

Mathematics: Algebra Grade Ladder

Year 7	Year 8	Year 9	IGCSE: Year 10 and 11
		9A*	9A*/8A*
		<ul style="list-style-type: none"> ● Use rules of indices for negative and fractional values to simplify expressions. ● Find formulae that approximately connect data. ● Solve simultaneous equations in two variables graphically where one equation is linear and the other is quadratic. ● Solve problems using intersections and gradients of graphs 	<ul style="list-style-type: none"> ● Expand expressions with three brackets and manipulate algebraic fractions. ● Find the nth term of geometric sequences. ● Use differentiation to find minima and maxima in simple situations. ● Find composite and inverse functions.
	9A*	8A*	8A/7A
	<ul style="list-style-type: none"> ● Formulate and solve linear equations. ● Use algebraic methods to solve simultaneous equations in two variables. ● Change the subject of a formulae where the subject appears in one term only. ● Work with algebraic expressions and use the rules of indices for integer values. ● Remove and insert brackets 	<ul style="list-style-type: none"> ● Formulate, use and solve linear equations. ● Use algebraic methods to solve simultaneous equations in two variables. ● Change the subject of a formula where the subject appears in one term only. ● Use the rules of indices for integral values. ● Remove and insert brackets when working with algebraic 	<ul style="list-style-type: none"> ● Use rules of indices for negative and fractional values. ● Find formulae that approximately connect data and express general laws in symbolic form. ● Solve simultaneous equations in two variables graphically where one equation is linear and the other is quadratic. ● Solve problems using intersections and gradients of

	<p>when working with algebraic expressions, formulae and equations.</p> <ul style="list-style-type: none"> Find the nth term in a sequence when the rule is quadratic. Sketch and interpret graphs of functions, including functions that model real situations. 	<p>expressions, formulae and equations.</p> <ul style="list-style-type: none"> Find the nth term rule in a sequence where the rule is quadratic. Sketch and interpret graphs of functions, including functions that model real situations. 	<p>graphs.</p> <ul style="list-style-type: none"> Find the nth term of quadratic sequences. Use function notation.
9A*	8A*	8A/7A	6B/5B
<ul style="list-style-type: none"> Solve linear equations with whole number coefficients algebraically and graphically. Solve simple inequalities and represent the solution using a number line such as $-2 \leq x < 3$. Remove brackets from and simplify when working with simple algebraic expressions, equations and formulae. Use 'trial and improvement' methods to solve simple polynomial equations. 	<ul style="list-style-type: none"> Solve linear equations with whole number coefficients algebraically and graphically. Express a function symbolically. Use graphical methods to solve simultaneous equations in two unknowns. Solve linear inequalities and represent the solution using a number line. Remove brackets when working with simple algebraic expressions, equations and formulae. Use 'trial and improvement' methods to solve simple polynomial equations. 	<ul style="list-style-type: none"> Solve linear equations with whole number coefficients algebraically and graphically. Use graphical methods to solve simultaneous equations in two unknowns. Solve simple inequalities and represent the solution using a number line. Remove brackets when working with simple algebraic expressions, equations and formulae. Use 'trial and improvement' methods to solve simple polynomial equations. 	<ul style="list-style-type: none"> Formulate, use and solve linear equations. Solve simultaneous equations in two variables. Change the subject of a formulae where the subject appears in one term only. Use the rules of indices for integer values. Remove and insert brackets when working with algebraic expressions, formulae and equations. Find the nth term of a linear sequence involving fractions. Sketch and interpret graphs of functions, including functions that model real situations.
8A*	8A/7A	6B/5B	5C/4C
<ul style="list-style-type: none"> Find the nth term of a sequence 	<ul style="list-style-type: none"> Find the nth term of a sequence 	<ul style="list-style-type: none"> Find the nth term of a sequence 	<ul style="list-style-type: none"> Solve linear equations with

