

# Assignment 7

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**Problem:** Let A and B be independent events with  $P(A) = 0.3$  and  $P(B) = 0.4$ . Find:

- 1)  $P(AB)$
- 2)  $P(A + B)$
- 3)  $P(A|B)$
- 4)  $P(B|A)$

**Solution:**

so we have,

$$P(A) = 0.3 \quad (1)$$

$$P(B) = 0.4 \quad (2)$$

1)

$$P(AB) = P(A) \times P(B) \quad (3)$$

$$= 0.3 \times 0.4 \quad (4)$$

$$= 0.12 \quad (5)$$

2)

$$P(A + B) = P(A) + P(B) - P(AB) \quad (6)$$

$$= 0.3 + 0.4 - 0.12 \quad (7)$$

$$= 0.58 \quad (8)$$

3)

$$P(A|B) = \frac{P(AB)}{P(B)} \quad (9)$$

$$= \frac{0.12}{0.4} \quad (10)$$

$$= 0.3 \quad (11)$$

4)

$$P(B|A) = \frac{P(AB)}{P(A)} \quad (12)$$

$$= \frac{0.12}{0.3} \quad (13)$$

$$= 0.4 \quad (14)$$