Algebra

Grade	I can….
9	Use function notation to find composite functions such as fg(x) Prove statements algebraically Factorise a cubic expression Write a quadratic in the form $a(x + b)^2 + c$ Write a formula to represent its functions based on its transformations Find the equation of a tangent to a circle at a given point Find approximate solutions to equations using iteration
8	Write a formula based on indirect proportional relationships Write a quadratic in the form $(x + b)^2 + c$ Use and calculate gradients and intercepts of graphs Transform a graph using af(x) and f(ax) Recognise and use the equation of a circle with its centre at the origin Solve a quadratic equation using the quadratic formula Solve a quadratic equation by completing the square Find the region of a graph satisfied by two or more inequalities Solve equations involving algebraic fractions Solve simultaneous equations which include a quadratic
7	Simplify expressions using a combination of the laws of indices Write a formula based on direct proportional relationships Simplify algebraic fractions by factorising and cancelling common factors Apply the four arithmetic rules to algebraic fractions Factorise a quadratic expression with a non-unit coefficient of x^2 into two brackets Transform a graph using f(x) + a, f(x + a), -f(x) and f(-x) Identify graphs of different functions Solve a quadratic equation by factorising or using the graph Change the subject of a formula involving powers and fractions
6	Simplify algebraic fractions Use negative and fractional laws of indices Factorise a quadratic expression with a unit coefficient of x^2 into two brackets Write a quadratic expression as the difference of two squares Plot and recognise graphs of quadratic, cubic and reciprocal functions Solve inequalities Change the subject of formula where a term appears twice Solve a pair of linear simultaneous equations using algebra
5	Expand and simplify two brackets with a non-unit coefficient of x Use simple laws of indices Write and use the nth term of any quadratic sequence Calculate the gradient and length between any two points Substitute fractions, decimals and negative values into formulae Solve simultaneous equations where there is a common term Solve linear inequalities and represent on a number line
4	Expand and simplify two brackets with unit coefficients of x Use the nth term of a quadratic sequence Write the nth term of a simple quadratic sequence Plot and understand features of linear graphs written in different forms Use set notations when working with intervals Solve simultaneous equations using a graph
3	Expand and simplify expressions with negative numbers Factorise an expression with common factors Write and use the nth term for an arithmetic sequence Substitute positive and negative values into expressions involving x^2 and x^3 Solve linear equations with the unknown on both sides Use trial and improvement to solve an equation Plot and understand features of graphs in the form $y = mx + c$
2	Collect like terms in an expression Expand a single bracket Write an expression to match a description Find and identify the HCF and LCM Identify arithmetic progression as a times table with adjustment Substitute positive values into linear expressions and formulae Plot coordinates involving negative numbers Plot and understand simple lines Solve a simple two step linear equation
1	Collect simple like terms like a + a + a Describe the difference between expressions and equations Identify common factors between numbers Identify common multiples between numbers Describe more challenging number patterns in words Plot positive coordinates
E3	Find and recognise factors and multiples in different numbers Begin to understand the rols of the "=" sign when 'balancing' equations Recognise a wider range of number patterns insluding sequences of multiples of 2, 5 and 10
E2	Find and recognise multiples of different numbers Spot sequences of numbers, including odds and evens Begin to write some number sentences using, +, - and = Solve problems in time
E1	Read, write and order numbers up to 10. Recognise what is one more and one less Use halving as way of "undoing" doubling and vice-versa Tell the time