Chapter- 11

Algebraic Expressions

An Algebraic Expression is the combination of constant and variables. We use the operations like addition, subtraction etc to form an algebraic expression.

Variable

A variable does not have a fixed value .it can be varied. It is represented by letters like a, y, p m etc.

Constant

A constant has a fixed value. Any number without a variable is a constant.

Example

1. 2x + 7

Here we got this expression by multiplying 2 and x and then add 7 to it.

In the above expression, the variable is x and the constant is 7.

2. y^2

We get it by multiplying the variable y to itself.

Terms of an Expression

Terms

To form an expression we use constant and variables and separate them using the operations like addition, subtraction etc. these parts of expressions which we separate using operations are called **Terms**.

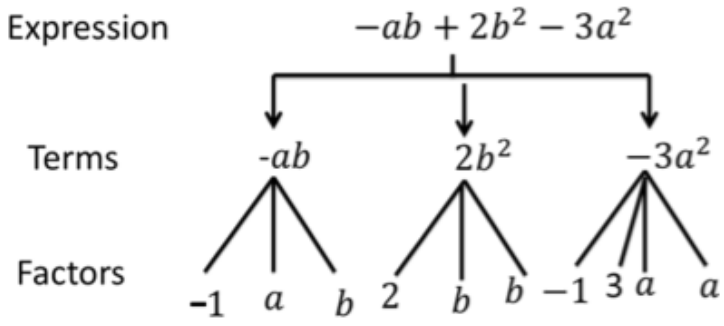
$4x - y + 7$

In the above expression, there are three terms, 4x, - y and 7.

Factors of a Term

Every term is the product of its factors. As in the above expression, the term 4x is the product of 4 and x. So 4 and x are the factors of that term.

We can understand it by using a tree diagram.



Coefficients

As you can see above that some of the factors are numerical and some are algebraic i.e. contains variable. The numerical factor of the term is called the numerical coefficient of the term.

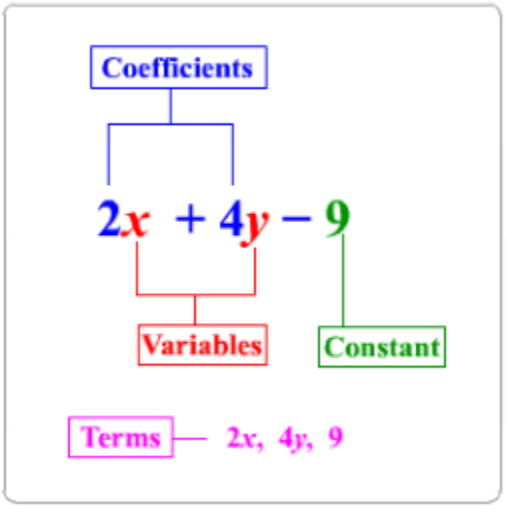
In the above expression,

-1 is the coefficient of ab

2 is the coefficient of b^2

-3 is the coefficient of a^2.

Parts of an Expression

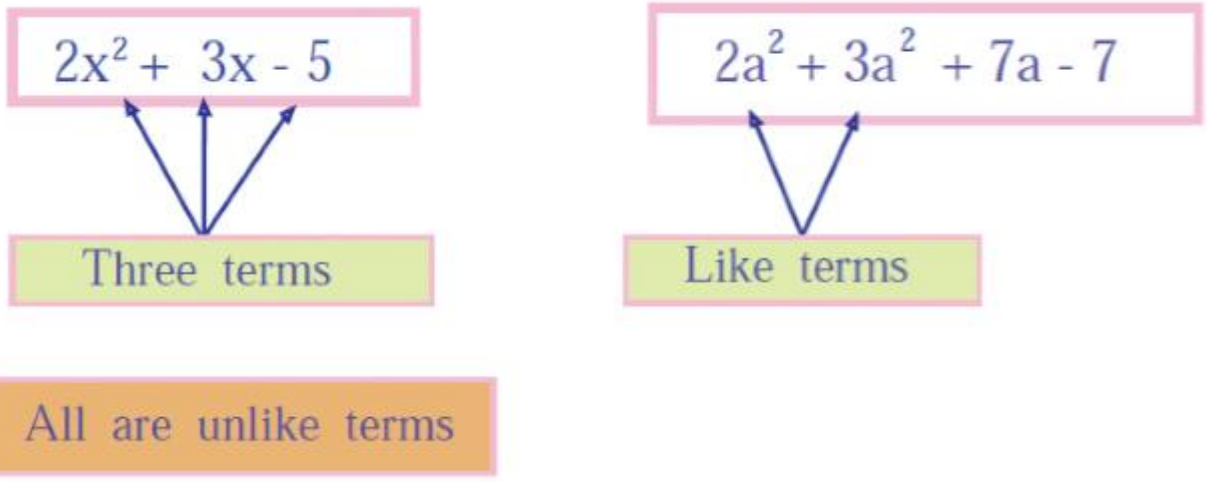


Here in the above figure, you can identify the terms, variables, constants and coefficients.

Like and Unlike Terms

Like Terms are the terms which have same algebraic factors. They must have the same variable with the same exponent.

Unlike Terms are the terms which have different algebraic factors.



$2x^2 + 3x – 5$ does not contain any term with same variable.

$2a^2 + 3a^2 + 7a – 7$ contains two terms with same variable i.e. $2a^2$ and $3a^2$.so these are like terms.

Monomials, Binomials, Trinomials and Polynomials

Expressions**Meaning****Example**Monomial

Any expression which has only one term.
$5x^2$, 7y, 3ab
Binomial
Any expression which has two, unlike terms.
$5x^2 + 2y$, 2ab – 3b
Trinomial
Any expression which has three, unlike terms.
$5x^2 + 2y + 9xy$, x + y – 3
Polynomial
Any expression which has one or more terms with the variable having non-negative integers as an exponent is a polynomial.
$5x^2 + 2y + 9xy + 4$ and all the above expressions are also polynomial.