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| **What will we be learning?**  ***Algebra:***  Further quadratics, rearranging formulae and identities  Algebraic fractions  Equation of a circle  Further equations and graphs | **Why this? Why now?**  These topics build on the algebra manipulation skills covered previously and extends in order to be able to solve more challenging quadratic equations.  All of these skills are then revisited and extended in the A level Mathematics syllabus. | **Key Words:**  Solve  Solutions  Quadratic  Difference of two squares  Sum  Product  Indices  Rearrange  Equation  Identity  Proof  Function  Inverse  Composite  Origin  Tangent  Roots  Turning point |
| **What will we learn?**   * Expand two or more brackets * Factorise quadratics including where there is a coefficient of x2 greater than 1 * Rearrange formulae * Distinguish between equations and identities * Use algebra to construct arguments and proofs * Interpret simple expressions as functions with inputs and outputs * Interpret the reverse process as the ‘inverse function’ * Interpret the succession of two functions as the ‘composite function’ * Simplify and manipulate algebraic expressions involving algebraic fractions * Recognise and use the equation of a circle with centre at the origin * Find the equation of a tangent to a circle at a given point * Solve linear equations in one unknown algebraically including those with the unknown on both sides * Solve quadratic equations by factorising, completing the square and the quadratic equation * Find approximate solutions using a graph * Recognise, sketch and interpret graphs of linear and quadratic functions * Identify and interpret roots, intercepts and turning points of quadratic functions graphically and algebraically * Translate simple situations or procedures into algebraic expressions or formulae in order to derive an equation that can be solved and interpreted | |
| **What opportunities are there for wider study?**  Solving quadratics is used to plot the position of projectiles  Parabolas in the real world: <https://www.youtube.com/watch?v=He42k1xRpbQ>  Use completing the square to derive the quadratic formula: <https://nrich.maths.org/1394> | |
| **How will I be assessed?**  Condensed calculator GCSE paper  Homestudy tasks – split between written exam questions and Dr Frost retrieval practice tasks  Quality of classwork | |