CHAPTER 06

Progressions

n^{th} term from the end of an A.P:

If 'a' and 'b' are the first term and common difference respectively on an A.P with 'n' terms, then

n^{th} term from the end = $(n - m + 1)^{th}$ term from beginning

$= a_{(n-m+1)} = a + (n - m)\, d$

In alternate way:

First write the given A.P in reverse order, then 'a' will be last term (say 'l') and common difference will be (-d).

Now,

n^{th} term from the end = n^{th} term of new A.P = $l + (n - 1)(-d) = l - (n - 1)\, d$ $(\because a_n = a + (n - 1)d)$

Example:

Find the 10^{th} term from the end of the A.P. 4, 9, 14…254.

Sol.

Given,

A.P is 4, 9, 14…254

Here, first term (a) = 4

Common difference (d) = 9 – 4 = 5

Last term (l) = 254

n = 10

Now,

n^{th} term from the end = l – (n – 1)d

= 254 – (10 - 1)5

= 254 – (9 x 5)

= 254 – 45

= 209

Hence, the 10^{th} term from thse end is 209.