

Figure 1: Parts of an Algebraic Expression (व्यंजक के भाग) & Equation Balance (समीकरण संतुलन)

1. VARIABLES, CONSTANTS & POLYNOMIALS (चर, अचर एवं बहुपद) — Algebra Basics

1.1 Core Algebraic Terms (मुख्य बीजगणितीय पद):

- **Variable (चर):** A letter (x, y, z, a, b) whose value can change.
- **Constant (अचर):** A fixed number (like 5, −7, 12) whose value never changes.
- **Coefficient (गुणांक):** The numerical factor multiplied with a variable (in −6x, coefficient of x is **−6**).
- **Like Terms (सजातीय पद):** Terms with the **exact same variables & powers** (e.g., $3x^2$ and $-7x^2$). Only Like Terms can be added or subtracted!

चर का मान बदलता है (x, y); अचर का मान स्थिर रहता है (5, −7)। केवल सजातीय पदों (Like Terms) को ही जोड़ा या घटाया जा सकता है!

Expression Type (प्रकार)	Number of Terms (पद)	Examples (उदाहरण)
Monomial (एकपदी)	1 term	$5x$, $-3y^2$, $7ab$
Binomial (द्विपदी)	2 unlike terms	$x + 4$, $3a - 2b$
Trinomial (त्रिपदी)	3 unlike terms	$x^2 + 2x + 1$, $a + b - c$

2. TRANSPOSITION RULES & QUICK SOLVED EXAMPLES — Simple Equations

2.1 Golden Transposition Rules (पक्षांतरण के नियम): When moving a term across the **=** sign:
• **+** becomes **−** | **−** becomes **+** | **×** becomes **÷** | **÷** becomes **×**.

बराबर (=) के दूसरी तरफ ले जाने पर: (+) → (−), (−) → (+), (×) → (÷), और (÷) → (×) हो जाता है।

Word Statement (शाब्दिक कथन)	Algebraic Expression / Equation
5 more than twice a number x	**2x + 5**
7 subtracted from 3 times y gives 14	**3y − 7 = 14**
One-fourth of a number z is 9	**z / 4 = 9**
Sum of two consecutive numbers is 25	**x + (x + 1) = 25**

Quick Solved RMS Example	Step-by-Step Solution
Solve: 3x − 7 = 14	3x = 14 + 7 = 21 ⇒ x = 21 ÷ 3 = **7**
Evaluate $2x^2 + 3x - 5$ at x = 2	2(4) + 3(2) − 5 = 8 + 6 − 5 = **9**
Add: (4x + 3y) + (2x − 5y)	(4 + 2)x + (3 − 5)y = **6x − 2y**

Narayan Sir's Mantra: Always check your equation answer by plugging the value of x back into LHS to verify **LHS = RHS**!

समीकरण का उत्तर जाँचने के लिए x का मान बाएँ पक्ष (LHS) में रखकर देखें कि LHS = RHS है या नहीं!