Knowledge Rich Curriculum Plan

Year 10 Foundation – Algebra 1

Lesson	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to success:	Feedback
To learn how to simplify algebraic expressions.	• Students will know how to collect like terms. • Students will know how to simplify expressions involving the multiplication of different mixtures of letters/numbers. • Students will know how to simplify algebraic expressions involving multiplication with the same letters, where the index laws need to be applied.	**Algebraic Expression** – A collection of numbers and letters **Simplify** – make something simpler or easier to use **Co-efficient** – a number placed before and multiplying the letter in an algebraic expression	• Students need to be able to simplify numerical expressions using the index laws for multiplication.	**Steps to Success – Collecting like terms:** **Step 1:** Identify the like terms within the expression. You need to allocate a shape/colour to each set of terms, making sure to include the sign in front of the term. **Step 2:** Add or subtract each set of like terms. **Step 3:** Write the simplified expression.	
To learn how to simplify algebraic expressions.	• Students will know how to simplify expressions involving the division of different mixtures of letters/numbers. • Students will know how to simplify algebraic expressions involving division with the same letters, where the index laws need to be applied. • Students will know how to simplify algebraic expressions where the index law for brackets is required. **Opportunity for challenge:** • Students will know how to simplify multi-step algebraic expressions using the index laws.		• Students need to be able to simplify numerical expressions using the index laws for division and brackets.	**Steps to Success- Simplifying expressions involving multiplication:** **Step 1:** Multiply the coefficients of each term. **Step 2:** Multiply the letters of each term using index laws when appropriate. **Steps to Success - Simplifying expressions involving division:** **Step 1:** Divide the coefficients of each term. **Step 2:** Divide the letters of each term using index laws when appropriate.	
To learn how to expand single brackets.	• Students will know how to expand single brackets by multiplying a single integer term over a bracket. E.g. $2(x + 3)$ • Students will know how to expand single brackets by multiplying an algebraic term over a bracket. E.g. $x(x - 4)$ • Students will know how to expand single brackets by multiplying multiple terms over a bracket. e.g. $2a(4a + 5)$ or $2ab(3a + b)$ • Students will know how to expand multiple single brackets involving index laws and then collect the like terms. E.g. $2(x + 3) + 5(2x - 4)$ **Opportunity for challenge:** • Students will know how to expand multiple single brackets involving index laws and then collect the like terms. E.g. $x(x + 3) + x(2x + 4)$	**Expand** – multiply out	• Students need to know how to multiply algebraic expressions. • Students need to know how to collect like terms.	**Steps to Success – Expanding single brackets** **Step 1:** Multiply the term on the outside of the bracket with the first term that is inside the bracket. Remember if there are indices involved that when we multiply, we add them. **Step 2:** Multiply the term on the outside of the bracket with the second term that is inside the bracket. **Steps to Success – Expanding and simplifying two single brackets** **Step 1** – Expand one bracket at a time. Start with bracket 1 - multiply the expression within the brackets by the term outside the bracket. **Step 2** – Expand bracket 2 - multiply the expression within the brackets by the term outside the bracket. **Step 3** – Simplify the expression by collecting like terms.	
To learn how to expand double brackets.	• Students will know how to expand double brackets and simplify answers by collecting like terms. E.g. $(x + 3)(x - 4)$	**Quadratic** – an expression where the highest power of the variable is 2	• Students need to know how to collect like terms. • Students need to know how to expand single brackets.	**Steps to Success – Expanding double brackets** **Step 1:** Multiply all terms in the second bracket by the first term in the first bracket and write these terms down. **Step 2:** Multiply all terms in the second bracket by the second term in the first bracket and write these down. You should now have four terms written down. **Step 3:** Collect like terms and write your answer, ensuring that you take care with the signs!	
To learn how to form algebraic expressions.	• Students will know how to form expressions representing a worded situation. • Students will know how to form expressions to represent area and perimeter.	**Perimeter** – the distance around the outside of a 2D shape **Area** – the amount of space inside a 2D shape	• Students need to know how to calculate the perimeter and area of simple shapes.	**Steps to Success – Forming algebraic expressions** **Step 1:** Read the question carefully. **Step 2:** Highlight any keywords. **Step 3:** Determine whether you are going to add, subtract, multiply or divide the algebraic terms. **Step 4:** Write out the algebraic expression.	

Lesson	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to success:	Feedback
To learn how to factorise expressions into a single bracket.	• Students will know how to factorise algebraic expressions into single brackets using a numerical highest common factor. • Students will know how to factorise algebraic expressions into single brackets using an algebraic highest common factor. • Students will know how to factorise algebraic expressions into single brackets using a mixture of numerical and algebraic highest common factors.	Factorise – put into brackets by bringing common factors outside Highest Common Factor – the largest number that both numbers can be divided by	• Students need to know how to find the HCF of two numbers.	**Steps to Success – Factorising expression into a single bracket** **Step 1:** Identify the highest common factor of the terms and write it in front of brackets. **Step 2:** Figure out what you multiply the HCF with to get the first term of the expression given in the question. This will be the first term that you place inside the bracket. **Step 3:** Figure out what you multiply the HCF with to get the second term of the expression given in the question. This will be the second term that you place inside the bracket.	
To learn how to substitute into formulae.	• Students will know how to substitute positive and negative integers into formulae. • Students will know how to substitute positive and negative numbers into worded formulae.	Substitution - replacing letters with numbers in algebraic expressions or equations	• Students need to able to use BIDMAS.	**Steps to Success - Substitution** **Step 1:** Write the **expression** out with the calculation symbols in all of the correct places. **Step 2: Substitute** the values for each letter into the correct place in the calculation. **Step 3:** Calculate the answer remembering to follow **BIDMAS.**	
			Exam Preparation 7		