

# Probability Assignment

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Question : If  $A$  and  $B$  are mutually exclusive events,  $\Pr(A) = 0.35$  and  $\Pr(B) = 0.45$  then find

- 1)  $\Pr(A')$
- 2)  $\Pr(B')$
- 3)  $\Pr(A + B)$
- 4)  $\Pr(AB)$
- 5)  $\Pr(AB')$
- 6)  $\Pr(A'B')$

**Solution:** Given that  $A$  and  $B$  are mutually exclusive events.

$$AB = 0 \quad (1)$$

1)

$$\Pr(A') = 1 - \Pr(A) \quad (2)$$

$$= 1 - 0.35 \quad (3)$$

$$= 0.65 \quad (4)$$

2)

$$\Pr(B') = 1 - \Pr(B) \quad (5)$$

$$= 1 - 0.45 \quad (6)$$

$$= 0.55 \quad (7)$$

3) From (1).

$$\Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB) \quad (8)$$

$$= 0.35 + 0.45 - 0 \quad (9)$$

$$= 0.80 \quad (10)$$

4) From (1)

$$\Pr(AB) = 0 \quad (11)$$

5)

$$\Pr(A) = \Pr(A(1)) \quad (12)$$

$$= \Pr(A(B + B')) \quad (13)$$

$$= \Pr(AB + AB') \quad (14)$$

$$= \Pr(AB) + \Pr(AB') - \Pr(AB.AB') \quad (15)$$

$$= \Pr(AB) + \Pr(AB') - \Pr(AA.(BB')) \quad (16)$$

$$= \Pr(AB) + \Pr(AB') \quad (17)$$

$$BB' = 0. \text{ So, } \Pr(A(BB')) = 0$$

$$\Pr(AB') = \Pr(A) - \Pr(AB) \quad (18)$$

$$= 0.35 - 0 \quad (19)$$

$$= 0.35 \quad (20)$$

6)

$$\Pr(A'B') = \Pr((A + B)') \quad (21)$$

$$= 1 - \Pr(A + B) \quad (22)$$

$$= 1 - 0.80 \quad (23)$$

$$= 0.20 \quad (24)$$