QUESTION

Given that A and B are independent events with $p(A) = 0.5$ and $p(B) = 0.3$, find the probability that one and only one of the events occurs.

ANSWER

$p(A) = 0.5$, therefore $p(\text{not} A) = 1 - 0.5 = 0.5$

$p(B) = 0.3$, therefore $p(\text{not } B) = 0.7$

$p(1 \text{ event}) = p((A \text{ and not } B) \text{ or } (B \text{ and not } A)) = (0.5)(0.7) + (0.3)(0.5) = 0.5$