YEAR 6

Children know how to:	Opportunities and ideas for journaling. "How do mathematicians.."	Problem Solving and reasoning opportunities	NCETM Spine and Assessment Materials
AUTUMN			
Number: Place Value (2 WEEKS)			Year 6 Spine 1
Numbers to ten million	White Rose Activity	NRICH	1.30: TP 1:1-1.8, 2.1-2.8, 3.1-3.6
Compare and order any number		Round the four dice	
Round any number	Negative Numbers	(for Rounding)	1.30: TP 2.9-2.10, 3.3
Negative numbers			
	How do mathematicians compare numbers?		1.30: TP 5.1-5.13
		I See Reasoning	
		Page 7-27	Yr6 NCETM assessment materials
			Page 9-11
Number: Addition, Subtraction, Multiplication and Division (4 WEEKS)			Year 6 Spine 1 Year 6 Spine 2
Add and subtract integers	How do mathematicians divide using factors?	NRICH	1.30: TP 4.1-4.8, 6.1-6.13
Multiply up to a 4-digit number by a 2-digit number		Explore the number patterns you make	
Short division		Moons of Vuvv	2.28: TP: 1.1-1.5, 2.1-2.5
Division using factors	How do mathematicians find squares and cubes?	Mystery Matrix	
Long division (1)		Factor lines	2.23: TP 1.1- 1.7, 2.1-2.8, 3.1-3.3, 4.1-4.13, 5.1-5.6,
Long division (2)		Factor-multiple chains	
Long division (3)	How do mathematicians know what order to use operations?	Round and Round the Circle	
Long division (4)		Counting Cogs	2.24: TP 1.1- 1.7, 2.1-2.9, 3.1-3.7
Common factors		Four go	
Common multiples			
Primes to 100		I See Reasoning	1.31: TP 1.1-1.4, 2.1-2.5, 3.1-3.7, 4.1-4.5, 5.1-5.7
Squares and cubes		Page 28-63	
Order of operations			
Mental calculations and estimation			Yr6 NCETM assessment materials
Reason from known facts			Page 12-17
Number: Fractions (4 WEEKS)			Year 6 Spine 3
Simplify fractions	White Rose Activity	NRICH	3.9: TP: 1.1- 1.12
Fractions on a number line		Rectangle tangle	3.9: TP: 2.1- 2.9, 3.1-3.8

Compare and order (denominator)	Add and subtract fractions activity (denominators are not multiples) How do mathematicians compare fractions? How do mathematicians find fractions of amounts? How do mathematicians divide fractions?	[Fraction Fascination](#) [I See Reasoning](#) Page 64-75	[Yr6 NCETM assessment materials](#) Page 18-22
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			
Geometry: Position and Direction (1 WEEK)			
The first quadrant	How do mathematicians use four quadrants? How do mathematicians translate/reflect?	NRICH [Coordinate Tan](#) [Ten hidden squares](#) [I See Reasoning](#) Page 132-137	[Yr6 NCETM assessment materials](#) P34-36
Four quadrants			
Translations			
Reflections			
SPRING			
Number: Decimals (2 WEEK)			[Year 6 Spine 2](#)
Three decimal places	How do mathematicians multiply by 10,100 and 1000? How do mathematicians divide by 10,100 and 1000?	[I See Reasoning](#) Page 13-17	2.29: TP 1.1- 1.6, 2.1-2.5 [Yr6 NCETM assessment materials](#) P18- 22
Multiply by 10, 100 and 1,000			
Divide by 10, 100, 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)			
Number: Percentages (2 WEEKs)			
Fractions to percentages	How do mathematicians convert between FDP?	NRICH [Doughnut percents](#) [Would you rather?](#) [I See Reasoning](#)	
Equivalent FDP			
Order FDP			
Percentage of an amount (1)			
Percentage of an amount (2)			

Percentages – missing values		Page 82-91	
Number: Algebra (2 WEEKS)			
Find a rule – one step	How do mathematicians use letters instead of numbers?	I See Reasoning Page 102,106	Yr6 NCETM assessment materials P26-29
Find a rule – two step			
Forming expressions		NRICH	
Substitution		Domino sets	
Formulae		Break it up	
Forming equations		Holes	
Solve simple one-step equations		Button-up some more	
Solve two-step equations		Plenty of pens	
Find pairs of values		Two and two	
Enumerate possibilities			
Measurement: Converting Units (1 WEEK)			
Metric measures	How do mathematicians use convert measures?	I See Reasoning Page 108-019	Yr6 NCETM assessment materials P30-33
Covert metric measures			
Calculate with metric measures			
Miles and kilometres			
Imperial measures			
Measurement: Perimeter, Area and Volume (2 WEEKS)			Year 6 Spine 2
Shapes – same area	How do mathematicians find the area of triangles? How do mathematicians find the volume of a cuboid?	NRICH Dicey perimeter, dicey area I See Reasoning Page 111-121	2.30: TP 3.1- 3.5, 4.1-4.5 2.30: TP 1.1- 1.7 2.30: TP 2.1-2.9 Yr6 NCETM assessment materials P30-33
Area and perimeter			
Area of a triangle (1)			
Area of a triangle (2)			
Area of a triangle (3)			
Area of a parallelogram			
Volume – counting cubes			
Volume of a cuboid			
Number: Ratio (2 WEEKS)			Year 6 Spine 2
Using ratio language	White Rose Activity Calculating Ratio How do mathematicians calculate ratio?	NRICH Orange drink Pumpkin Pie I See Reasoning Page 92-97	2.27 TP: 1.1-1.8, 2.1-2.5, 3.1- 3.6, 4.1-4.10 Yr6 NCETM assessment materials P23-25
Ratio and fractions			
Introducing the ratio symbol			
Calculating ratio			
Using scale factors			
Calculating scale factors			
Ratio and proportion problems			

SUMMER			
Geometry: Properties of Shape (2 WEEKS)	How do mathematicians measure with a protractor? How do mathematicians draw accurately? How do mathematicians create nets?	NRICH Shape draw Baravelle Making Spirals Cut nets Making cuboids Where are they? Round a hexagon Always, sometimes or never? Shape Quadrilaterals I See Reasoning 127-131	Yr6 NCETM assessment materials P34-36
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			
Statistics (2 WEEKS)			Year 6 Spine 2
Circles	White Rose Activity The Mean How do mathematicians read pie charts? How do mathematicians calculate the mean?	NRICH Match the matches Birdwatch I See Reasoning Page 137 -141	2.26 TP: 1.1-1.4, 2.1-2.8, 3.1-3.2, 4.1-4.2 Yr6 NCETM assessment materials P37-39
Read and interpret pie charts			
Pie charts with percentages			
Draw pie charts			
The mean			
Revision of gaps (3 WEEKS)			
Week 1			
Week 2			
Week 3			