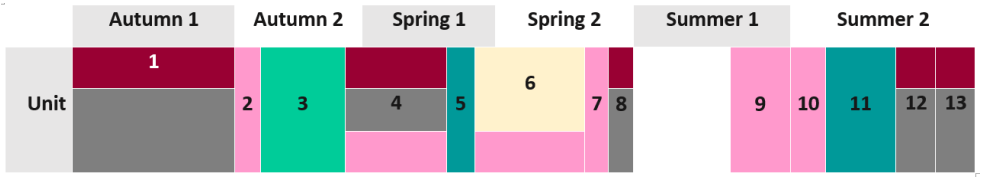
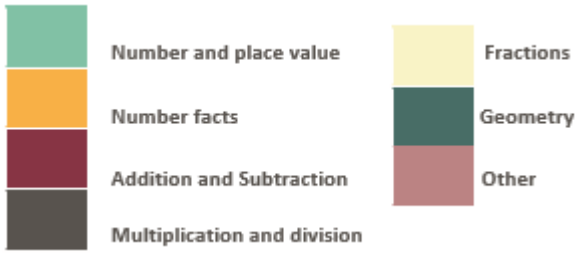
Year 5/6 Maths Curriculum – Year B





*please note that geometry and statistics units will be taught as a whole key stage

Unit	Year 5/6	NC Objectives
1	**NCETM Y6 Unit 1 - Calculating using knowledge of structures (1)** • 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 derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding. • 1.28 Common structures and the part–part–whole relationship • 1.29 Using equivalence and the compensation property to calculate	
2	**NCETM Y6 Unit 2 - Multiples of 1,000** • 1.26 Composition and calculation: multiples of 1,000 up to 1,000,000	**Number – Addition and Subtraction** • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) (NCY5 NCETM Y6) • add and subtract numbers mentally with increasingly large numbers (NCY5 NCETM Y6) • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy (NCY5 NCETM Y6) • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (NCY5 NCETM Y6) **Non Statutory Notes** NAS - Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency (see Mathematics Appendix 1). (NCY5 NCETM Y6) NAS - They practise mental calculations with increasingly large numbers to aid fluency (for example, 12 462 – 2300 = 10 162). (NCY5 NCETM Y6)
3	**NCETM Y6 Unit 3 - Numbers up to 10,000,000** • 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 non-standard partitioning. • 6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts. • 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.	**Number: Number and Place Value** • read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (NC Y5 Y6 NCETM Y6) • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (NCY5 NCETM Y6) • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 (NCY5 NCETM Y6) • solve number problems and practical problems that involve all of the above (NCY5 NCETM Y6) • Pupils identify the place value in large whole numbers. (NCY5 NCETM Y6) • round any whole number to a required degree of accuracy **Number – Addition and Subtraction, Multiplication and Division** • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) (NCY5 NCETM Y6) • add and subtract numbers mentally with increasingly large numbers (NCY5 NCETM Y6) • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy (NCY5 NCETM Y6)

	• 1.30 Composition and calculation: numbers up to 10,000,000	• solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (NCY5 NCETM Y6) • solve number and practical problems that involve all of the above • perform mental calculations, including with mixed operations and large 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 • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. **Non Statutory Notes** NPV - Pupils use the whole number system, including saying, reading and writing numbers accurately. NASMD - Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division (see Mathematics Appendix 1). NASDM - They undertake mental calculations with increasingly large numbers and more complex calculations. NASDM - Pupils round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures.
4	**NCETM Y6 Unit 5 - Multiplication and division** • **6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.** • 2.18 Using equivalence to calculate • 2.23 Multiplication strategies for larger numbers and long multiplication • 2.24 Division: dividing by two-digit divisors • 2.25 Using compensation to calculate	**Number – Addition and Subtraction, Multiplication and Division** • 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 remainders, fractions, or by rounding, as appropriate for the context • 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 • solve number and practical problems that involve all of the above • perform mental calculations, including with mixed operations and large numbers • 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. **Number - Fractions** • 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 **Non Statutory Notes** NF - Pupils connect equivalent fractions > 1 that simplify to integers with division and other fractions > 1 to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions. (NC Y5 NCETM Y6) NASMD - Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division (see Mathematics Appendix 1). NASDM - They undertake mental calculations with increasingly large numbers and more complex calculations. NASDM - Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.
5	**NCETM Y6 Unit 6 - Area, perimeter, position and direction** • 2.30 Multiplicative contexts: area and perimeter 2	**Geometry – Position and Direction** • 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. **Non Statutory Notes** GPD - Pupils draw and label a pair of axes in all four quadrants with equal scaling. This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers.

