Assignment 6

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CBSE Class 12 Probability

Excercise: 13.1 Question: 3

If $\Pr(A) = 0.8$, $\Pr(B) = 0.5$ and $\Pr(B|A) = 0.4$, find

1) $\Pr(A \cap B)$
2) $\Pr(A|B)$
3) $\Pr(A \cup B)$

Solution:

1) $\Pr(A \cap B)$

$$\Pr(B|A) = \frac{\Pr(AB)}{\Pr(A)} \tag{0.0.1}$$

$$\implies \Pr(AB) = \Pr(B|A) \times \Pr(A) \tag{0.0.2}$$

$$= 0.4 \times 0.8 = 0.32 \tag{0.0.3}$$

Therefore $\Pr(A \cap B) = 0.32$.

2) $\Pr(A|B)$

$$\Pr(A|B) = \frac{\Pr(AB)}{\Pr(B)} \tag{0.0.4}$$

$$= \frac{0.32}{0.5} \tag{0.0.5}$$

$$= 0.64 \tag{0.0.6}$$

Therefore $\Pr(A|B) = 0.64$.

3) $\Pr(A \cup B)$

$$\Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB) \tag{0.0.7}$$

$$= 0.8 + 0.5 - 0.32 \tag{0.0.8}$$

$$= 0.98 \tag{0.0.9}$$

Therefore $\Pr(A \cup B) = 0.98$.