

Ex 5.3

NCERT Solutions by Dev Anoop (Bathinda)

3(8) $l = 28, S_n = 144, n = 9$

$S_n = 144$

$\frac{n}{2} [a + l] = 144$

$\frac{9}{2} [a + 28] = 144$

$\Rightarrow a + 28 = \frac{144 \times 2}{9}$

$\Rightarrow a = 32 - 28$

$\Rightarrow a = 4$

4) $9, 17, 25, \dots$

$a = 9, d = 17 - 9 = 8$

$S_n = 636$

$\frac{n}{2} [2a + (n-1)d] = 636$

$\frac{n}{2} [2 \times 9 + (n-1)8] = 636$

$\Rightarrow \frac{n}{2} [9 + 4(n-1)] = 636$

$\Rightarrow n(9 + 4n - 4) = 636$

$\Rightarrow 4n^2 + 5n - 636 = 0$

$\Rightarrow 4n^2 + 53n - 48n - 636 = 0$

$\Rightarrow n(4n + 53) - 12(4n + 53) = 0$

$\Rightarrow (4n + 53)(n - 12) = 0$

$\Rightarrow 4n + 53 = 0, n - 12 = 0$

$\Rightarrow n = -\frac{53}{4}, n = 12$
reject $-\frac{53}{4}$, $\therefore n = 12$

5) $a = 5, a_n = l = 45, S_n = 400$
 $d = ?, n = ?$

$5 + (n-1)d$

$S_n = 400$

$\frac{n}{2} (a + l) = 400$

$\frac{n}{2} (5 + 45) = 400$

$\Rightarrow \frac{n}{2} \times 50 = 400$

$\Rightarrow n = 16$

$a_{16} = 45$

$a + 15d = 45$

$5 + 15d = 45$

$\Rightarrow 15d = 45 - 5$

$\Rightarrow d = \frac{40}{15}$

$\Rightarrow d = \frac{8}{3}$

6) $a = 17, a_n = l = 350$
 $d = 9, n = ?, S_n = ?$

$a_n = 350$

$a + (n-1)d = 350$

$17 + (n-1)9 = 350$

$\Rightarrow (n-1)9 = 333$

$\Rightarrow n-1 = \frac{333}{9}$

$\Rightarrow n = 38$

$S_n = \frac{n}{2} (a + l)$

$= \frac{38}{2} (17 + 350)$

$= 19 \times 367$

$= 6973$