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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 decimalsSimplify surdsApply the four basic operators to surdsDefine error intervals with upper and lower boundCalculate income, expenditure and and profit/loss calculationsTypes of Number and Sequences:Describe and continue sequencesRecognise 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 sequenceIndices 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 indicesCalculate with numbers in standard formSimplify 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 identityUse algebra to construct proofsGradients and Lines:Plot and interpret graphsInterpret the gradient of a straight line graph as a rate of changeUse the form y=mx+c to identify parallel {**Higher - and perpendicular**} linesFind 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 graphNon-linear Graphs:Recognise, sketch and interpret graphs of linear, quadratic, cubic, reciprocal {**Higher – and exponential**} functionsPlot and interpret graphs, including reciprocal graphs {**Higher - and exponential graphs**}Find approximate solutions using a graphIdentify and interpret roots and intercepts of quadratic functions graphicallyRecognise and use the equation of a circle with centre at the originUsing GraphsPlot 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> |  |