DAY 3

1. **Find AP whose 3rd term is 5 and 7th term is 9?** **[Example 5]**

   Sol:- Given: 3rd term = 5 $\Rightarrow a + 2d = 5 \dots\dots\dots.$ i)

   7th term = 9 $\Rightarrow a + 6d = 9 \dots\dots\dots..$ ii)

   Subtracting i) from ii), we get

   $(a + 6d) - (a + 2d) = 9 - 5$

   $\Rightarrow a + 6d - a - 2d = 4 \qquad \Rightarrow 4d = 4$

   $\Rightarrow d = \dfrac{4}{4} = 1$ Put value of d in i), we get

   i) $\Rightarrow a + 2\boldsymbol{d} = 5 \quad \Rightarrow a + 2(\boldsymbol{1}) = 5 \quad \Rightarrow a = 5 - 2 = 3$

   $\therefore$ Required AP is 3,4,5, … … ..

2. **Find AP whose 2nd term is 13 and 4th term is 3?**

   Sol:- Given: 2nd term = 13 $\Rightarrow a + d = 13 \dots\dots\dots.$ i)

   4th term = 3 $\Rightarrow a + 3d = 3 \dots\dots\dots..$ ii)

   Subtracting i) from ii), we get

   $(a + 3d) - (a + d) = 3 - 13$

   $\Rightarrow a + 3d - a - d = -10 \qquad \Rightarrow 2d = -10$

   $\Rightarrow d = \dfrac{-10}{2} = -5$ Put value of d in i), we get

   i) $\Rightarrow a + \boldsymbol{d} = 13 \quad \Rightarrow a + (-\boldsymbol{5}) = 13 \quad \Rightarrow a = 13 + 5 = 18$

   $\therefore$ Required AP is 18,13,8, … … ..

3. **Find 10th term of AP whose 1st term is 2 and 5th term is 26?**

   Sol:- Given: 1st term = 2 $\Rightarrow a = 2 \dots\dots\dots\dots\dots..\dots.$ i)

   5th term = 26 $\Rightarrow \boldsymbol{a} + 4d = 26$

   $\Rightarrow \boldsymbol{2} + 4d = 26$ {By i)}

   $\Rightarrow 4d = 26 - 2 = 24 \quad \Rightarrow d = \dfrac{24}{4} = 6$

   Now 10th term = $a + 10d = 2 + 9 \times 6 = 2 + 54 = 56$

4. **The 17th term of an AP exceeds its 10th term by 7. Find the common difference.**
   [Ex 5.2, Q10]

   Sol :- Given **17th term of an AP exceeds its 10th term by 7**

   $\Rightarrow 17^{th} \text{ term} = 10^{th} \text{ term} + 7$

   $\Rightarrow a + 16d = a + 9d + 7 \qquad \Rightarrow a + 16d - a - 9d = 7$

   $\Rightarrow 7d = 7 \qquad\qquad\qquad \Rightarrow d = \dfrac{7}{7} = 1$

Hence **difference is 1.**

5. Find 20th term from the last of AP 3,8,13,.......253?   **[Ex 5.2, Q17]**

Sol:- $\begin{pmatrix} \textbf{20th term from the last} \\ \textbf{of AP } 3, 8, 13, \ldots\ldots, 248, 253 \end{pmatrix} = \begin{pmatrix} \textbf{20th term from the starting} \\ \textbf{of AP } 253, 248, \ldots\ldots 8, 3 \end{pmatrix}$

So in A.P. $253, 248, \ldots\ldots.8, 3$

$$a = 253, d = 248 - 253 = -5$$

Now 20th term $= a + 19d = 253 + 19 \times (-5) = 253 - 95 = 158$

6. Which term of AP 3, 15, 27, 39,...... will be 132 more than its 54th term?

                                                                 [Ex 5.2, Q11]

Sol:- Given AP 3, 15, 27, 39,......

Here $a = 3$ and $d = 15 - 3 = 12$

Given condition: (Which term) $= \mathbf{132 + (54^{th}}$ **term)**

Suppose **Which term** is n^{th} **term.**

So $(n^{th}$ term$) = 132 + (54^{th}$ term$)$

$\Rightarrow \quad a + (n-1)d = 132 + a + 53d$

$\Rightarrow \quad 3 + (n-1)12 = 132 + 3 + 53 \times 12$

$\Rightarrow \quad (n-1)12 = 132 + 3 + 636 - 3$

$\Rightarrow \quad (n-1)12 = 768 \qquad \Rightarrow n - 1 = \dfrac{768}{12} = 64$

$\Rightarrow n = 64 + 1 = 65$

Hence **65th term** of the given A.P. is 132 more than its 54th term.

EXERCISE

1. Find AP whose 5th term is 18 and 9th term is 34?
2. Find AP whose 4th term is 13 and 7th term is 22?
3. Find 15th term of the AP whose 3rd term is 6 and 9th term is 36?
4. Ex 5.2, Q 3,7,8,9,16,18
5. Find 11th term from the last of AP $10, 7, 4, \ldots\ldots -62$?