Answer on Question #44830 – Math – Statistics and Probability

Question

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

Let the event A is that Ram hit a target, B is that Shyam hit the target.

Then $P(A) = 0.56, P(B) = 0.45, P(A \cap B) = 0.25.$

i) $P\{at\ least\ one\ will\ hit\ the\ target\} = P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.56 + +0.45 - 0.25 = 0.76.$

ii) $P\{exactly\ one\ will\ hit\ the\ target\} = P(A \backslash B) + P(B \backslash A) = P(A) - P(A \cap B) + P(B) - -P(A \cap B) = 0.56 - 0.25 + 0.45 - 0.25 = 0.51.$

iii) $P\{not\ more\ than\ one\ will\ hit\ the\ target\} = 1 - P(A \cap B) = 1 - 0.25 = 0.75.$

Answer.

i) 0.76

ii) 0.51

iii) 0.75