4. Exercise: Independence of two events - I

Exercises due Feb 12, 2020 05:29 IST *Completed*

Exercise: Independence of two events - I

1/1 point (graded)

We have a peculiar coin. When tossed twice, the first toss results in Heads with probability $1/2$. However, the second toss always yields the same result as the first toss. Thus, the only possible outcomes for a sequence of 2 tosses are HH and TT, and both have equal probabilities. Are the two events $A = \{\text{Heads in the first toss}\}$ and $B = \{\text{Heads in the second toss}\}$ independent?

No, they are dependent ✔ **Answer:** No, they are dependent

Solution:

Intuitively, the occurrence of event A gives us information on whether event B will occur, and therefore the two events are dependent.

Mathematically, $\mathbf{P}(A) = \mathbf{P}(B) = \mathbf{P}(A \cap B) = 1/2$, so that $\mathbf{P}(A \cap B) \neq \mathbf{P}(A)\,\mathbf{P}(B)$.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

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? Clarify question?

Perhaps I misread this, but why isn't the probability of B given that A has occurred equal to one? I thoug...

1 new

? why P(A intersection B) = 1/2?

I understand this problem from an intuitive POV. Also understand why P(A)=P(B)=1/2... can someone she...

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