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|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| C1 | Unit 1 | | | | Unit 10 | Unit 2  [Multiples of 1,000](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-2-multiples-of-1-000/) | Unit 3  [Numbers up to 10,000,000](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-3-numbers-up-to-10-000-000/) | | Unit 5 | | | | Consolidation and formative assessment |
|  | [Calculating using knowledge of structures (1)](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-1-calculating-using-knowledge-of-structures-1-1-1/) | | | | [Calculating using knowledge of structures (2)](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-10-calculating-using-knowledge-of-structures-2-1-1-1-1/) |  |  | | [Multiplication and division](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-5-multiplication-and-division/) | | | |  |
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|  |  | | Unit 12 - [Order of operations](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-12-order-of-operations/) | | | |  | Unit 11 - [Solving problems with two unknown](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-11-solving-problems-with-two-unknowns/)s | | | | |  |
| FF | Foundational Fluency Sessions | | | | | | | | | | | | |
| C2 | Unit 6  [Area, perimeter, position and direction](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-6-area-perimeter-position-and-direction/) (including missing coordinates) | | Unit 7 | | | | | | Year 5  Unit 10 | Unit 4  [Draw, compose and decompose shapes](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-4-draw-compose-and-decompose-shapes-1-1-1-1-1-1-1-1-1/) (including circles) | | Unit 8  [Statistics](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-8-statistics/) | |
|  |  | | [Fractions and percentages](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-7-fractions-and-percentages/) | | | | | | [Angles](https://www.ncetm.org.uk/classroom-resources/cp-year-5-unit-10-angles/) |  | |  | |
|  | Recap: Year 5 Unit 3 - Negative Numbers | | |  | | | | | | Unit 13 - [Mean average](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-13-mean-average/) | | | |
| FF | Foundational Fluency Sessions | | | | | | | | | | | | |
| C3 | Unit 9 | | Revision and Consolidation | | SATS | Unit 11 | Unit 12  [Order of operations](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-12-order-of-operations/) | Unit 13  [Mean average](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-13-mean-average/) | \*Unit 14\*  Further Application in real life contexts  Bespoke inputs  Further Investigations  Becoming Year 7 Ready | | | | |
|  | [Ratio and proportion](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-9-ratio-and-proportion/) | |  | |  | [Solving problems with two unknown](https://www.ncetm.org.uk/classroom-resources/cp-year-6-unit-11-solving-problems-with-two-unknowns/)s |  |  |  | | | | |
| FF | Foundational Fluency Sessions | | | | | | | | | | | | |

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| Unit | Year 6 | NC Objectives which feature in unit |
|  | 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 | Algebra   * use simple formulae * express missing number problems algebraically   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) |
| 1 |
| 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](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf#page=46) [Appendix 1](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf#page=46)). (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 | 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. * 1.30 Composition and calculation: numbers up to 10,000,000 | 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) * 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](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf#page=46)).  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 | 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. (Including circles) | 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). |
|  | 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](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMARY_national_curriculum_-_Mathematics_220714.pdf#page=46)).  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. |
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| 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. |
| 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 5CETM 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. |
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| 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 |
|  | 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 |
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| 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) |
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| 11 | Solving problems with two unknowns   * 6AS/MD–4 Solve problems with 2 unknowns. * 1.31 Problems with two unknowns   NB: Taught ongoing throughout year through FF | Algebra   * 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) |
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| 12 | Order of operations   * 2.22 Combining multiplication with addition and subtraction * 2.28 Combining division with addition and subtraction * NB: Taught ongoing throughout year through FF | 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. |
| 13 | Mean average  • 2.26 Mean average and equal shares  NB: Taught ongoing throughout year through FF | 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 |
| Year 5  Unit 10 | \*Revisit/Consolidate/Apply\*  Angles  • 5G–1 Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size. | Geometry – Properties of shape   * identify acute and obtuse angles and compare and order angles up to two right angles by size (NC Y4 NCETM Y5) * identify 3-D shapes, including cubes and other cuboids, from 2-D representations * know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles * draw given angles, and measure them in degrees (o )   Identify:   * angles at a point and one whole turn (total 360o ) * angles at a point on a straight line and 1/2 a turn (total 180o ) * other multiples of 90o * use the properties of rectangles to deduce related facts and find missing lengths and angles   Non Statutory Notes  GPS - Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles.GPS - Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools.  GPS - Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems. |

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