Victoria University of Bangladesh

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Name: Shahinur Rahman Kawsar

ID : 1119460111

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MAT-102

Ans: to the Q: NO: ①

Given here,

$A = \{a, b, c, d\}$

$B = \{b, d, e, f\}$

$C = \{a, c, g, h\}$

(i) $A - B$

$= \{a, b, c, d\} - \{b, d, e, f\}$

$= \{a, c, d\}$

(ii) $B - C$

$= \{b, d, e, f\} - \{a, c, g, h\}$

$= \{b, d, e, f\}$

(iii) $B - B$

$= \{b, d, e, f\} - \{b, d, e, f\}$

$= \{\}$

Ans. to the Q:no: (2) (2)

given here,

$$A = \{a,b,c,d,e,f\}$$

so,

$$P(A) = \{\emptyset, \{a\}, \{b\}, \{c\}, \{d\}, \{e\}, \{f\}, \{a,b\}, \{a,c\}, \{a,d\}, \{a,e\}, \{a,f\}, \{b,c\}, \{b,d\}, \{b,e\}, \{b,f\}, \{c,d\}, \{c,e\}, \{e,f\}, \{d,e\}, \{d,f\}, \{e,f\}, \{a,b,c\}, \{a,b,d\} \{a,b,f\}, \{a,c,d\}, \{a,c,e\}, \{a,c,f\}, \{a,d,e\}, \{a,d,f\}, \{a,e,f\}, \{b,c,d\}, \{b,d,c\}, \{b,d,f\} \{b,d,e\}, \{b,d,f\}, \{b,e,f\}, \{c,d,e\}, \{c,d,f\} \{c,e,f\}, \{d,e,f\}, \{a,b,c,d\}, \{a,b,d,e\} \{a,b,c,f\}, \{a,b,d,e\}, \{a,b,d,f\} \{a,b,e,f\} \{a,c,d,e\}, \{a,c,d,f\}, \{a,c,e,f\}, \{a,d,e,f\} \{b,c,d,e\}, \{b,c,e,f\}, \{b,d,e,f\} \{c,d,e,f\}, \{a,b,c,d,e\}, \{a,b,c,d,f\} \{a,b,c,e,f\}, \{a,b,d,e,f\}, \{a,c,d,e,f\} \{a,c,d,e,f\}, \{b,c,d,e,f\} \{a,b,c, e,f\}$$

Ans: to the Q: NO: (3) (3)

$62+60+58+..+40$

First team,

$$a = 62$$

Common ~~difference~~ difference $d = 60-62$

$$= -2$$

Let number of terms $= n$

Then,

$$a+(n-1)d = 40$$
$$\Rightarrow 60+(n-1)-2 = 40$$
$$\Rightarrow 60-2n+2 = 40$$
$$\Rightarrow 62-2n = 40$$
$$\Rightarrow -2n = 40-62$$
$$\Rightarrow -2n = -22$$
$$\Rightarrow n = \frac{-22}{-2}$$
$$\Rightarrow n = 11$$

Hence the required sum,

$$= \frac{n}{2}\{2a+(n-1)d\}$$
$$= \frac{12}{2}\{2.62+(12-1)-2\}$$
$$= 6\{124+11.(-2)\}$$
$$= 6(124-22)$$
$$= 6 \times 102$$
$$= 612$$

Ans. to the Q.NO. (4) (4)

An arithmetic progression (AP) is a sequence where the differences between every two consecutive terms are the same. In this type of progression, there is a possibility to derive a formula for the n^{th} term of the AP. For example, the sequence 2, 6, 10, 14... is an arithmetic progression (AP) because it follows a pattern where each number is obtained by adding 4 to the previous term. In this sequence, n^{th} term $= 4n-2$. The terms of the sequence can be obtained by substituting $n = 1, 2, 3...$ in the n^{th} term i.e.,

(1) When $n=1$, first term $= 4n-2 = 4(1)-2 = 4-2 = 2$
(2) When $n=2$, second term $= 4n-2 = 4(2)-2 = 8-2 = 6$
(3) When $n=3$, thins term $= 4n-2 = 4(3)-2 = 12-2 = 10$

In this article, we will explore the concept of arithmetic progression the formula to find its n^{th} term of an AP.