



## MITx: 6.041x Introduction to Probability - The Science of Uncertainty



Bookmarks

- ▶ Unit 0:  
Overview
- ▶ Entrance  
Survey
- ▶ Unit 1:  
Probability  
models and  
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and  
independence

Unit overview

Lec. 2:  
Conditioning and  
Bayes' rule

Exercises 2 due Feb  
17, 2016 at 23:59 UT

Lec. 3:  
Independence

Exercises 3 due Feb  
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Solved problems

Problem Set 2

Problem Set 2 due Feb  
17, 2016 at 23:59 UT

Unit 2: Conditioning and independence &gt; Lec. 3: Independence &gt; Lec 3 Independence vertical



Bookmark

## Exercise: Independence of two events - I

(1/1 point)

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

Answer:

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

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

You have used 1 of 1 submissions

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