INTRODUCTION TO ALGEBRA

Algebra is the kind of mathematics in which symbols (usually letters) represent unknown numbers in mathematical expressions and equations. For example: $x + 2 = 5$. In English, it could be said as "what number plus two is equal to five?" You can obviously see that x stands for a number that we do not know.

Algebraic Expressions and Equations

A mathematical expression that has a letter or symbol representing a number is an *algebraic expression*. For example: $3 + x$ is an algebraic expression as it has the letter *x* representing an unknown number.

An algebraic equation is an algebraic expression that is equated to a number, another algebraic expression or to a mathematical expression. For example: $3 + x = 5$, is an algebraic equation as it has the equals sign (=) which equates or compares '3 + x' and '5.'

Types of Algebraic Expressions and Equations

Some types of algebraic expression are:

1. Linear Expressions and Equations: a linear expression or equation is the kind of algebraic expression or equation that has its variables to have a power of one. For example: $3x$, $3x + 4$, $4b + 2a$, etc.
2. Quadratic Expressions and Equations: a quadratic expression or equation is the kind of algebraic expression or equation that has at least one of its variables to have a power of two, while others may have the power or one. For example: $3x^2$, $3x^2 + 4$, $3x^2 + 4b$, $4b^2 + 4c^2$, $3x^2 = 0$, etc.
3. Cubic Expressions and Equations: a cubic algebraic expression or equation is an algebraic expression or equation that has at least one of its variables to have a power of 3, whilst others may have the powers of 2 or 1, but not 4 or above. For example: $2x^3$, $2x^3 + 5$, $4x^3 + 2b^2 - 4$; $2x^3 - 47 = 0$, etc.

Like Terms and Unlike Terms

Like terms usually have same letter or rather variable. For example, $3x + 4b + 5x + 2b$, $3x$ and $5x$ have the same variable that is the same letter 'x.' The concept between like terms is the grouping of item that are alike.

Unlike terms are do not possess the same variable or letter. For example: $4b$ and $3x$ are unlike terms as they have different variables.

Operations in mathematics that involves unlike or like terms are normal operations of which the unknown is group together. For example, Rofiyat has 2 pencils ($2p$) and 4 books ($4b$) while Hassan has 3 pencils ($3p$) and 2 books ($2b$). You see that pencils are like terms and pencils and books are unlike terms.

Note. In the expression, $3x$. 3 is the *coefficient* while x is the *variable*.