

Assignment2

Q1. Explain Total Probability.

Q2. Explain Bayes' theorem in terms of total probability.

Q3. Oscar has lost his dog in either forest A with a priori probability 0.4 or in forest B with a priori probability 0.6. If the dog is alive and not found by the n th day of search it will die that evening with a probability of $n/(n+2)$. If the dog is in A (either dead or alive) and Oscar spends a day searching for it in A the conditional probability that he will find it that day is 0.25. Similarly if the dog is in B and Oscar spends a day searching for it in B with a conditional probability 0.15. The dog can't go from one forest to the other. Oscar can only search in day time and he can travel from forest A to forest B in night.

1. In which forest should Oscar look to maximize the probability that he finds his dog on the first day of search?
2. Given that Oscar looked in forest A on the first day but didn't find his dog, what is the probability that the dog is in forest A?
3. Oscar has decided to look in forest A for the first two days, what is the probability that he will find the dog live in second day.