraction percentage equivalents WALT find equivalent fractions, decimals and percentages</p>	<ul style="list-style-type: none">Decimals and Fraction EquivalentsFractions as divisionUnderstand percentagesFractions to percentagesEquivalent FDP	Fraction wall simplify <i>degrees of accuracy</i>	<p>Give an example Of a fraction that is greater than 1.1 and less than 1.5. Now another example that no one will think of. Explain how you know.</p> <table border="1"><tr><td>$\frac{1}{8}$</td><td>$\frac{2}{8}$</td><td>$\frac{3}{8}$</td><td>$\frac{4}{8}$</td></tr><tr><td>0.375</td><td>???</td><td>???</td><td>???</td></tr></table> <p>Complete the pattern</p> <p>Complete the table. Another and another Write a unit fraction which has a value of less than 0.5? ... and another, ... and another, ... Ordering Starting with the largest: 23%, 5/8, 3/5, 0.8 NRICH In the Money</p>	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$	0.375	???	???	???	Arithmetic practice
$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$										
0.375	???	???	???										
2	<ul style="list-style-type: none">solve problems involving the calculation of percentagesCompare and order fractions, including fractions >1Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts <p>WALT order fractions, decimals and percentages WALT percentage of an amount multi step WALT find percentages of missing numbers</p>	<ul style="list-style-type: none">Order FDPPercentage of an amount – one stepPercentage of an amount – multi stepPercentage missing numbers	Bar model <i>simplify degrees of accuracy</i>	<p>What else do you know? 88% of a sum of money = £242. Make up some other statements. Write real life problems for your number sentences. Undoing I think of a number and then reduce it by 15%. The number I end up with is 306. What was my original number? In a sale where everything is reduced by 15% I paid the following prices for three items. £255, £850, £4.25 What was the original selling price? NRICH Would You Rather?</p>	Arithmetic								
	Measurement Area, perimeter and volume (1)												

3	<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 	<ul style="list-style-type: none"> Shapes - same area Area and perimeter Area of a triangle counting squares Area of a right angled triangle Area of any triangle 	Bar model, ruler mm^3 km^3	Testing conditions A square has the perimeter of 12 cm. When 4 squares are put together, the perimeter of the new shape can be calculated. For example:  What arrangements will give the maximum perimeter? What would give the minimum? Always, sometimes, never 	Arithmetic practice
4	<ul style="list-style-type: none"> 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 and cubic metres and extending to other units 	<ul style="list-style-type: none"> Area of a parallelogram Volume - counting cubes Volume of a cuboid 	Bar model mm^3 km^3	Visualising Jess has 24 cubes which she builds to make a cuboid. Write the dimensions of cuboids that she could make. List all the possibilities. Drawing Draw a net for a cuboid that has a volume of 24 cm^3 NRICH Cylinder Cutting	Arithmetic practice
5	Statistics				
	<ul style="list-style-type: none"> interpret and construct pie charts and line graphs and use these to solve problems Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs (Year 4) illustrate and name parts of circles including radius, diameter and circumference and know that the diameter is twice the radius 	<ul style="list-style-type: none"> Line graphs Dual bar charts Read and interpret pie charts Pie charts with percentages 	<i>pie chart, mean, average data set</i>	Is this true or false? Convince me. Make up your own 'true/false' statement about a pie chart. Drawing conclusions 	Arithmetic practice

				<p>This graph shows the speeds of Nada and Amy in the race. Describe the difference between their races. Which cyclist do you think finished first - Nada or Amy?</p> <p>NRICH Graphing Number Patterns</p>	
6	<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 	<ul style="list-style-type: none"> Draw pie charts The mean 	<p><i>pie chart, mean, average data set</i></p>	<p>Missing information The mean score in six test papers in a spelling test of 20 questions is 15. Five of the scores were 13 12 17 18 16 What was the missing score?</p> <p>Create a questions Make up a set of five numbers with a mean of 2.7</p> <p>NRICH Birdwatch NRICH Presenting the Project</p>	<p>Arithmetic practice</p>

