

Question: -

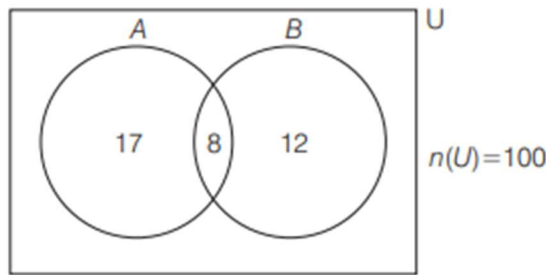
Two newspapers A and B are published in a city. It is known that 25% of the city population reads A and 20% reads B while 8% reads both A and B . Further, 30% of those who read A but not B look into advertisements and 40% of those who read B but not A also look into advertisements, while 50% of those who read both A and B look into advertisements. Then, the percentage of the population who look into advertisements is (2019 Main, 9 April II)

- (a) 13.5 (b) 13
(c) 12.8 (d) 13.9

Solution: -

Let the population of city is 100.

Then, $n(A) = 25$, $n(B) = 20$ and $n(A \cap B) = 8$



So, $n(A \cap \bar{B}) = 17$ and $n(\bar{A} \cap B) = 12$

According to the question, Percentage of the population who look into advertisement is

$$\begin{aligned} &= \left[\frac{30}{100} \times n(A \cap \bar{B}) \right] + \left[\frac{40}{100} \times n(\bar{A} \cap B) \right] \\ &\quad + \left[\frac{50}{100} \times n(A \cap B) \right] \\ &= \left(\frac{30}{100} \times 17 \right) + \left(\frac{40}{100} \times 12 \right) + \left(\frac{50}{100} \times 8 \right) \\ &= 5.1 + 4.8 + 4 = 13.9 \end{aligned}$$