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| Subject: Mathematics Year 11 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 | Gradients 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** | Graphs, Gradients and Lines:<https://www.youtube.com/watch?v=JcEHR6O5E6Q> | <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/><https://corbettmaths.com/contents/> |
| Half term 2 | Expanding and FactorisingKnow the difference between an equation and an identity, argue mathematically to show algebraic expressions are equivalent ad use algebra to support and construct arguments and **proofs** Simplify and manipulate algebraic expressions by : factorising quadratic expressions of the form x2+bx+c, including difference of two squares; **factorising quadratic expressions of the form ax2+bx+c** Know the difference between an equation and an identity; solve quadratic equations **including those that require rearrangement** algebraically by factorising **by completing the square and by using the quadratic formula** Identify and interpret roots; deduce roots algebraically **and turning points by completing the square** Solve two simultaneous equations in two variables (linear/linear **or linear/quadratic**) algebraically; find approximate solutions using a graph Changing the SubjectSolve linear inequalities in one variable Know the difference between an equation and an identity; argue mathematically to show algebraic expressions are equivalent and use algebra to support and construct arguments **and proofs** Translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations) solve the equations (s) and interpret the solution **Find approximate solutions to equations numerically using iteration**  FunctionsWhere appropriate, interpret simple expressions as functions with inputs and outputs; **interpret the reverse process as the ‘inverse function’; interpret the succession of two functions as a ‘composite function’** Solve two simultaneous equations in two variables (linear/linear **linear/quadratic** algebraically; find approximate solutions using a graph Identify and interpret roots; deduce roots algebraically **and turning points by completing the square** Solve linear inequalities in one **or two** variable**(s)** **and quadratic inequalities in one variable** represent the solution set on a number line,  **using set notation and on a graph** Recognise, sketch and interpret graphs of quadratic functions Apply Pythagoras’ Theorem and trigonometric ratios to find angles and lengths in right-angled triangles **and, where possible, general triangles** in two  **and three** dimensional figures  | Algebra:<https://www.youtube.com/watch?v=c4xwvFtsrMU>Quadratic Equations: <https://www.youtube.com/watch?v=QAmbU12zs8c> |  |