

Ex 5.4**NCERT Solutions by Dev Anoop (Bathinda)**

$$\textcircled{2} \quad a_3 + a_7 = 6$$

$$a + 2d + a + 6d = 6$$

$$\Rightarrow 2a + 8d = 6$$

$$\Rightarrow a + 4d = 3$$

$$\Rightarrow a = 3 - 4d \dots \textcircled{1}$$

$$a_3 \times a_7 = 8$$

$$(a + 2d)(a + 6d) = 8$$

using $\textcircled{1}$

$$(3 - 4d + 2d)(3 - 4d + 6d) = 8$$

$$\Rightarrow (3 - 2d)(3 + 2d) = 8$$

$$\Rightarrow 3^2 - (2d)^2 = 8$$

$$\Rightarrow 9 - 4d^2 = 8$$

$$\Rightarrow 4d^2 = 1$$

$$\Rightarrow d = \pm \sqrt{\frac{1}{4}}$$

$$= \pm \frac{1}{2}$$

$$\text{if } d = \frac{1}{2}$$

$$a = 3 - 4 \times \frac{1}{2}$$

$$= 3 - 2$$

$$= 1$$

$$S_{16} = \frac{16}{2} \left[2 \times 1 + 15 \times \frac{1}{2} \right]$$

$$= 8 (2 + 7.5)$$

$$= 8 \times 9.5$$

$$= 76$$

$$\text{if } d = -\frac{1}{2}$$

$$a = 3 - 4 \times -\frac{1}{2}$$

$$= 3 + 2$$

$$= 5$$

$$S_{16} = \frac{16}{2} \left[2 \times 5 + 15 \times -\frac{1}{2} \right]$$

$$= 8 (10 - 7.5)$$

$$= 8 \times 2.5$$

$$= 20$$

$$S_{16} = 20, 76$$

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