

Foundations of probability theory

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Conditional
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The best-choice problem

Tijms (2012)

Your friend proposes the following wager: twenty people are requested to write a number in a piece of paper. They write any number they like, no matter how high. You fold up the twenty pieces of paper and place them randomly on a tabletop. Your friends task is to single out the paper with the largest number. He opens the papers one by one. Each time he opens one, he must decide whether to stop with that one or go on to open another one. Once a paper is opened, your friend cannot go back to any of the previously opened paper. He pays you one dollar if he does not identify the paper with the highest number on it, otherwise you pay him five dollars. Do you take the wager?

What would you say to a similar wager with 100 people where your friend pays you one dollar if he does not find the paper with the highest number and you pay him ten dollars otherwise?

Your friend will use the following strategy. He will allow the first half of papers to pass through his hands, and remember the highest number that has appeared. As he process the second half, he chooses the first paper showing a number higher than the one he remembered in the first half.

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Tijms, H. (2012). *Understanding probability*. Cambridge University Press.