

The Hypergeometric Distribution: Exercises

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Poker hands If you draw a hand of five cards from a deck of 52 cards, what is the probability that you will draw exactly two aces?

Capture-Recapture Experiments You capture 100 butterflies in a field and mark them with a dot of paint. You come back the next day and capture another 100 butterflies, recording how many of them are marked.

1. Given that the field contains a total of T butterflies, what is the probability of capturing s marked butterflies on the second day?
2. Suppose that $s = 75$. What value of T maximizes the conditional probability of this observation?

Sample Symmetrization A string of $2t = 200$ coin flips contains 20 successes. Bound the probability that more than 12 or less than 8 of those successes occur in the first half of the string.