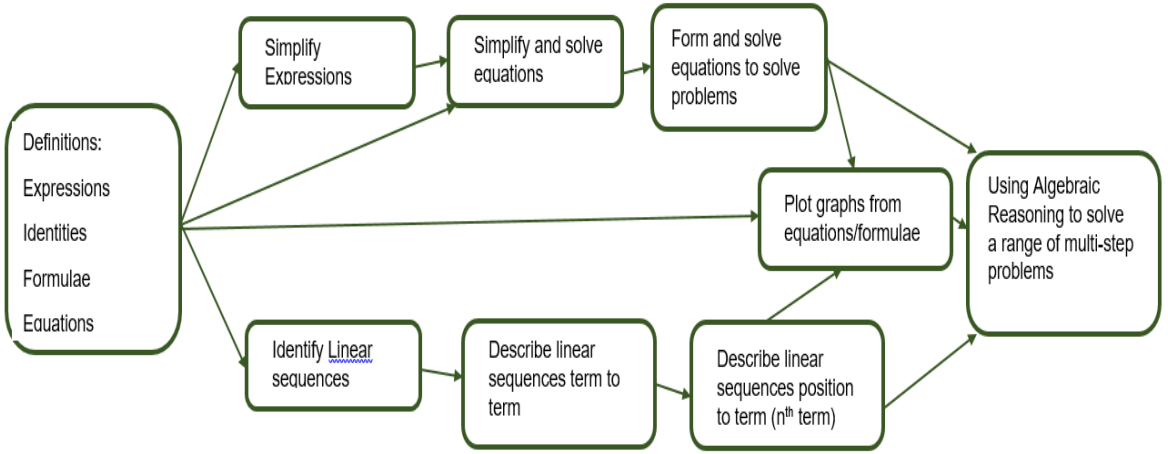
MATHS – YEAR 8 – Unit 8 Describing with Algebra

1. Tier 3 Vocabulary	
Expression	one or a group of terms and may include variables, constants, operators and grouping symbols.
Formula	A rule or fact written with mathematical symbols. It usually has: • an equals sign (=) • two or more variables (x, y, etc)
Equation	An **equation** is a statement with an equals sign, stating that two expressions are equal in value, for example
Identity	An **identity** is an equation which is always true, no matter what values are substituted
Variable	A symbol for a number we don't know yet. It is usually a letter like x or y.
Sequence	A list of numbers or patterns connected by a rule
Solve	To find a value (or values) we can put in place of a variable that makes the equation true.

2. Numerical Reasoning – Prime Numbers	
=	Equal to: Exactly the same amount or value.
≠	Not Equal to: One value is not equal to another
≈	Approximately Equal to:
≡	Equivalent to/Identical to
>	Greater than
<	Less than
≥	Greater than or equal to
≤	Less than or equal to

3. Knowledge Structure



MATHS – YEAR 8 – Unit 8 Describing with Algebra

4. History

The word algebra comes from the Arabic) الجبرal-jabr lit. "the restoring of broken parts") from the title of the book ʿIlm al-jabr wa l-muqābala "The Science of Restoring and Balancing" by the Persian mathematician and astronomer al-Khwarizmi. In his work, the term al-jabr referred to the operation of moving a term from one side of an equation to the other, المقابلةal-muqābala "balancing" referred to adding equal terms to both sides. Shortened to just algeber or algebra in Latin, the word eventually entered the English language during the fifteenth century, from either Spanish, Italian, or Medieval Latin. It originally referred to the surgical procedure of setting broken or dislocated bones. The mathematical meaning was first recorded in the sixteenth century.

Ancient Babylon and Egypt are the two places that were at the centre of the development of algebra. Both of these civilizations used algebra in different ways and for different reasons, but it's generally accepted that it was the Babylonians who first made basic use of algebra and pioneered its beginnings in the field of mathematics. There is evidence of this that dates back as far as 1900 to 1600 BC. The tablet known as the Plimpton 322 tablet displays Pythagorean triples and other forms of mathematics.

5. Key Ideas

Algebra	Algebra is the part of maths where letters and other general symbols are used to represent quantities and values in expressions, formulae and equations.
Uses of Algebra	Algebra is used extensively in engineering and construction planning to ensure that buildings, bridges, airplanes, and more are built safely and correctly. In the financial sector, algebra is used in predicting risks and in assessing economic impacts.
Graphs	A graph is just a diagram that shows the relationship between variable quantities, typically of two variables, each measured along one of a pair of axes at right angles.

6. Geometrical Reasoning - Perimeter

Linear Sequence	A number pattern which increases (or decreases) by the same amount each time is called a linear sequence.
Common Difference	The increase or decrease from one term to another in a linear sequence.
Term	In a linear sequence each number in the list is called a term. The first number is the first term, the 5th number in the list is the 5th term.
Term to Term Rule (recursive)	A term to term rule allows you to find the next number in the sequence if you know the previous term (or terms.)
Position to term rule (explicit)	A position to term rule allows you to find the value of any term in the sequence. Often referred to as finding the n^{th} term.