

⑫ First 40 integers
div. by 6 are

6, 12, 18, 24, ...

$$a = 6$$

$$d = 12 - 6 = 6$$

$$S_{40} = \frac{40}{2} [2 \times 6 + 39 \times 6]$$

$$= 20 \times 6 \times 41$$

$$= 4920$$

⑬ 8, 16, 24, 32, ...

$$a = 8$$

$$d = 16 - 8 = 8$$

$$S_{15} = \frac{15}{2} [2 \times 8 + 14 \times 8]$$

$$= \frac{15}{2} \times 8 \times 16$$

$$= 960$$

⑭ 1, 3, 5, ..., 49

$$a = 1, d = 2 - 1 = 2$$

$$a_n = 49$$

$$a + (n-1)d = 49$$

$$1 + (n-1)2 = 49$$

$$\Rightarrow 2(n-1) = 48$$

$$\Rightarrow n-1 = 24$$

$$\Rightarrow n = 25$$

$$S_{25} = \frac{25}{2} (1 + 49)$$

$$= \frac{25}{2} \times 50$$

$$= 625$$

⑮ 200, 250, 300, ...

$$a = 200, d = 250 - 200 = 50$$

$$n = 30$$

$$S_{30} = \frac{30}{2} [2 \times 200 + 29 \times 50]$$

$$= 15 (400 + 1450)$$

$$= 15 \times 1850$$

$$= 27750$$

⑯ $x, x-20, x-40, \dots$

$$a = x, d = -20, n = 7$$

$$S_7 = 700$$

$$\frac{7}{2} [2x + 6(-20)] = 700$$

$$\Rightarrow \frac{7}{2} (x - 60) = 100$$

$$\Rightarrow x = 160$$

The prizes are
Rs 160, Rs 140, Rs 120, Rs 100,
Rs 80, Rs 60, Rs 40

⑰ Trees planted by

$$\text{class I} = 3$$

Trees planted by

$$\text{class II} = 3 \times 2 = 6$$

⋮
Trees planted by class x

$$= 3 \times x$$

$$= 36$$

3, 6, 9, 12, ..., 36