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| Subject: Mathematics Year 11 Curriculum Map 2022-2023 | | | |
| Terms | **Topics covered** and **core knowledge and skills** | Links to careers | Links to the Knowledge organiser and other additional resources |
| Half term 1 | Non Calculator Methods:  Apply the four basic operators to fractions and decimals  Simplify surds  Apply the four basic operators to surds  Define error intervals with upper and lower bound  Calculate income, expenditure and and profit/loss calculations  Types of Number and Sequences:  Describe and continue sequences  Recognise and use sequences of triangular, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences and simple geometric progressions {**Higher – including surds**}  Calculate the nth term of a linear and quadratic sequence  Indices and Roots:  Recognise and use sequences of square and cube numbers  **Higher - Estimate powers and roots of any given positive number**  Calculate with roots, integer and fractional indices  Calculate with numbers in standard form  Simplify expressions involving sums, products and powers, including the laws on indices | Types of Number and Sequences:  <https://www.youtube.com/watch?v=iLoKfB9hFLA>  <https://www.youtube.com/watch?v=7Vf6BJwdy_0>  Indices and Roots:  <https://www.youtube.com/watch?v=I95Nw1Pwl7c> | This link would take you to the KO on our website  <https://teachers.thenational.academy/subjects/maths/key-stages/key-stage-4>  <https://www.bbc.co.uk/bitesize/subjects/z38pycw>  <https://vle.mathswatch.co.uk/vle/> |
| Half term 2 | Manipulating Expressions:  Simplify and manipulate algebraic expressions (including those involving surds and {**Higher - algebraic fractions**})  Distinguish between an equation and an identity  Use algebra to construct proofs  Gradients and Lines:  Plot and interpret graphs  Interpret the gradient of a straight line graph as a rate of change  Use the form y=mx+c to identify parallel {**Higher - and perpendicular**} lines  Find the equation of a line when given a gradient and point(s)  Find approximate solutions to two simultaneous equations {**Higher – including linear/quadratic**} from a graph  Non-linear Graphs:  Recognise, sketch and interpret graphs of linear, quadratic, cubic, reciprocal {**Higher – and exponential**} functions  Plot and interpret graphs, including reciprocal graphs {**Higher - and exponential graphs**}  Find approximate solutions using a graph  Identify and interpret roots and intercepts of quadratic functions graphically  Recognise and use the equation of a circle with centre at the origin  Using Graphs  Plot and interpret graphs of non-standard functions in real contexts  **Higher - Interpret the gradient at a point on a curve as the instantaneous rate of change**  **Higher - Apply the concepts of instantaneous and average rate of change in a variety of contexts**  **Higher - Calculate or estimate gradients of graphs and areas under graphs**  **Higher - Interpret gradients and area under graphs for distance-time graphs, velocity-time graphs and graphs in financial contexts** | Manipulating Expressions:  <https://www.youtube.com/watch?v=c4xwvFtsrMU>  Graphs, Gradients and Lines:  <https://www.youtube.com/watch?v=JcEHR6O5E6Q> |  |