

Year 9 Higher Unit Two Knowledge Organiser - Algebra – The Basics, Expanding and Factorising, Equations and Sequences

Algebra: The Basics		
1	Algebraic notation	The use of letters to represent unknown values.
2	Variable	A letter or symbol for a number we don't know.
3	Expression	A mathematical 'sentence' with at least two variables and an operation.
4	Identity	An equation that is always true, no matter what values are substituted. \equiv
5	Equation	A statement with an equals sign, stating that two expressions are equal in value.
6	Formula	Is a fact or rule that connects two or more quantities.
7	Term	Is a single number or variable, or the product of several numbers or variables.
8	Like Term	Terms that have the same letter to the same power.
9	Simplify	Group and combine like terms.
10	Index Number/ Indices/ Power	A figure that represents the number of times a number is multiplied by itself.
11	Cancelling	To reduce a fraction by dividing.
12	Substitute	Replace a variable with a known value.
13	Evaluate	Find the value.
14	Coefficient	A number used to multiply a variable.
15	Unknown	A number we do not know.
16	\neq	Not equal to.
Expanding and Factorising Single Brackets		
1	Expand	Removing brackets by multiplication.
2	Factor	A number/ term that divides into another number without leaving a remainder.
3	Factorise	Remove the highest common factor from two or more terms.
4	Linear expression	An expression where the highest power of x is 1.
5	Quadratic expression	An expression where the highest power of x is 2.
6	DOTS	Difference of two squares.
7	Equivalent	Equal in value.
8	Product	Multiply.
9	Binomial	Two term algebraic expression.

Setting Up, Rearranging and Solving Equations			
1	Derive	To set up an equation.	
2	Subject of a formula	The letter on its own one side of the equal's sign.	
3	Rearrange	To change the subject of a formula.	
4	Solve	To find the value of the unknown in an equation.	
5	Balance	To do the same to both sides of an equation.	
6	Proof	Logical mathematical arguments used to show the truth of a mathematical statement.	
7	Iteration	The repeated application of a process where the output of each step is used as the input in the next step.	
Sequences			
1	Arithmetic Sequence	When terms in a sequence have a common difference.	
2	Common Difference	The value you add or subtract between two consecutive terms in an arithmetic sequence.	
3	Geometric Sequence	When terms in a sequence have a common ratio.	
4	Common Ratio	The multiplier between two consecutive terms geometric sequence.	
5	Common Sequences	Square numbers	1, 4, 9, 16, 25, 36, 49, 64, 81
		Cube numbers	1, 8, 27, 64, 125, 216, 343
		Triangular numbers	1, 3, 6, 10, 15, 21, 28, 36
		Fibonacci sequence	1, 1, 2, 3, 5, 8, 13, 21, 34
6	Fibonacci Sequence	The results of adding the previous two terms to generate the next term.	1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89
7	Consecutive terms	Two terms immediately next to each other in a sequence.	
8	Term to term rule	Describes how you get from a term to its consecutive term.	
9	Nth term rule	A formula that enables you to find any number in a sequence.	
10	Generate	To calculate terms in a sequence.	
11	Ascending order	Arrange numbers from smallest to largest.	
12	Descending order	Arrange numbers from largest to smallest.	

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13	Quadratic sequence	A sequence where the first difference between terms is not equal, but the second difference is equal.
14	First difference	The difference between the terms of a sequence.
15	Second difference	The difference between the values in the first difference.