

AP Statistics - Conditional Probability and Independence - Test

Common Core AP STAT 4.5, AP STAT 4.6, HSS-CP.A.2, HSS-CP.A.3, HSS-CP.A.4, HSS-CP.B.6, HSS-CP.B.8 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 45-minute test covers conditional probability, the multiplication rule, tree diagrams, and independence. Show the formula or table row you use and give each answer as a fraction or decimal.

About this test

- Grade: AP Statistics
- Chapter: Conditional Probability and Independence
- Standards: AP STAT 4.5, AP STAT 4.6, HSS-CP.A.2, HSS-CP.A.3, HSS-CP.A.4, HSS-CP.B.6, HSS-CP.B.8
- Time: 45 minutes
- Total: 20 points

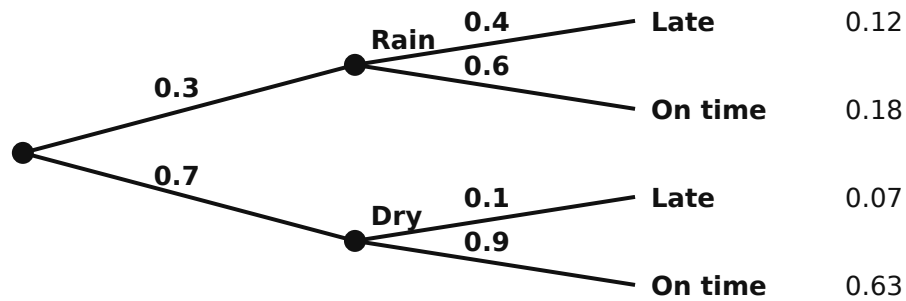
Question 1 - Conditional from a table [3 pts]

Likes	Boys	Girls	Total
Yes	24	36	60
No	16	24	40
Total	40	60	100

Opinion by sex.

(a) Find $P(\text{likes} \mid \text{girl})$. (1 point) (b) Find $P(\text{girl} \mid \text{likes})$. (1 point) (c) Are liking and sex independent? (1 point)

Question 2 - Tree diagram [4 pts]



A tree for bus arrival.

(a) Find $P(\text{rain and late})$. (1 point) (b) Find $P(\text{late})$. (1 point) (c) Find $P(\text{rain} | \text{late})$. (2 points)

Question 3 - Independence [3 pts]

$P(A) = 0.5$, $P(B) = 0.2$, and $P(A \text{ or } B) = 0.6$. (a) Find $P(A \text{ and } B)$. (1 point) (b) Are A and B independent? (1 point) (c) Are they mutually exclusive? (1 point)

Question 4 - Without replacement [2 pts]

A drawer has 5 black and 3 white socks. Two are chosen at random without replacement. Find $P(\text{both black})$.

Question 5 - At least one [2 pts]

A basketball player makes 75% of free throws, independently. Find the probability that she makes at least one of two shots.

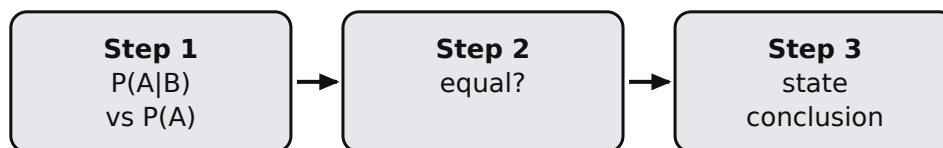
Question 6 - Explain the difference [2 pts]

Explain the difference between independent events and mutually exclusive events using the roll of one die: A = even number and B = a 6.

Question 7 - Medical test [3 pts]

A condition affects 5% of people. A test is positive for 90% of people with the condition and 8% of people without it. Find $P(\text{positive})$ and $P(\text{condition} | \text{positive})$. (3 points)

Question 8 - Read the notation [1 pt]



Independence check.

Write $P(\text{rain} \mid \text{late})$ in words.