PROGRESSIONS – ARITHMETIC PROGRESSION (FOUNDATION → PLACEMENT LEVEL)

1. WHAT IS AN ARITHMETIC PROGRESSION (AP)?

An Arithmetic Progression (AP) is a sequence of numbers in which the difference between consecutive terms is constant. This constant difference is called the common difference.

2. IMPORTANT TERMS

- First term (a): The first number of the AP
- Common difference (d): Difference between two consecutive terms
- Number of terms (n): Total terms in the AP

3. IMPORTANT FORMULAS

- n■■ term: $T_n = a + (n-1)d$
- Sum of n terms: $S_n = n/2\,[2a + (n-1)d]$

4. SOLVED EXAMPLES

- Example 1: Find 10■■ term of AP 3, 7, 11,... → $T_{10} = 39$
- Example 2: Sum of first 5 terms of AP 2,4,6,... → $S_5 = 30$
- Example 3: Number of terms in AP 5,10,15,...,200 → n = 40

5. PRACTICE QUESTIONS

- 1. Find the 15■■ term of AP: 4, 9, 14, ...
- 2. Find the sum of first 10 terms of AP: 1, 3, 5, ...
- 3. How many terms are there in AP: 7, 14, 21, ..., 210?
- 4. Find the 20■■ term of AP where a = 3, d = 7
- 5. If $T_n = 50$, a = 2, d = 4, find n

6. ANSWERS (FOR SELF-CHECK)

- 1. 74
- 2. 100
- 3. 30
- 4. 136
- 5. n = 13