

## 22. Exercise: Inference of the bias of a coin

### Exercise: Inference of the bias of a coin

1/1 point (graded)

The random variable  $K$  is geometric with a parameter which is itself a uniform random variable  $Q$  on  $[0, 1]$ . Find the value  $f_{Q|K}(0.5 | 1)$  of the conditional PDF of  $Q$ , given that  $K = 1$ . *Hint:* Use the result in the last segment.

✓ Answer: 1

#### Solution:

We identify  $Q$  with the variable  $Y$  in the last segment. The information that  $K = 1$  is the information that the first coin flip resulted in Heads, which is the same as the information that  $K = 1$  in the last segment. Therefore, the conditional PDF of  $Q$  is  $2q$ , which for  $q = 0.5$  evaluates to 1.

You have used 1 of 3 attempts

❗ Answers are displayed within the problem

## 讨论

Topic: Unit 5 / Lec. 10 / 22. Exercise: Inference of the bias of a coin

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