Summer 1: The First Emperor

Week	Unit	National Curriculum objectives Possible lesson objectives	White Rose Maths (WRM) 'small steps'	Models and images representing number Key vocabulary	Reasoning (in addition to WRM questions)	Fluency
Geometry Properties of shape (2)						
1	<ul style="list-style-type: none">find unknown angles in any triangles, quadrilaterals and regular polygonsrecognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing anglesfind unknown angles in any triangles, quadrilaterals and regular polygonsrecognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles	<ul style="list-style-type: none">Measure and classify anglesCalculate anglesVertically opposite anglesAngles in a triangle	Part-whole model, bar model -	Possibilities One angle at the point where the diagonals of a rectangle meet is 36 degrees. What could the other angles be? Convince me.  NRICH Olympic Turns NRICH Triangles in Circles (easy, then hard!)	Arithmetic practice	
2	<ul style="list-style-type: none">find unknown angles in any triangles, quadrilaterals and regular polygonsrecognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing anglesfind unknown angles in any triangles, quadrilaterals and regular polygonsrecognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles	<ul style="list-style-type: none">Angles in a triangle – special casesAngles in a triangle – missing anglesAngles in a special quadrilateralsAngles in a regular polygons	Part-whole model, bar model	Other possibilities If one angle of an isosceles triangle is 36 degrees, what could the triangle look like? Draw it. Are there other possibilities? Prove it How many angles do you need to know to work out the missing ones in: A square? A parallelogram? A trapezium? An equilateral triangle? An isosceles triangle? A scalene triangle? Any regular polygon? Any irregular polygon? NRICH Round a Hexagon	Arithmetic practice	
3	<ul style="list-style-type: none">recognise, describe and build simple 3D shapes, including making nets WALT identify parts of a circle WALT draw shapes accurately WALT draw nets of 3-D shapes	<ul style="list-style-type: none">CirclesDraw shapes accuratelyDraw nets of 3-D shapes	Part-whole model, bar model	What's the same, what's different? The nets of a triangular prism and a square based pyramid. Visualising Jess has 24 cubes which she builds to make a cuboid. Write the dimensions of cuboids that she could make. List all the possibilities. Always, sometimes, never	Arithmetic practice	

				<p>Is it always, sometimes or never true that, in a polyhedron, the number of vertices plus the number of faces equals the number of edges?</p> <p>NRICH Making Cuboids NRICH Cut Nets NRICH Shape Draw NRICH Quadrilaterals NRICH Where Are They? NRICH Always, Sometimes or Never? Shape</p>	
Position and Direction					
4	<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 <p>WALT identify coordinates in the first quadrant WALT read and plot points in four quadrants WALT solve problems with coordinates WALT translate a shape WALT reflect a shape</p>	<ul style="list-style-type: none"> The first Quadrant Read and plot points in four quadrants Solve problems with coordinates Translations Reflections 	Part-whole model, bar model	<p>Working backwards Two triangles have the following co-ordinates: Triangle A: (3, 5) (7, 5) (4, 7) Triangle B: (3, 1) (7, 1) (4, 3) Describe the translation of triangle A to B and then from B to A.</p>	Arithmetic practice
5	<p>Consolidation Revising identified areas of need</p>				Arithmetic practice
6	<p>SATs Week Assessments</p>				Arithmetic practice
7	<p>Investigating... Pentominoes</p>			<p>NRICH World of Tan 25 – Pentominoes NRICH Penta Play NRICH Penta Place</p>	Arithmetic practice
8	<p>Investigating... Tessellations</p>			<p>NRICH Tessellating Transformations NRICH Semi-regular Tessellations</p>	Arithmetic practice

Summer 2: What a Performance

Week	Unit	National Curriculum objectives Possible lesson objectives	White Rose Maths (WRM) 'small steps'	Models and images representing number Key vocabulary	Reasoning (in addition to WRM questions)	Fluency
1	Investigating... Probability					
		WALT understand the language of probability WALT describe probabilities using fractions, decimals and percentages	-	Probability scale <i>Probability, even chance, more/less likely certain, impossible</i>	NRICH What do you Know about Probability (2) NRICH The Hair Colour Game NRICH Strange Dice NRICH Journey to School	Arithmetic practice
2		WALT conduct simple probability experiments	-	Probability scale <i>Probability, even chance, more/less likely certain, impossible</i>	NRICH Interactive Spinners NRICH Which Spinners? NRICH Stop or Dare?	Arithmetic practice
3	Investigating... WRM Futures					
		<ul style="list-style-type: none"> Solve problems involving addition, subtraction, multiplication and division Solve problems involving the calculation of percentages and the use of percentages for comparison 	<ul style="list-style-type: none"> Exploring annual salaries – division + percentages Annual salary – division + percentages Exploring hourly rates –division, percentages, multiplication 	Cuisenaire, 100 square, Base-10, column layout Salary, gross pay, income tax, take-home pay, annual salary, deductions, shifts, hourly rate,		Arithmetic practice
4		<ul style="list-style-type: none"> Solve problems involving addition, subtraction, multiplication and division Solve problems involving the calculation of percentages and the use of percentages for comparison 	<ul style="list-style-type: none"> Budgeting for your bills- four operations Buying your dream home – ordering six-digit numbers, multiplicative reasoning, percentages and fractions 	Cuisenaire, 100 square, Base-10, column layout Take-home pay, expenditure, housing, deposits, mortgages, repayments		Arithmetic practice

5	Investigating... WRM Futures				
	<ul style="list-style-type: none"> • Recognise when it is possible to use formulae for area and volume of shapes • Associate a fraction with division and calculate decimal fraction equivalents 	<ul style="list-style-type: none"> • Decorating your dream home - area and Perimeter 	Cuisenaire, 100 square, Base-10, column layout		Arithmetic practice