

Year 8 Unit 2 Knowledge Organiser – Powers and Roots, Order of Operations, Simplifying and Manipulating Algebra

Powers and Roots			
1	Index Number/ Indices/ Power	A figure that represents the number of times a number is multiplied by itself.	
2	Index Notation	Represents repeated multiplications of the same number.	
3	Square Number	The result of multiplying a number by itself. It will always be positive.	1, 4, 9, 16, 25, 36, 49, 64, 81, 100
4	Square Root	The opposite of squaring a number to find the original factor.	$\sqrt{\quad}$
5	Cube Number	The result of multiplying a number by itself, then by itself again.	1, 8, 27, 64, 125, 216, 343, 512, 729, 1000
6	Cube Root	The opposite of cubing a number to find the original factor.	$\sqrt[3]{\quad}$
7	Reciprocal	1 divided by the number.	
8	Prime	A whole number, that only has two factors, 1 and itself.	2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97
9	Prime Factor	A factor that is a prime number.	
10	Prime Factor Decomposition	To write a number as a list of prime numbers multiplied together. (Product of prime factors.)	
11	Factor	A number that divides into another number without leaving a remainder.	
12	Area	The space inside a shape.	
13	Volume	The amount of space inside a 3D shape.	
14	Pythagorean triples	Three positive integers where $a^2 + b^2 = c^2$ .	
Order of Operations			
1	BIDMAS	The order in which to complete a calculation.	B -Brackets I –Indices D –Division M – Multiplication A –Addition S – Subtraction
2	Addition	Finding the total, or sum, by combining two or more numbers.	
3	Subtraction	Taking on number away from another.	

4	Multiplication	Times numbers together.	
5	Division	The result of sharing fairly.	
6	Operation	A mathematical process. E.g. +, -, ×, ÷	
7	Substitute	Replace a variable with a known value.	
Algebraic Terminology			
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	Term	Is a single number or variable, or the product of several numbers or variables.	
4	Like terms	Terms that have the same letter to the same power.	
5	Unknown	A number we do not know.	
6	Expression	A mathematical 'sentence' with at least two variables and an operation.	
7	Coefficient	A number used to multiply a variable.	
8	Equation	A statement with an equals sign, stating that two expressions are equal in value.	
9	Formula	Is a fact or rule that connects two or more quantities.	
10	Identity	An equation that is always true no matter what values are substituted.	$\equiv$
11	Simplify	Group and combine like terms.	
12	Cancelling	To reduce a fraction by dividing.	
13	Equivalent	Equal in value.	
Expanding and Factorising			
1	Factor	A number/ term that divides into another number without leaving a remainder.	
2	Factorise	Remove the highest common factor from two or more terms.	
3	Expand	Removing brackets by multiplication.	
4	Linear expression	An expression where the highest power of x is 1.	
5	Equivalent	Equal in value.	
6	Product	Multiply.	
7	Binomial	Two term algebraic expression.	