

Algebra 2 - Conditional Probability and Independence - Test

Common Core S-CP.A.1, S-CP.A.2, S-CP.A.3, S-CP.A.4, S-CP.A.5, S-CP.B.6, S-CP.B.7, S-CP.B.8, S-CP.B.9 · maths-pdf.fr/en/

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

This 45-minute test on conditional probability and independence has 9 questions worth 20 points in total. The questions move from direct skills to multi-step problems. Show your work, because partial credit is given for a correct setup and sound reasoning.

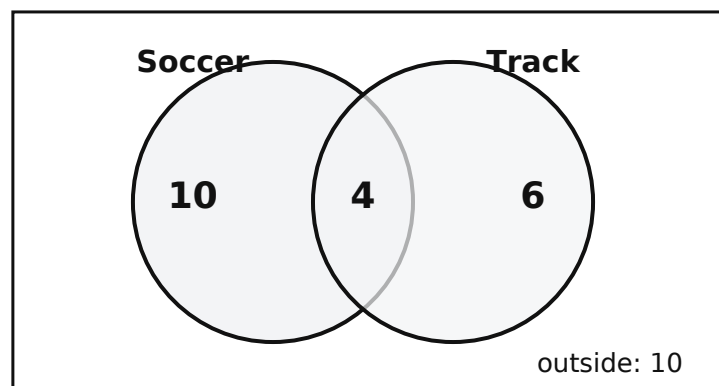
About this test

- Grade: Algebra 2
- Chapter: Conditional Probability and Independence
- Standards: S-CP.A.1, S-CP.A.2, S-CP.A.3, S-CP.A.4, S-CP.A.5, S-CP.B.6, S-CP.B.7, S-CP.B.8, S-CP.B.9
- Time: 45 minutes
- Total: 20 points

Question 1 - Sample space [2 pts]

Two fair dice are rolled. Find the probability that the sum is at least 10.

Question 2 - Union [2 pts]



30 students in two sports.

The Venn diagram shows 30 students. Find the probability that a random student plays soccer or track.

Question 3 - Two-way table [3 pts]

	Girls	Boys	Total
Owens a bike	36	24	60
No bike	14	26	40
Total	50	50	100

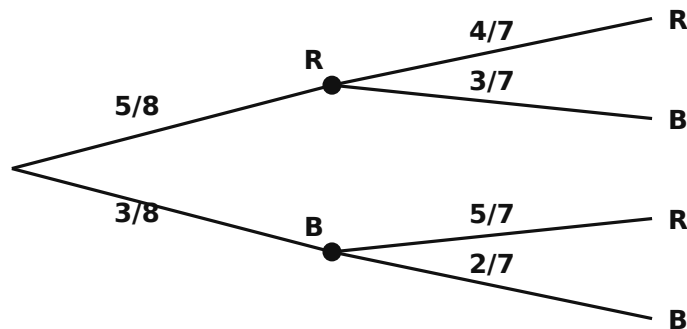
Bike ownership.

The table shows 100 students. Find $P(\text{owns a bike})$, $P(\text{owns a bike} \mid \text{girl})$, and decide whether owning a bike is independent of gender.

Question 4 - Independence check [2 pts]

For two events, $P(A)=0.6$, $P(B)=0.5$, and $P(A \text{ and } B)=0.35$. Are A and B independent?

Question 5 - Tree diagram [3 pts]



Two draws from a bag of 5 red (R) and 3 blue (B) marbles, without replacement.

A bag has 5 red and 3 blue marbles. Two are drawn without replacement. Find the probability that the marbles are different colors.

Question 6 - Counting [2 pts]

(a) In how many ways can a president, vice president, and treasurer be chosen from 7 students? (b) In how many ways can a team of 3 be chosen from 7 students?

Question 7 - At least one [2 pts]

A fair coin is flipped 4 times. Find the probability of at least one head.

Question 8 - Conditional probability [2 pts]

Of 200 customers, 80 buy coffee, 50 buy a muffin, and 30 buy both. Find $P(\text{buys a muffin} \mid \text{buys coffee})$.

Question 9 - Find the error [2 pts]

Jamal says that drawing two cards without replacement makes the events independent. Explain his error using the cards.