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**Knowledge Rich Curriculum Plan**

Year 11 Foundation – Algebra 1



| **Lesson/Learning Sequence** | **Intended Knowledge:**  *Students will know that…* | **Tiered Vocabulary** | **Prior Knowledge:**  *In order to know this students, need to already know that…* | **Assessment** |
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| **To learn how to expand single brackets** | * Students will know how to expand single brackets by multiplying a single term over a bracket. * Students will know how to expand multiple single brackets and simplify the answer by collecting 'like terms'. | **Expand –** in maths, expand means multiply out | * Students will need to know how to multiply algebraic expressions * Students will need to know how to collect like terms * Students will need to know how to calculate with negative numbers |  |
| **To learn how to expand double brackets** | * Students will know how to expand double brackets and simplify answers by collecting 'like terms'. |  | * Students will need to know how to expand single brackets * Students will need to know how to calculate with negative numbers |  |
| **To learn how to factorise expressions into a single bracket** | * Students will know how to factorise algebraic expressions into single brackets | **Factorise –** put back into brackets by bringing common factors outside  **Highest Common Factor** – the largest number that both or all of the numbers can be divided by | * Students need to know how to find the HCF of two numbers |  |
| **To learn how to factorise quadratics into double brackets** | * Students will know how to factorise quadratics in the form ax2 + bx + c where b and c are either positive or negative and a = 1 * Students will know how to factorise the difference of two squares where the coefficient of x2 is 1 | **Quadratic –** involving a squared algebraic term but no other power higher than 2 | * Students need to know how to expand double brackets * Students need to know how to calculate with negative numbers |  |
| **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. * Students will know how to substitute positive and negative numbers into kinematics formulae. | **Substitution**: the action of replacing someone or something with another person or thing. In algebra “substitution" means putting numbers where the letters are in an algebraic expression | * Students need to be able to calculate with negative numbers * Students need to able to use BIDMAS |  |
| **To learn how to solve linear equations** | * Students will know how to solve simple two step linear equations with one unknown using the balancing method e.g. 2x+3 =15. * Students will be able to solve linear equations involving fractions and brackets. | **Solve –** find an answer  **Equation –** A mathematical statement that two amounts, or groups of symbols representing an amount, are equal:  Example  3x - 3 = 15  **Linear Equation –** an equation between two variables that can be written in the form y=mx+c. Linear equations give a straight line when plotted on a graph. | * Students should already know how to solve one-step equations * Students will need to know how to expand single brackets |  |
| **To learn how to solve linear equations with unknowns on both sides** | * Students will know how to solve linear equations with unknowns on both sides. |  | * Students will need to know how to solve two step linear equations with one unknown e.g. 2x+3 =15. * Students will be able to solve linear equations involving brackets. |  |
| **To learn how to form and solve linear equations** | * Students will know how to set up and solve equations for a word problem. * Students will know how to solve shape problems by forming equations |  | * Students will need to know how to solve linear equations * Students should know how to form expressions. * Students will need to know how to calculate perimeter and area |  |
| **To learn how to interpret inequalities and represent them on number lines** | * Students will know that an inequality is a symbol >, ≤, <, ≥ that can be used to compare two values. * Students will know how to use the inequality symbols correctly * Students will know that > means greater than, ≤ means less than or equal to, < means less than and ≥ means greater than or equal to * Students will know how to list integers that satisfy an inequality e.g. -2< x <3. * Students will know how to represent inequalities on number lines. * Students will know how to write linear inequalities to represent a set shown on a number line. | **Integer –** whole number  **Inequality –** a symbol which makes a non-equal comparison between two numbers or other mathematical expressions e.g. >, <, > and <  **Satisfies –** meet the expectations, needs, or desires of | * Students should be able to use the four operations with positive and negative integers. |  |
| **To learn how to solve linear inequalities** | * Students will know the solution set is the set of values that satisfy a given set of equations or inequalities. * Students will know how to solve simple linear inequalities in one variable, and represent the solution set on a number line. * Students will solve an inequality such as –3 < 2x + 1 <7 and show the solution set on a number line. * Students will know how to solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both. | **Solve –** find an answer | * Students will know how to list integers that satisfy inequality e.g. -2< x <3. * Students will know how to represent inequalities on number lines. * Students will know how to construct inequalities to represent a set shown on a number line. * Students know how to solve one and two step equations. |  |
| **To learn how to rearrange formulae** | * Students will know how to rearrange simple formulae to change the subject. * Students will know how to rearrange kinematic formulae. * Students will know that rearrange means change the position of. * Students will know how to change the subject of a more complicated formula involving powers and roots. * Students will know that Kinematics concerns the motion of objects, | **Rearrange –** change the position of.  **Formula –** A mathematical relationship or rule expressed in symbols. Example A=πr2 | * Students should have the ability to use negative numbers with the four operations and recall and use hierarchy of operations and understand inverse operations * Students should know how to expand brackets. |  |