

Stat 134: Section 7

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Problem 1

You flip a fair coin 10 times, and I flip a fair coin 10 times. What's the probability that we get the same number of heads? Write your answer without a summation.

Hint: Write down your answer using summation first. Now how can you relate your summation to a hypergeometric distribution?

Problem 2

Draw five cards from a standard deck of cards to form a poker hand. Let E be the event of having no point. Find $P(E)$.

Instead of subtracting the sum of probabilities of getting points, try to think how you can approach this directly.

Hint: For a poker hand to receive no point, they have to be all singles, but not a straight or flush.

Problem 3

Let X and Y be independent random variables with non-negative integer values.

- a. Show that $P(X + Y = n) = \sum_{k=0}^n P(X = k)P(Y = n - k)$;
- b. Find the probability that the sum of numbers on four dice is 8, by taking X to be the sum on two of the dice, Y the sum on the other two.

This is called the discrete convolution formula.

Ex 3.1.16 in Pitman's Probability