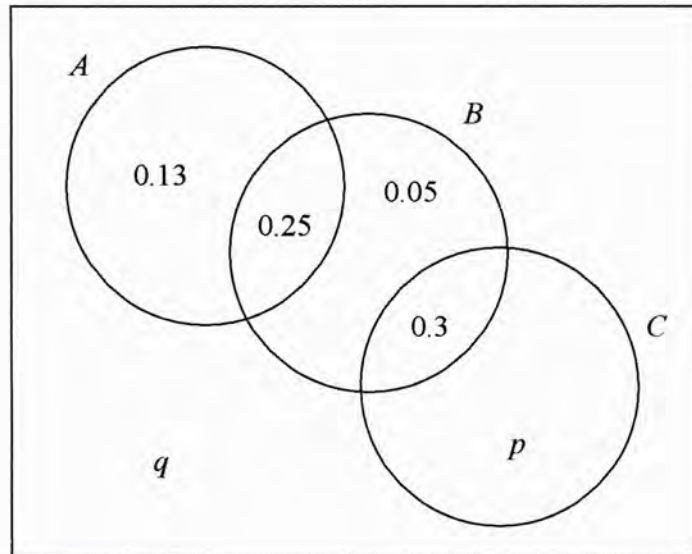


1. The Venn diagram, where p and q are probabilities, shows the three events A , B and C and their associated probabilities.



- (a) Find $P(A)$

$$\text{(a)} \quad P(A) = 0.13 + 0.25 = 0.38 \quad (1)$$

The events B and C are independent.

- (b) Find the value of p and the value of q

(3)

- (c) Find $P(A|B')$

(2)

$$\text{(b)} \quad P(B) = 0.25 + 0.05 + 0.3 = 0.6$$

$$P(C) = 0.3 + p$$

B & C are independent, so $P(B \cap C) = P(B) \times P(C)$

$$0.3 = 0.6 \times (0.3 + p)$$

$$0.3 = 0.18 + 0.6p$$

$$p = \frac{0.3 - 0.18}{0.6} = 0.2$$

$$q = 1 - 0.13 - 0.25 - 0.05 - 0.3 - 0.2 = 0.07$$

$$\text{(c)} \quad P(A|B') = \frac{P(A \cap B')}{P(B')} = \frac{0.13}{0.13 + q + p} = \frac{0.13}{0.13 + 0.2 + 0.07} = 0.325$$