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## 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  $\mathbf{P}(A \cap B) \neq \mathbf{P}(A)\mathbf{P}(B)$ .

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You have used 1 of 1 attempt

**1** Answers are displayed within the problem

## Discussion

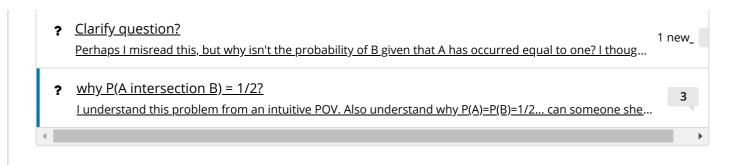
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