<p>where the rule is linear.</p> <ul style="list-style-type: none"> • Use index notation to express powers of whole numbers and understand and use the term square root. • Interpret graphs from real situations. • Use basic conventions, simplification and substitution with expressions, formulae and linear equations. • Construct and use simple formulae and formulate and solve linear equations expressed in symbolic form with whole number coefficients. 	<p>where the rule is linear.</p> <ul style="list-style-type: none"> • Use index notation to express powers of whole numbers and evaluate square roots • Represent and use simple functions and interpret graphs from real situations. • Use basic conventions, simplification and substitution with expressions, formulae and linear equations. • Construct and use simple formulae and formulate and solve linear equations. 	<p>where the rule is linear.</p> <ul style="list-style-type: none"> • Use index notation to express powers of whole numbers and understand and use the term square root. • Use simple functions and interpret graphs from real situations. • Use basic conventions, simplification and substitution with expressions, formulae and linear equations. • Construct and use simple formulae and solve linear equations with whole number coefficients. 	<p>whole number coefficients algebraically and graphically.</p> <ul style="list-style-type: none"> • Express a function symbolically. • Use graphical methods to solve simultaneous equations in two unknowns. • Solve simple inequalities and represent the solution using a number line. • Remove brackets when working with simple algebraic expressions, equations and formulae. • Find the gradient and y-intercept of lines.
8A/7A	6B/5B	5C/4C	3D
<ul style="list-style-type: none"> • Use terms such as square, cube and prime. • Use a letter to stand for an unknown number. • Generate a sequence and determine possible rules for generating sequences. 	<ul style="list-style-type: none"> • Use terms such as square, cube and prime. • Use a letter to stand for an unknown number. • Generate a sequence and determine possible rules for generating sequences. 	<ul style="list-style-type: none"> • Use terms such as square, cube and prime. • Use a letter to stand for an unknown number. • Follow sets of instructions to generate a sequence and determine possible rules for generating sequences. 	<ul style="list-style-type: none"> • Find the nth term of a sequence where the rule is linear. • Use index notation to express powers of whole numbers and understand and find square roots. • Represent and use simple functions and interpret graphs from real situations. • Use basic conventions, simplification and substitution with expressions, formulae and linear equations.

			<ul style="list-style-type: none"> Construct and use simple formulae and formulate and solve linear equations with whole number coefficients.
6B/5B	5C/4C	3D	3E/2E
<ul style="list-style-type: none"> Predict patterns and sequences of whole numbers, such as doubling and halving numbers. Can state what is meant by a multiple and factor. Use simple rules expressed in words. 	<ul style="list-style-type: none"> Predict patterns and sequences of whole numbers, such as doubling and halving numbers. Use number properties, such as multiple and factor. Use simple rules expressed in words. 	<ul style="list-style-type: none"> Predict patterns and sequences of whole numbers, such as doubling and halving numbers. Use number properties, such as multiple and factor. Use simple rules expressed in words. 	<ul style="list-style-type: none"> Use number properties such as square, cube and prime. Use a letter to stand for an unknown number. Follow sets of instructions to generate a sequence and determine possible rules for generating sequences.
5C/4C	3D	3E/2E	2F/1F
<ul style="list-style-type: none"> Predict number patterns within 100, including those in the 2, 5 and 10 times tables. Use function machines with one operation. 	<ul style="list-style-type: none"> Predict number patterns within 100, including those in the 2, 5 and 10 times tables. Use function machines with one operation. 	<ul style="list-style-type: none"> Predict number patterns within 100, including those in the 2, 5 and 10 times tables. Use function machines with one operation. 	<ul style="list-style-type: none"> Predict patterns and sequences of whole numbers, such as doubling and halving numbers. Use number properties, such as multiple and factor. Use simple rules expressed in words.
3D	3E/2E		1G
<ul style="list-style-type: none"> Use addition and subtraction patterns up to 10 and use these patterns to understand the relationship between addition and subtraction. 	<ul style="list-style-type: none"> Use addition and subtraction patterns up to 10 and use these patterns to understand the relationship between addition and subtraction. 		<ul style="list-style-type: none"> Predict number patterns up to 100, including those in the 2, 5 and 10 times tables. Use function machines with one operation.

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<ul style="list-style-type: none">• Copy, continue and devise repeating patterns using real objects or pictures.		Learners lack the basic foundations in order to calculate and solve problems involving algebra.