

Answer on Question #45512 —Math - Statistics and Probability

3. The Probability that Ram will hit a target is 0.56 and the Probability that Shyam will hit the target is 0.45. The Probability that both will hit the target is 0.25. Find the Probability that i) at least one will hit the target ii) exactly one will hit the target iii) not more than one will hit the target

Solution

Things to notice: we have two shouts. As $0.56 \cdot 0.45 \approx 0.25$ we can conclude that those are independent events i. Here we add such probabilities: (Ram hits and Shyam misses)+(Ram hits and Shyam does)+(Ram misses and Shyam hits). That is all possible cases

$$0.56 * 0.45 + 0.56 * 0.55 + 0.45 * 0.44 = 0.758$$

ii. Here we add only (Ram hits and Shyam does not)+(Ram misses and Shyam hits)

$$0.56 * 0.55 + 0.45 * 0.44 = 0.506$$

iii. Here we add: both misses+(Ram hits and Shyam misses)+(Ram misses and Shyam hits)

$$0.56 * 0.55 + 0.45 * 0.44 + 0.44 * 0.55 = 0.748$$