

CSE 21: Quiz 5 Solutions

May 17, 2006

The platoon commander knows:

- If the air strike is successful, there is a 70% probability that the ground forces will NOT encounter enemy fire.
 - If the air strike is not successful, there is a 60% probability that the ground forces WILL encounter enemy fire.
 - There is an 80% probability that the air strike will be successful.
- 1a. What is the probability that the ground forces will NOT encounter enemy fire? **Solution:** $P(\text{forces do not encounter fire}) = P(\text{air strike successful AND forces do not encounter fire}) + P(\text{air strike not successful AND forces do not encounter fire}) = P(\text{air strike successful})P(\text{ground troops do not take fire} \mid \text{air strike successful}) + P(\text{air strike not successful})P(\text{ground troops do not take fire} \mid \text{air strike not successful})$. **Ans:** $0.8 \cdot 0.7 + 0.2 \cdot (1 - 0.6) = 0.64$
- 1b. The ground forces did not encounter enemy fire. What is the probability that the air strike was successful? **Solution:** $P(\text{air strike successful} \mid \text{ground forces did not encounter enemy fire}) = P(\text{air strike successful AND ground forces did not encounter enemy fire}) / P(\text{ground forces did not encounter enemy fire}) = P(\text{air strike successful})P(\text{ground forces did not encounter enemy fire} \mid \text{air strike successful}) / 0.64$. **Ans:** $\frac{0.8 \cdot 0.7}{0.64} = \frac{0.56}{0.64} = \frac{7}{8} = 0.875$.