

SOA Exam P Q11 (General Probability)

Let $P(C) = \text{Collision}$ $P(D) = \text{Disability}$

Given: $P(C) = 2P(D)$

$$P(C \cap D) = 0.15$$

$$P(C \cap D) = P(C)P(D) \leftarrow \text{Independent}$$

$$P(C \cap D) = 2P(D)P(D)$$
$$= 2[P(D)]^2$$

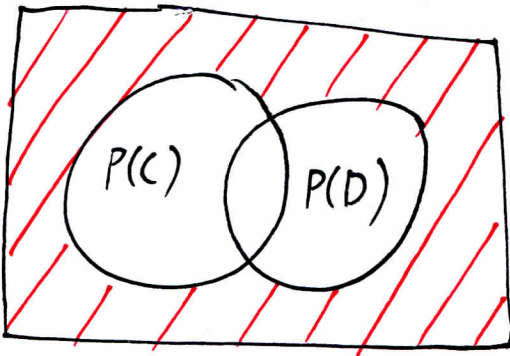
$$0.15 = 2[P(D)]^2$$

$$0.075 = [P(D)]^2$$

$$P(D) = \sqrt{0.075}$$

$$P(C) = 2P(D)$$

$$= 2\sqrt{0.075}$$



$$P[C^c \cap D^c] = P[C^c]P[D^c]$$
$$= [1 - P(C)][1 - P(D)]$$
$$= [1 - 2\sqrt{0.075}][1 - \sqrt{0.075}]$$
$$= (0.4523)(0.7261)$$
$$= 0.$$
$$\approx 0.33$$

ANS: B