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| **What will we be learning?**  **Algebra:** Introduction to quadratics & rearranging formulae, Linear & quadratic equations & their graphs | **Why this? Why now?**    Students simplify and manipulate algebraic expressions by expanding or factorising linear expressions and quadratic expressions of the form x² + bx + c, including the difference of two squares.  Students should recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function y = 1/x with x ≠ 0, {the exponential function y = k to the x power for positive values of k,  Students can use the form y = mx + c to identify parallel {and perpendicular} lines; find the equation of the line through two given points, or through one point with a given gradient. | **Key Words:**  Binomials, Brackets  Expand  Factorise  Simplify  Sum  Product  Formulae  Linear  Quadratic  Reciprocal  Exponential    Equation  Approximate  Interpret  Sketch  Gradient  Parallel  Perpendicular  Distance  Speed  Acceleration |
| **What will we learn?**  • Simplify and manipulate algebraic expressions by:  o expanding products of two binomials  o factorising quadratic expressions of the form x2 +bx+c including the difference of two squares  o simplifying expressions involving sums, products and powers, including the laws of indices  • Understand and use standard mathematical formulae  • Rearrange formulae to change the subject  • Solve linear equations in one unknown algebraically including those with the unknown on both sides of the equation  • Find approximate solutions using a graph  • Solve quadratic equations algebraically by factorising  • Find approximate solutions using a graph  • Translate simple situations or procedures into algebraic expressions or formulae; derive an equation and the solve the equation and interpret the solution  • Use the form y=mx+c to identify parallel lines and perpendicular lines  • Find the equation of the line through two given points, or through one point with a given gradient  • Identify and interpret gradients and intercepts of linear functions graphically and algebraically  • Recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions and the reciprocal function  • Plot and interpret graphs (including reciprocal graphs and exponential graphs) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematics problems involving distance, speed and acceleration | |
| **What opportunities are there for wider study?**  **Dr Frost Maths** is the primary resource that we use for homestudies and it has lots of useful revision tools. Alongside this, you can search for a specific topic and you can either practise some questions online, or watch a video. Under the resources section, there is also a “Full Coverage” document for some topics that have a huge bank of exam questions on the topic in question.  <https://www.drfrostmaths.com/course.php?sid=-10>  **Corbett Maths** - video links, practice questions and textbook exercises with answers available. <https://corbettmaths.com/contents/>  **MathsGenie** - videos and exam questions along with worked solutions. <https://www.mathsgenie.co.uk/advance-information.html>  **Careers:** Engineering, Physicist | |
| **How will I be assessed?**  Half Term Assessment  Homestudy tasks  Quality of classwork | |