

Assignment I (ICSE CLASS 10)

Homework1

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A Course Homework QUES 2 (C)

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Problem 1

2.(C) In an Arithmetic Progression, the fourth and sixth terms are 8 and 16 respectively. Find the : i) common difference ii) first term iii) sum of the first 20 terms

Solution. Let a_i denote the i th term of the AP , d denote the common diff, s denote the sum of first 20 terms

1 Given:

$$a_4 = 8, a_6 = 14$$

2 To find:

$$a_1 = ? d = ? s = ?$$

$$a_6 - a_4 = 2d$$

$$(i) d = \frac{a_6 - a_4}{2}$$

$$= \frac{6}{2}$$

$$= 3$$

$$a_1 + 3d = a_4$$

$$(ii) a_1 = a_4 - 3d$$

$$= 8 - 3(3)$$

$$= -1$$

$$n = 20$$

$$\begin{aligned}iii) S &= a_1 + a_2 + \dots + a_{20} \\&= \frac{n[2a_1 + (n-1)d]}{2} \\&= \frac{20[2(-1) + (20-1)3]}{2} \\&= \frac{20[-2 + (19)3]}{2} \\&= \frac{20*[55]}{2} \\&= 550\end{aligned}$$