## Probability Assignment

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## 12.13.1.3

If Pr(A) = 0.8, Pr(B) = 0.5, and Pr(AB) = 0.32, find:

- (i) Pr(AB)
- (ii) Pr(A|B)
- (iii) Pr(A + B)

## **SOLUTION:**

(i) Given, Pr(A) = 0.8We know that,

$$Pr(B|A) = \frac{Pr(AB)}{Pr(A)}$$
 (1)

$$0.4 = \frac{\Pr(AB)}{0.8}$$
 (2)

$$Pr(AB) = 0.32 \tag{3}$$

(ii) Similarly,

$$\Pr(A|B) = \frac{\Pr(AB)}{\Pr(B)} \tag{4}$$

$$Pr(A|B) = \frac{Pr(AB)}{Pr(B)}$$
 (5)

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

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

$$Pr(A|B) = \frac{0.32}{0.5}$$

$$= 0.64$$
(4)
(5)

(iii)

$$Pr(A + B) = Pr(A) + Pr(B) - Pr(A - B)$$

(8)

$$Pr(A + B) = 0.8 + 0.5 - 0.32$$
 (9)

$$= 0.98$$
 (10)