

Exercise

- In a dark chamber 20 coins (10 heads and 10 tails) rests on the ground. We want to separate 2 sets of 10 coins with the same number of tails. We can not see the coins, we can only flip each one. How would you separate the coins?

Solution:

We first pick up 10 random coins, in this set we have x heads and $10 - x$ tails and in the other set we have y heads and $10 - y$ tails.

Since $x + y = 10$ (there was 10 heads in the initial set) the first set is compound by x heads and y tails and the second one is compound by y heads and x tails. If we flip all the 10 coins of one set, we guarantee that both sets have the same number of tails and heads.