ಎಸ್ಎಸ್ಎಲ್ ಸಿ–ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ

MATHEMATICS Chapter–5
Arithmetic Progression
To find nth term of an A.P
EXERCISE 5.2

3. In the following APs, find the missing terms in the boxes :
(i)   2, ⬜ , 26
(ii) ⬜ , 13, ⬜   3
(iii) 5, ⬜ , ⬜ , 91/2
(iv) – 4, ⬜ , ⬜ , ⬜ , ⬜ , 6
(v) ⬜ , 38, ⬜ ⬜ ⬜ 22

Soln:
(ii)   **(…….Contd)**

$=18 + 2(-5)$

$=18 - 10 = 8$

So, Second term $= 2 + d = 2 + 12 = 14$

Hence, the missing term in the boxes

are 18 and 8

(iii) Let the common difference of the given AP be d

$a = 5$ 4th term $9\frac{1}{2}$

$\Rightarrow 5 + (4-1)d = \frac{19}{2}$ $(\because an = a + (n-1)d)$

$\Rightarrow 3d = \frac{19}{2} - 5$

$\Rightarrow 3d = \frac{9}{2}$

$d = \frac{3}{2}$

$\therefore$ 2nd term $= 5 + \frac{3}{2} = \frac{13}{2} = 6\frac{1}{2}$

and Third term $= \frac{13}{2} + \frac{3}{2} = 8$

Hence, the missing term in the boxes

are $6\frac{1}{2}$ and 8

(iv) Let the *common difference of the given AP be d*

$a = -4$ 6th term $= 6$

$\Rightarrow -4 + (6-1)d = 6 (\because a_n = a + (n-1)d)$

$\Rightarrow -4 + 5d = 6$

$\Rightarrow 5d = 6 + 4$

$\Rightarrow 5d = 10$

$\Rightarrow d = \frac{10}{5}$ $\Rightarrow = 2$

$\therefore$ 2nd term $= -4 + 2 = -2$

3rd term $= -2 + 2 = -0$

4th term $= 0 + 2 = 2$

5th term $= 2 + 2 = 4$

Hence, the missing term in the boxes

are $-2, 0, 2, 4$

(v) Let the 1st *term and common difference of the given AP be a and d respectively*

Then,

2nd term $= 38$

$a + (2-1)d = 38 (\because a_n = a + (n-1)d)$

$a + d = 38$ .... (1)

6th term $= 22$

$a + (6-1)d = 22$

$a + 5d = 22$ ....(2)

Solving (1) and (2), we get

$a = 53$ $d = -15$

$\therefore$ 3rd term $= 53 + (3-1)(-15)(\because a_n = a + (n-1)d)$

$= 53 - 30 = 23$

4th term $= 53 + (4-1)(-15)(\because a_n = a + (n-1)d)$

$= 8$

5th term $= 53 + (5-1)(-15)(\because a_n = a + (n-1)d)$

$= 7$

Hence, the missing term in the boxes

are $53, 23, 8, -7$

4. Which term of the AP : 3, 8, 13, 18, . . ………..
,is 78?
Soln:- The given AP is $3, 8, 13, 18……$
Here a=3   d=8-3=5
Let the nth term of the AP be 78
Then $a_n = a + (n-1)d$

$78 = 3 + (n-1)(5)$

$5(n-1) = 78 - 3$

$5(n-1) = 75$

$n-1 = \frac{75}{5}$

$n-1 = 15$

$n = 15 + 1$

$n = 16$

Hence 16th term of the AP is 78

5. Find the number of terms in each of the following APs :
(i) 7, 13, 19, . . . , 205

$(ii) 18, 15\frac{1}{2}, 13 …………… -47$

Soln:- (i) 7, 13, 19.............205

Here $a = 7$ $d = 13 - 7 = 6$ $a_n = 205$

Let the number of term be n

then $a_n = 205$

$a + (n-1)d = 250$

$7 + (n-1)6 = 250$

$6(n-1) = 250 - 7$

$6(n-1) = 198$

$n-1 = \frac{198}{6}$

$n-1 = 33$

$n = 33 + 1 = 34$

Hence the number of term of the given AP is 34