|  |  |  |  |
| --- | --- | --- | --- |
| Subject: Mathematics Year 7 Curriculum Map 2024-2025 | | | |
| Terms | **Topics covered** and **core knowledge and skills** | Links to careers | Links to the Knowledge organiser and other additional resources |
| Half term 1 | **NP1 – Place Value and the Number Line**   |  | | --- | | writing integers and decimals in expanded form and in words | | ordering positive integers and decimals, placing on a number line | | ordering positive and negative numbers, placing on a number line, symmetry of the number line about 0 | | multiplying/dividing by positive and negative powers of 10 | | rounding 'to the nearest', d.p. and s.f. | | common metric converions | | finding the midpoint of two numbers | | the median of discrete data | | working in different bases (e.g. binary) |   **NP2: Addition and Subtraction**   |  | | --- | | strategies for addition and subtraction of positive integers and decimals, including counting up/down in different intervals (incl. decimals) | | complement of a decimal (able to find 1-p, given p) | | inverting addition and subtraction, additive inverse, additive identity; | | using the commutative and associative laws to help calculation | | extending additive number sense to unknowns, working with equality | | zero pairs | | finding the perimeter of a polygon | | basic angle facts (straight line, round a point, vertically opposite, in a triangle) | | mean & range of a dataset | | applications & problems, including money problems and using different bases, continuing linear sequences | | Decimals:  <https://www.youtube.com/watch?v=X0Gl72XKiyI>  Place Value:  <https://www.youtube.com/watch?v=q_3x2svPzkM>  Positive and Negative Numbers:  <https://www.youtube.com/watch?v=pbP2bdpT27w>  Perimeter:  <https://www.youtube.com/watch?v=YEw90aDVh-U>  Angles:  <https://www.youtube.com/watch?v=S-Xx22DaOvE>  Averages:  <https://www.youtube.com/watch?v=SALCargi1_0> | <https://classroom.thenational.academy/subjects-by-key-stage/key-stage-3/subjects/maths>  <https://www.bbc.co.uk/bitesize/subjects/zqhs34j>  <https://vle.mathswatch.co.uk/vle/>  <https://family.eedi.com/login> |
| Half term 2 | **Continue NP2: Addition and Subtraction**  **NP3: Multiplication and Division**   |  | | --- | | multiplication tables to 12x12 | | mental and written strategies for multiplication of positive integers and decimals, formal and informal techniques, commutativity, associativity and distributivity | | multiples and LCM (by systematic listing) | | division of positive integers and decimals, writing division as a fraction, formal and informal techniques, incl. distributivity; divisibility rules | | inverse operations, multiplicative inverse creating the multiplicative identity, non-commutativity and non-associativity of division | | extending multiplicative and additive number sense to unknowns | | factors and HCF (by systematic listing), coprime numbers | | multiplicative reasoning: getting from one number to another by multiplying | | rectilinear area | | volume of cubes and cuboids | | applications and problems, including money problems; simple proportion problems; different bases; method selection (which operation) for worded problems | | Multiples:  <https://www.youtube.com/watch?v=xyOCgnixiaE>  Fractions:  <https://www.youtube.com/watch?v=3pccvFEWO0k>  Operations:  <https://www.youtube.com/watch?v=xm0ZgEImZZA>  Area:  <https://www.youtube.com/watch?v=D8RJUooe9CI> |  |
| Half term 3 | **NP4: Powers, Roots and Primes**   |  | | --- | | Squares to 15^2 and cubes to 10^3 by heart | | Calculating powers, evaluating numerical expressions with powers, understanding index form | | Roots as inverses of powers | | addition and subtraction rules with positive indices | | Prime numbers, product of primes, using the primes as building blocks (Fundamental Theorem of Arithmetic), applying the prime factorisation to find the factors of (large) numbers; intro to HCF with primes |   **NP5: Order of Operations**   |  | | --- | | Commutativity and fluency in calculation | | Order of operations with the four operations | | Order of operations including exponents | | Breaking the order of operations with brackets | | writing numerical expressions using the order of operations; practice with integers and decimals | | Powers & Roots:  <https://www.youtube.com/watch?v=I95Nw1Pwl7c>  Operations:  <https://www.youtube.com/watch?v=xm0ZgEImZZA> |  |
