

4D Finding Critical Regions for a Geometric Distribution

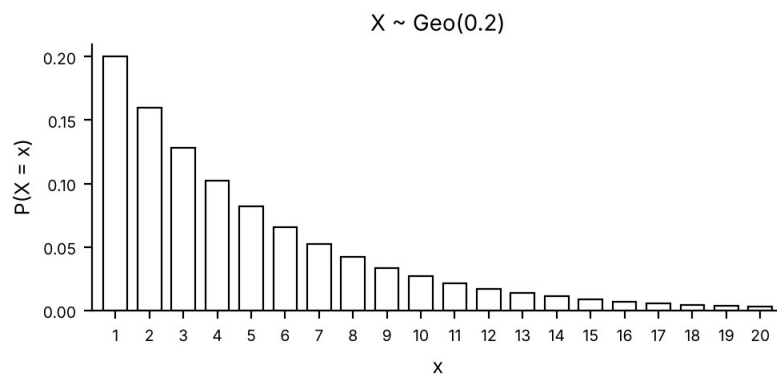
Testing $H_1: p < m$: the critical region is at which end of the distribution? Which probability do you use?

Testing $H_1: p > m$: the critical region is at which end of the distribution? Which probability do you use?

Solving an inequality such as $0.8^{c-1} < 0.05$ using logs (watch out for the direction of the inequality):

1. Ayesha wishes to test if a five-sided spinner numbered from 1 to 5 is fair. She spins the spinner and counts the number of trials until she gets the spinner to show the number 1.
 - a) Using a 5% level of significance, find the critical region for a one-tailed test of the hypothesis that the probability of getting the number 1 on a single spin is less than $\frac{1}{5}$.

Shade the critical region on the diagram:



- b) Write down the actual significance level of the test in part a.

2. In a particular city, a Lobster Card is used as a method of payment on trains. The company that administers the card claims that only 1 in 1000 cards will be rejected by the card reader at the train station. A station manager feels that the company is understating the proportion of cards rejected by the card reader, and decides to carry out a test. When he comes on shift at 5:00am he counts the number of passengers who pass through until he notes a passenger who has a Lobster Card rejected.
- a) Using a 5% level of significance, find the critical region for a one-tailed test of the hypothesis that the proportion of Lobster Cards rejected by the card reader is greater than 1 in 1000.
- b) Write down the actual significance level of the test in part a.