		GPD - Pupils draw and label rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes. These might be expressed algebraically for example, translating vertex (a, b) to (a – 2, b + 3); (a, b) and (a + d, b + d) being opposite vertices of a square of side d.
6	**NCETM Y6 Unit 7 - Fractions and percentages** • **6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.** • **6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.** • **6F–3 Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.** • **3.8 Common denomination: more adding and subtracting** • **3.9 Multiplying fractions and dividing fractions by a whole number** • **3.10 Linking fractions, decimals and percentages**	**Number – Fractions** ● add and subtract fractions with the same denominator and denominators that are multiples of the same number (NC Y4 NCETM Y6) ● 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 (NC Y5 NCETM Y6) ● solve problems which require knowing percentage and decimal equivalents of 1/2 , 1/4 , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25 (NC Y5 NCETM Y6) **Fractions** ● 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, 1/4 × 1/2 = 1/8] ● divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6] ● associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] ● recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. **Non Statutory Notes** NF - Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions. (NC Y5 NCETM Y6) NF - Pupils should make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is 100 1 , 50% is 100 50 , 25% is 100 25) and relate this to finding 'fractions of'. (NC Y5 NCETM Y6) MND - Common factors can be related to finding equivalent fractions NF - Pupils should practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator. They should start with fractions where the denominator of one fraction is a multiple of the other (for example, 1/2 + 1/8 = 5/8) and progress to varied and increasingly complex problems. NF - Pupils should use a variety of images to support their understanding of multiplication with fractions. This follows earlier work about fractions as operators (fractions of), as numbers, and as equal parts of objects, for example as parts of a rectangle. NF - They practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators.
7	**NCETM Y6 Unit 8 - Statistics** • **This topic is part of the National Curriculum but is not included in the DfE 2020 guidance or the NCETM Mastery PD Materials.**	**Statistics** ● interpret and construct pie charts and line graphs and use these to solve problems ● calculate and interpret the mean as an average. **Non Statutory Notes** S - Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts. S - Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects. S - They should connect conversion from kilometres to miles in measurement to its graphical representation. S - Pupils know when it is appropriate to find the mean of a data set
8	**NCETM Y6 Unit 9 - Ratio and proportion** • **6AS/MD–3 Solve problems involving ratio relationships.** • **2.27 Scale factors, ratio and proportional reasoning**	**Number – Multiplication and Division** ● MND - solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. (NC Y4 NCETM Y4, 5,6) **Ratio and Proportion** ● 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. **Non Statutory Notes** MND - Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children). (NC Y3 NCETM Y5,6) MND - Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children. (NC Y4 NCETM Y6) RP - Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes and recipes). RP - Pupils link percentages or 360° to calculating angles of pie charts. RP - Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation a:b to record their work. RP - Pupils solve problems involving unequal quantities, for example, 'for every egg you need three spoonfuls of flour', ' 3/5 of the class are boys'. These problems are the foundation for later formal approaches to ratio and proportion
9	**NCETM Y6 Unit 12 - Order of operations** • 2.22 Combining multiplication with addition and subtraction • 2.28 Combining division with addition and subtraction	**Number – Multiplication and Division** • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign (NC Y5 NCETM Y6) • use their knowledge of the order of operations to carry out calculations involving the four operations **Non Statutory Notes** NASMD - Pupils explore the order of operations using brackets; for example, 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9.
10	**NCETM Y6 Unit 13 - Mean average** • 2.26 Mean average and equal shares	**Statistics** • calculate and interpret the mean as an average. **Non Statutory Notes** S - Pupils know when it is appropriate to find the mean of a data set
11	**NCETM Y6 Unit 4 - Draw, compose and decompose shapes** • 6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.	**Geometry – Properties of Shape** • 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. **Non Statutory Notes** Pupils draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles. Pupils describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements. These relationships might be expressed algebraically for example, d = 2 × r; a = 180 – (b + c).
12	**NCETM Y6 Unit 10 - Calculating using knowledge of structures (2)** • 6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding. • 1.29 Using equivalence and the compensation property to calculate	**Number – Multiplication and Division** • Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example, 13 + 24 = 12 + 25; 33 = 5 x ?). (NC Y5 NCETM Y6) **Non Statutory Notes**
13	**NCETM Y6 Unit 11 - Solving problems with two unknowns**	**Algebra**

