

② Three events A, B and C have probabilities $\frac{2}{5}$, $\frac{1}{3}$ and $\frac{1}{2}$, respectively. Given that $P(A \cap C) = \frac{1}{5}$ and $P(B \cap C) = \frac{1}{4}$. Find the values of $P(C|B)$ and $P(A' \cap C')$.

$$- P(A) = \frac{2}{5} \quad P(B) = \frac{1}{3} \quad P(C) = \frac{1}{2}$$

$$P(C|B) = \frac{P(B \cap C)}{P(B)} = \frac{\frac{1}{4}}{\frac{1}{3}} = \frac{3}{4}$$

$$P(A' \cap C') = 1 - P(A \cup C) = 1 - (P(A) + P(C) - P(A \cap C))$$
$$= 1 - \left(\frac{2}{5} + \frac{1}{2} - \frac{1}{5} \right) = \frac{1}{2} - \frac{1}{5} = \frac{3}{10}$$