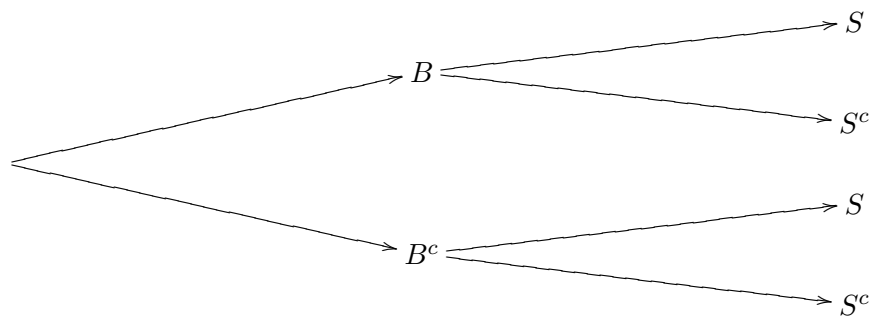


This quiz covers material from chapter 7. Show your work.

1. (6 points) During a senior class trip to New York City, students were given the choice of a number of activities, such as seeing a Broadway show on Friday night, or visiting the Statue of Liberty on Saturday morning. In all, 60% of the students saw the Broadway show. Of those that saw the show, 40% also visited the Statue of Liberty. Of those who didn't see the show, 80% visited the Statue of Liberty.

a. (2 pts) If a student is selected at random, let B represent the event where the student saw the Broadway show, and let S be represent the event where the student visited the Statue of Liberty. Given the information above, complete the tree diagram.



b. (2 pts) If a student is selected at random, what is the probability that they saw the Statue of Liberty?

c. (2 pts) If a student who visited the Statue of Liberty is selected at random, use Bayes' Theorem to calculate the probability that they also saw the Broadway show.

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2. (*4 points*) Every year, the University of Maryland has 25,000 applicants, from which it accepts 10,000. Two such applicants are Bill and Mary. What is the probability that both are admitted (assume every applicant has an equal likelihood of being accepted)?

3. (*6 points*) An experiment has a uniform sample space with 100 outcomes. Let E and F be two events such that $n(E) = 70$, $n(F) = 80$, and $n(E \cap F) = 60$.

a. (*2 pts*) What is $P(E \cup F)$?

b. (*2 pts*) What is $P(E \cap F^c)$?

c. (*2 pts*) What is $P(E^c \cap F^c)$?

4. (*4 points*) A pair of dice are rolled. Let E be the event where doubles are rolled (both dice have the same number), and let F be the event where the sum of the numbers on the dice is greater than or equal to 10.

a. (*2 pts*) Compute $P(E)$ and $P(F)$.

b. (*2 pts*) Compute $P(E \cap F)$. Are E and F independent events?