Probability Assignment 3

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Question : In Class XI of a school 40% of the students study Mathematics and 30% study Biology. 10% of the class study both Mathematics and Biology. If a student is selected at random from the class, find the probability that he will be studying Mathematics or Biology.

Solution : Assume A be the event that the student is studying Mathematics and B be event that the student is studying biology. So,

$$\Pr(A) = \frac{40}{100} \tag{1}$$

$$= \frac{2}{5} \tag{2}$$

And,

$$\Pr(B) = \frac{30}{100} \tag{3}$$

$$= \frac{3}{10} \tag{4}$$

Then, $\Pr(AB)$ represent probability of studying both mathematics and biology.

$$\implies \Pr(AB) = \frac{10}{100} \tag{5}$$

$$= \frac{1}{10} \tag{6}$$

Hence, Probability of studying mathematics or biology will be given by $\Pr(A + B)$.

$$\implies \Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB) \tag{7}$$

$$= \frac{2}{5} + \frac{3}{10} - \frac{1}{10} \tag{8}$$

$$= \frac{3}{5} \tag{9}$$