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## 12. Exercise: Coin tossing

Exercises due Feb 19, 2020 05:29 IST **Completed**

### Exercise: Coin tossing

2.0/2.0 points (graded)

Use the second method in the preceding segment to find the probability that the 6th toss out of a total of 10 tosses is Heads, given that there are exactly 2 Heads out of the 10 tosses. As in the preceding segment, continue to assume that all coin tosses are independent and that each coin toss has the same fixed probability of Heads. (In this and subsequent questions, your answer should be a number. Do not enter '!' or combinations in your answer.)

9/45

✓ Answer: 0.2

#### Solution:

The conditional universe consists of sequences of length 10 that contain exactly 2 Heads. There are

$$\binom{10}{2} = \frac{10!}{8!2!} = \frac{10 \cdot 9}{2} = 45$$

such sequences. Out of these 45 sequences, how many have the property that the 6th toss was Heads? There are 9 sequences with this property: the 6th toss is fixed to be Heads, and the other Heads can be any of the remaining 9 tosses. Therefore, the desired conditional probability is  $9/45 = 1/5$ .

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You have used 3 of 3 attempts



 Answers are displayed within the problem


## Discussion

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 Does the answer take fraction form?  
Do I need to entered exactly a decimal or can I input a fraction?

4

 Can't understand wording.


Hi. Have last attempt. First read was like in preceding lecture, namely " given that there are exactly 2 Hea... 1 new\_

 Community TA

 Write things down


As of the last 8 or so videos, I've started writing down everything I needed to fully follow along, and the e...

1

 Another intuitive approach

For this specific problem, I found even easier to think that the 6th toss could actually be any toss at rand...

3

 Need help with counting the event that 6th toss was a head given exactly 2 tosses were heads

I have intuitively figured out the solution to the problem, but can't get the math behind it (counting). Can...

5 new\_

 Second approach is easier

When I watched the lecture I thought the first approach was easier.<br> After doing the problem I agree ...

4

 n choose k [STAFF]

In this exercise, we need to use (n choose k) in the answer, don't we? I can use Wolfram, but wouldn't it b...

2 new\_

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