

3④ $l = 28, S_n = 144, n = 9$

$$S_n = 144$$

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

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

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

$$\Rightarrow a = 32 - 28$$

$$\Rightarrow a = 4$$

④ 9, 17, 25, ...

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

$$S_n = 636$$

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

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

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

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

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

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

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

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

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

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

rejected $\therefore n = 12$

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

$$5 + (n-1)d = 45$$

$$S_n = 400$$

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

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

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

$$\Rightarrow n = 16$$

$$a_{16} = 45$$

$$a + 15d = 45$$

$$5 + 15d = 45$$

$$\Rightarrow 15d = 45 - 5$$

$$\Rightarrow d = \frac{40}{15} = \frac{8}{3}$$

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

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

$$a_n = 350$$

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

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

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

$$\Rightarrow n-1 = \frac{333}{9} = 37$$

$$\Rightarrow n = 38$$

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

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

$$= 19 \times 367$$

$$= 6973$$