| SUBJECT: Number CURRICULUM PROGRESSION PATHWAYS |  |  |  |  |  |  |  |
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| Year 7 | Year 8 | Year 9 | KS4 Foundation pathway | KS4 Higher pathway | KS5 (Level 3) A-level Mathematics/Core Mathematics | Further Education and training | Careers |
| Approximation, estimation and rounding <br> - Round money to the nearest pound or penny <br> - Write decimals in order of size <br> - Round decimals to the nearest integer and 1 DP <br> - Round decimas to make estimations <br> - Round to multiples of ten | Approximation, estimation and rounding <br> - Round to more than 1 DP <br> - Round to a given number of significant figures <br> - Round to an appropriate degree of accuracy | Approximation, estimation and rounding <br> - Find upper and lower bounds of a measurement and calculate error intervals | Approximation, estimation and rounding <br> - Use inequality notation to specify simple error intervals and truncated intervals | Approximation, estimation and rounding <br> - Find upper and lower bounds and use inequality notation to specify simple error intervals and truncated intervals <br> - Calculate upper and lower bounds | Modeling and Estimation <br> - Standard form <br> - Use estimation techniques to solve real world problems(Core Maths) <br> - Use rounded and unrounded values in calculations to maintain accuracy | - Natural Sciences <br> - Business and Finance <br> - Psychology <br> - Banking <br> - Accountancy | - Actuarial Science <br> - Aeronautical <br> Engineering  <br> - Chemical <br> Engineering  <br> - $\quad$ Civil Engineering  <br> - Economics <br> -  <br> C Engineering  <br> - Engineering <br> (General)  <br> - Mathematics  |
| Roots and powers <br> - Use a calculator or mental calculation to find squares and square roots <br> - Use index form for powers and use in the property of operations | Roots and powers <br> - Calculate using squares, square roots, cubes and cube roots <br> - Give integers that a square root lies between <br> - Use priority of operations to calculate with powers, root and brackets and check answers on calculators | Roots and powers <br> - Calculate combinations of indices, root, fractions and brackets including [-1] and estimate these answers <br> - Use index laws to simplify numerical expressions <br> - Understand negative and zero indices <br> - Use powers of tens and their prefixes both positive and negative | Roots and powers | Roots and powers <br> - Recognize powers of $2,3,4$ and 5 <br> - Understand surd notation on a calculator <br> - Multiply and divide in standard form <br> - Add and subtract in standard form <br> - Use fractional indices <br> - Understand laws of surds and apply these to simplify and rationalise surds where the denominator is just a single surd <br> - Expand brackets with surds and | Roots and powers <br> - Use indices and percentages with compound interest and finance (Core Maths) <br> - Use laws of indices with positive, negative and fractional powers, rationalising surds (A-level) <br> Number properties <br> - Understand different types of numbers: natural, rational, complex, integers, |  | Mechanical <br> Engineering <br> - Physics <br> - Statistics <br> - Council and city planning <br> - Microbiology <br> - Astronomy |

Core knowledge and skills mapped across the curriculum

| Number properties <br> - Order directed numbers <br> - Find all factor pairs of an integer <br> - Identify common factors <br> - Find the HCF and LCM using listing strategies <br> - Recognise prime and square numbers <br> Fractions <br> - Use fraction notation to describe parts of a shape <br> - Compare and order fractions with the same denominator using pictorial and non pictorial representations | Number properties <br> - Write a number as a product of its prime factors including index form <br> - Use prime factor decomposition to find HCF and LCM <br> Fractions <br> - Order and compare fractions with different denominators <br> - Adding and subtracting fractions with different denominators <br> - Multiply integers and fractions by a fraction <br> - Divide both integers and fractions by fractions | - Write large and small numbers in standard form <br> - Order numbers in standard form <br> - Enter and read numbers in standard form from a calculator <br> Number properties <br> - Use inequality symbols with numbers | Number properties <br> - Recognize powers of 2,3,4 and 5 <br> - Understand surd notation on a calculator <br> - Multiply and divide in standard form <br> - Add and subtract in standard form <br> Fractions <br> - Divide a fraction by a whole number | rationalise where the conjugate is needed <br> Number properties <br> - Understand the difference between rational and irrational numbers | consecutive(Alevel) <br> - Work with finite and infinite number sequences (Alevel) <br> Fractions Decimals Percentages, Calculations <br> - Use scientific and graphical calculators effectively <br> - Calculate with personal finance data: budgeting, income tax, national insurance, debt management, VAT, mortgage, exchange rates, investments and inflation (Core Maths) |
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Core knowledge and skills mapped across the curriculum

- Convert improper fractions to a mixed number
- Identify equivalent fractions
- Simplify fractions
- Add and subtract fractions with common denominators that lead to simplification
- Find fractions of an amount
- Write one quantity as a fraction of another


## Decimals

- Add and subtract decimals of any magnitude
- Multiply and divide decimals by a single digit integer
- Divide numbers that give decimal answers
- Convert between fractions, decimals and percentages
- Find the reciprocal of a number
- Convert mixed numbers to improper
- Apply all four operations to mixed numbers
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## Decimals

- Multiply and divide decimals by integers with more than one digit
- Multiply and divide decimals by other decimals up to 2 DP
- Order decimals of any size, including positive and negative
- Multiply and divide by negative powers of 10
- Recognise recurring and terminating decimals
- Order fractions by converting to decimals or equivalent fractions
- Change time to decimal hours
- Convert recurring fractions


Core knowledge and skills mapped across the curriculum