| Half term 4 | **NP6: Directed Numbers**   |  | | --- | | negative numbers in context (temperature, finance) and on a number line (vertical and horizontal) | | ordering positive and negative numbers, using symbols, placing on a number line | | addition of directed numbers | | subtraction of directed numbers (as addition of additive inverse); symmetry of subtraction (a-b=n, b-a=-n) | | multiplication and division with negative numbers | | powers of negative numbers | | order of operations with negatives | | applications (contextual) and problems |   **A1: Introduction to Algebraic Thinking**   |  | | --- | | Generalising number to algebra, concept of an 'unknown variable' | | Simplifying simple additive linear expressions with no more than three variables | | Solving simple 'unknown value' problems, using a range of symbols, including blank boxes and letters | | Substituting numbers for variables presented as a range of symbols, including blank boxes and letters | | Positive and Negative Numbers:  <https://www.youtube.com/watch?v=pbP2bdpT27w>  Algebra:  <https://www.youtube.com/watch?v=c4xwvFtsrMU> |  |
| Half term 5 | **NP7: Fractions**   |  | | --- | | concept of a fraction, multiple visual representations - shading shapes, bar models, placing on a number line | | proper and improper fractions, | | equivalent fractions, simplifying fractions, comparing the size of fractions through common denominator or common numerator | | complement of a fraction (able to find 1-p, given p) | | adding and subtracting fractions, including proper, improper and mixed | | fraction of an amount by a bar model, expressing one number as a fraction of another, find original amount if you know a fraction of it | | multiplying and dividing fractions, fraction of an amount (incl. fractions of fractions) with link to multiplying; increasing and decreasing by a fraction by multiplying | | multiplication of a number by its reciprocal gives 1 (revisit of NP3.5 more formally) | | order of operations with fractions | | problems: worded fraction problems; | | Binary fractions |   **NP8: Percentages, Fractions and Decimals**   |  | | --- | | equivalence of FDP, techniques to convert, ordering FDP | | recurring and terminating decimals | | multiple representations of % - shading shapes, bars | | % of an amount; percentages greater than 100% | | percentage of an amount with decimal multipliers | | expressing one number as a % of another | | percentage increase and decrease (finding the % and adding/subtracting), fraction increase and decrease | | the effect of multiplying by numbers between 0 and 1 compared with numbers greater than 1 | | applications and problems, including interpreting pie charts and simple interest | | Fractions:  <https://www.youtube.com/watch?v=3pccvFEWO0k>  Percentages:  <https://www.youtube.com/watch?v=7EB0H1bhGTo>  Decimals:  <https://www.youtube.com/watch?v=X0Gl72XKiyI> |  |
| Half term 6 | **NP9: Estimation & Use of the Calculator**   |  | | --- | | Using the calculator effectively | | timetables - with and without the time button on the calculator. Solving problems with time accurately and by estimating. Converting units of time with/without calculator | | approximating the position of numbers on a number line, approximate metric/imperial conversions (with a calculator) | | approximating powers and roots | | error intervals for rounded numbers, including representing on a number line | | estimating the answer to calculations | | related calculations | | truncation and error intervals |   **A2: Manipulating and Simplifying Expressions 1**   |  | | --- | | Algebraic notation - ab for a\*b, 3y for y+y+y and 3\*y, a^4 for a\*a\*a\*a, a^2b for a\*a\*b, a/b for division, coefficients as fractions not decimals, where brackets can be implied | | collecting like terms | | simplifying indices and coefficients when multiplying and dividing, multiplication rule for indices (power of a power) | | writing algebraic expressions | | Estimation:  <https://www.youtube.com/watch?v=meOjLJF9F7U>  Time:  <https://www.youtube.com/watch?v=54YzxploVy4>  Algebra:  <https://www.youtube.com/watch?v=c4xwvFtsrMU> |  |