Answer on Question #44237-Math-Statistics and Probability

Two randomly selected grocery store patrons are each asked to take a blind taste test and to then state which of three diet colas (marked as A, B, or C) he or she prefers.

a. Draw a tree diagram depicting the sample space outcomes for the test results.

b. List the sample space outcomes that correspond to each of the following events:

(1) Both patrons prefer diet cola A.

(2) The two patrons prefer the same diet cola.

(3) The two patrons prefer different diet colas.

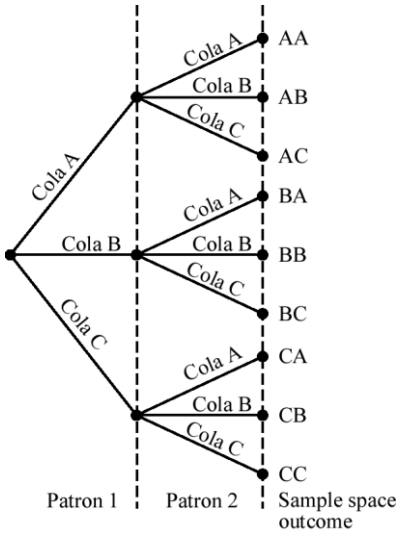
(4) Diet cola A is preferred by at least one of the two patrons.

(5) Neither of the patrons prefers diet cola C.

c. Assuming that all sample space outcomes are equally likely, find the probability of each of the events given in part b.

Solution

a.



b. (1) *AA* (2) *AA*, *BB*, *CC* (3) *AB*, *AC*, *BA*, *BC*, *CA*, *CB* (4) *AA*, *AB*, *AC*, *BA*, *CA*
(5) *AA*, *AB*, *BA*, *BB*

c. Each outcome has probability $\frac{1}{9}$.

(1) $\frac{1}{9}$. (2) $3 \cdot \frac{1}{9} = \frac{1}{3}$. (3) $6 \cdot \frac{1}{9} = \frac{2}{3}$. (4) $5 \cdot \frac{1}{9} = \frac{5}{9}$. (5) $4 \cdot \frac{1}{9} = \frac{4}{9}$.