# **Algebraic Expression**

#### **Understanding of Algebraic Expression**

- An Algebraic Expression is a combination of constants, variables, and mathematical operations (+, -, ×, ÷).
- Constants are fixed numbers. Example: 3, -5,  $\frac{7}{2}$
- Variables are symbols that can take various values. Example: x, y, z
- Operators are mathematical signs. Example: +, -, ×, ÷
- An algebraic expression does not have an equality sign (=).

## **Important Points**

- Terms: Parts of the expression separated by + or signs.
  Example: In 3x + 5y 7, the terms are 3x, 5y, and –7.
- Coefficient: The number multiplied with the variable.
  Example: In 4x, the coefficient of x is 4.
- Like Terms: Terms having the same variable with the same power.
  Example: 3x and -5x are like terms.
- Unlike Terms: Terms having different variables or powers.

**Example:** 2x and 3y are unlike terms.

• Algebraic expressions can be monomial (one term), binomial (two terms), trinomial (three terms), or polynomial (many terms).

## **Examples with Solutions**

**Example: Identifying Terms and Coefficients** 

```
 ➤ 7a - 5b + 3
 Terms: 7a, -5b, 3
 Coefficients: 7 (for a), -5 (for b)
 Constant term: 3
 Example: Addition of Algebraic Expressions
 ➤ Simplify: (3x + 5y) + (2x - 7y)
 Solution: = (3x + 2x) + (5y - 7y)
```

**Example: Subtraction of Algebraic Expressions** 

**Example: Multiplication of a Monomial and a Polynomial** 

**Solution:** =  $3m \times 2m + 3m \times 5$ 

 $= 6m^{2} + 15m$ 

**Example: Value of Expression for Given Values** 

Find the value of 
$$2x^2 - 3x + 4$$
 when  $x = 2$   
Solution:  $= 2(2)^2 - 3(2) + 4$   
 $= 2(4) - 6 + 4$   
 $= 8 - 6 + 4$   
 $= 6$ 

#### **Summary Points**

- Algebraic expressions combine variables, constants, and operations.
- No "=" sign is used in expressions.
- Monomial (1 term), Binomial (2 terms), Trinomial (3 terms), Polynomial (many terms).
- Like terms can be added or subtracted directly.
- Value of expression can be found by substituting the value of variables.