	• **6AS/MD–4 Solve problems with 2 unknowns.** • **1.31 Problems with two unknowns**	• 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. **Non Statutory Notes** A - Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as: - missing numbers, lengths, coordinates and angles -formulae in mathematics and science -equivalent expressions (for example, a + b = b + a) -generalisations of number patterns -number puzzles (for example, what two numbers can add up to)

NASMD	**Number, Addition, Subtraction, Multiplication and Division**
NPV	**Number and Place Value**
NAS	**Number, Addition and Subtraction**
NMD	**Number, Multiplication and Division**
G	**Geometry**
GPD	**Geometry, Position and Direction**
GPS	**Geometry, Properties of Shape**
M	**Measurement**

Dark grey references are ready-to-progress criteria from the DfE Guidance 2020

Light grey references are from the NCETM Primary Mastery Professional Development materials

Both are available online

	1	2	3	4	5	6	7	8	9	10	11	12 A	13
Autumn	**Unit 1 (NCETM Y6)**						**Unit 2 (NCETM Y6)**		**Unit 3 (NCETM Y6)**				Unit 4 (NCETM Y6 Unit 5)
	Calculating using knowledge of structures (1)						Multiples of 1,000		Numbers up to 10,000,000				Multiplication and division

Arithmetic		**Weekly Arithmetic Practice Application and Skills – Daily Arithmetic Practice**							
Spring	**Unit 4** (NCETM Y6 Unit 5) Multiplication and division		**Unit 5 (NCETM Y6)** Area, perimeter, position and direction	**Unit 6 (NCETM Y6)** Fractions and percentages			**Unit 7 (NCETM Y6)** Statistics	**Unit 8 (NCETM Y6)** Ratio and proportion	
Arithmetic	**Weekly Arithmetic Practice Application and Skills – Daily Arithmetic Practice**								
Summer	**evision for KS2 SATS (including content from Cycle A and light touch converting units of measure and angles)**	**SATS**	**Unit 9 (NCETM Y6 Unit 12)** Order of operations and algebra	**Unit 10 (NCETM Y6 Unit 13)** Mean average	**Unit 11 (NCETM Y6 Unit 4)** Draw, compose and decompose shapes	**Unit 12 (NCETM Y6 Unit 10)** Calculating using knowledge of structures (2)	**Unit 13 (NCETM Y6 Unit 11)** Solving problems with two unknowns		
Arithmetic	**Weekly Arithmetic Practice Application and Skills – Daily Arithmetic Practice**								

[Ready to progress Criteria Year 5 and Year 6 with examples and assessment questions - page 208 onwards]

Year 5 and 6 Assessments:

Assess all throughout Summer Term and formatively assess during the year at following points:

RTP - Mixed Age Year 5 / 6 Year B	**Last Taught in**	**Assess End of Cycle**
• 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).	unit 2	1
• 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 non-standard partitioning.	unit 3	1
• 6NPV–3 Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.	unit 3	1
• 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.	unit 3	1
• 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).	unit 1	1
• 6AS/MD–2 Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.	unit 12	3
• 6AS/MD–3 Solve problems involving ratio relationships.	unit 8	2

● 6AS/MD–4 Solve problems with 2 unknowns.	unit 13	3
● 6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.	unit 6	2
● 6F–2 Express fractions in a common denomination and use this to compare fractions that are similar in value.	unit 6	2
● 6F–3 Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.	unit 6	2
● 6G–1 Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.	unit 11	3
Foundational Fluency Year 5 and Year 6		
1. Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number.	**Year 4 FFF (Consolidate)**	**1,2,3**
2. Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.	**unit 5**	**2**
3. Use additive facts to find bonds within 1 and 0.1	**unit 1**	**1**
4. Multiply and divide whole numbers and decimals by 10, 100, 1000	**unit 1**	**1**
5. Calculate using formal written methods, incl decimals	**Year 3 /4 and unit 3**	**2**
6. Calculate using decimals, fractions, percentages	**unit 7**	**2**
7. Recall decimal fraction equivalents for 1/2, 1/4, 1/5 and 1/10, and for multiples of these proper fractions.	**unit 8**	**2**