Addition of Algebraic Expression

Understanding of Addition of Algebraic Expressions

- Addition of algebraic expressions means combining two or more expressions into a single expression.
- We can add like terms directly by adding their coefficients.
- Unlike terms cannot be added together; they are kept as they are.
- Always arrange expressions properly before adding.

Important Points

- Identify like terms (same variables with same powers).
- Add the coefficients of like terms.
- Write unlike terms as they are.
- Arrange the final expression neatly.

Examples with Solutions

Example: Simple Addition of Like Terms

➢ **Add: $3x + 5x$**

Solution: Like terms: $3x$ and $5x$

Add coefficients: $3 + 5 = 8$

Answer: $8x$

Example: Addition with Unlike Terms

➢ **Add: $4a + 3b + 5a + 2b$**

Solution: Group like terms: $(4a + 5a) + (3b + 2b)$

Add coefficients: $9a + 5b$

Answer: $9a + 5b$

Example: Addition of Trinomials

➢ **Add: $(2x^2 + 3x + 5)$ and $(x^2 + 4x + 2)$**

Solution: Group like terms: $(2x^2 + x^2) + (3x + 4x) + (5 + 2)$

Add: $3x^2 + 7x + 7$

Answer: $3x^2 + 7x + 7$

Example: Addition of Expressions with Fractions

➢ **Add:** $\left(\frac{1}{2}\right)$**x +** $\left(\frac{3}{4}\right)$**x**

Solution: Like terms: $\left(\frac{1}{2}\right)$x and $\left(\frac{3}{4}\right)$x

Add coefficients: $\frac{1}{2} + \frac{3}{4}$

Find LCM of 2 and 4 = 4

$\left(\frac{1}{2}\right) = \frac{2}{4}$

$\frac{2}{4} + \frac{3}{4} = \frac{5}{4}$

Answer: $\left(\frac{5}{4}\right)$x

Example: Addition of Multiple Expressions

➢ **Add: (3m + 2n), (5m – 4n), and (2m + 6n)**

Solution: Group like terms: (3m + 5m + 2m) + (2n – 4n + 6n)

Add: (10m) + (4n)

Answer: 10m + 4n

Summary Points

- Always add only like terms.
- Keep unlike terms separate.
- Arrange the final answer properly.
- Fractions should be added carefully by taking LCM.
- Practice grouping like terms quickly to make addition easier.