



Arithmetic Progressions Ex 19.7 Q1

Let the amount saved by the man in first year be x .

Then,

A TQ

$$x + (x + 100) + (x + 200) + \dots + (x + 900) = 16500$$

As his saving increased by Rs 100 every year.

$$\therefore 10x + 100 + 200 + \dots + 900 = 16500 \quad \text{--- (i)}$$

Here,

$100 + 200 + 300 + \dots + 900$ form a series of

$a = 100$, $d = 100$ and $n = 9$

So,

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

$$S_9 = \frac{9}{2}[100 + 900] = 4500 \quad \text{--- (ii)}$$

From (i) and (ii)

$$10x + (4500) = 16500$$

$$10x = 12000$$

$$\text{or } x = 1200$$

The man saved Rs 1200 in the first year.

Arithmetic Progressions Ex 19.7 Q2

Let the man save Rs 200 in n numbers of years.

Then,

A TQ

$$32 + 36 + 40 + \dots = 200$$

It forms a series of n terms, with $a = 32$ and $d = 4$

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

$$\Rightarrow 200 = \frac{n}{2}[2(32) + (n - 1)4]$$

$$\Rightarrow 400 = 60n + 4n^2$$

$$\Rightarrow n^2 + 15n - 100 = 0$$

$$\Rightarrow n = 5 \text{ or } -20$$

$$\text{But, } n \neq -20 \quad \text{[It can't be negative]}$$

$$\therefore n = 5$$

The man will save Rs 200 in 5 years.

Arithmetic Progressions Ex 19.7 Q3

Let the 40 annual instalments form an arithmetic series of common difference d and first instalment a

Then, series so formed is

$$a + (a + d) + (a + 2d) + \dots = 3600$$

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

$$\text{or } 3600 = 20[2a + 39d]$$

$$2a + 39d = 180 \quad \text{--- (i)}$$

and sum of first 30 terms is $\frac{2}{3}$ of 3600

$$= 2400$$

$$\Rightarrow 2400 = \frac{30}{2}[2a + (29)d]$$

$$\text{or } 2a + 29d = 160 \quad \text{--- (ii)}$$

From (i) and (ii)

$$a = 51$$

The first installment paid by this man is Rs 51.

Arithmetic Progressions Ex 19.7 Q4

Let the number of Radio manufactured increase by x each year and number of radio manufacture in first year be a . So, A.P formed ATQ is

$$a, a+x, a+2x, \dots$$

Here,

$$a_3 = a + 2x = 600 \quad \text{---(i)}$$

$$a_7 = a + 6x = 700 \quad \text{---(ii)}$$

From (i) and (ii)

$$a = 550, x = 25$$

(i) 550 Radio's were manufactured in the first year.

(ii) The total produce in 7 years is sum of produce in the first 7 years.

$$S_7 = \frac{7}{2}[550 + 700] \quad \left[\because S_n = \frac{n}{2}[a + l] \right]$$

$$= 4375$$

4375 Radio's were manufactured in first 7 years.

(iii) The product in 10th year

$$a_{10} = a + 9d$$

$$= 550 + 9(25) = 775$$

775 Radio's were manufactured in the 10th year.

***** END *****