A Cat, a Parrot, and a Bag of Seed:

A man finds himself on a riverbank with a cat, a parrot and a bag of seed. He needs to transport all three to the other side of the river in his boat. However, the boat has room for only the man himself and one other item (either the cat, parrot or seed). In his absence, the cat could eat the parrot, and the parrot would eat the bag of seed. Show how he can get all the passengers to the other side, without leaving the wrong ones alone together.

The problem that I see is that he needs to transport all three to the other side of the river in his boat. He only has room for himself and one other item. The items include a cat, a parrot and a bag of seed. The problem is if he leave two items alone they can eat the other like if he takes the seed first then the cat will eat the bird or if he takes the cat first then the bird will eat the seed.

Some insight that the word problem does not state is: it doesn’­­t matter how many trips the man takes.

The overall goal for the man is to make it across the river in his boat, with all three items.

Some of the constraints are that the cat can’t be left with the bird by itself. That means the man is not able to take the bag of seed first. Another constraint is that bird can’t be left with the bag of seed. That means the man can’t take the cat first.

The sub goals for the man is get each of the three items across the river without one eating the other.

The only solution I see is that if the man takes the bird first across the river, then that leaves the cat with the bag of seed. Once he drops off the bird on the other side, then he returns back to the side with the cat and the bag of seed. At this point it does not matter what he grabs. I will explain because if he grabs the bag of seed then that leaves the cat by itself. He then goes to the side with the bird. He drops off the bag of seed and then grabs the bird. He will then take the bird with him back to the other side of the river. He then will drop off the bird and pick up the cat. After that he will travel again across the river and drop off the cat. He then will go back to the original side where the bird is. This keeps the cat and the bag of seed on one side while he retrieves the bird to bring back to the side of the river where they want to be. Earlier I said it doesn’t matter what he grabbed second, because he would of repeated the same process if he would of grabbed the bird second. Below I have included a diagram.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Side A | River | Side B |  | Side A | River | Side B |  | Side A | River | Side B |
|  | man |  |  |  |  | man |  |  |  |  | man |
| Step 1 | bird |  |  | Step 6 |  |  | bird | Step 11 | bird |  |  |
|  | cat |  |  |  | cat |  |  |  |  |  | cat |
|  | bag of seed |  |  |  |  | bag of seed |  |  |  |  | bag of seed |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Side A | River | Side B |  | Side A | River | Side B |  | Side A | River | Side B |
|  |  | man |  |  |  |  | man |  |  | man |  |
| Step 2 |  | bird |  | Step 7 |  |  | bird | Step 12 | bird |  |  |
|  | cat |  |  |  | cat |  |  |  |  |  | cat |
|  | bag of seed |  |  |  |  |  | bag of seed |  |  |  | bag of seed |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Side A | River | Side B |  | Side A | River | Side B |  | Side A | River | Side B |
|  |  |  | man |  |  | man |  |  | man |  |  |
| Step 3 |  |  | bird | Step 8 |  | bird |  | Step 13 | bird |  |  |
|  | cat |  |  |  | cat |  |  |  |  |  | cat |
|  | bag of seed |  |  |  |  |  | bag of seed |  |  |  | bag of seed |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Side A | River | Side B |  | Side A | River | Side B |  | Side A | River | Side B |
|  |  | man |  |  | man |  |  |  |  | man |  |
| Step 4 |  |  | bird | Step 9 | bird |  |  | Step 14 |  | bird |  |
|  | cat |  |  |  | cat |  |  |  |  |  | cat |
|  | bag of seed |  |  |  |  |  | bag of seed |  |  |  | bag of seed |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Side A | River | Side B |  | Side A | River | Side B |  | Side A | River | Side B |
|  | man |  |  |  |  | man |  |  |  |  | man |
| Step 5 |  |  | bird | Step 10 | bird |  |  | Step 15 |  |  | bird |
|  | cat |  |  |  |  | cat |  |  |  |  | cat |
|  | bag of seed |  |  |  |  |  | bag of seed |  |  |  | bag of seed |

There are 20 socks in a drawer: 5 pairs of black socks, 3 pairs of brown and 2 pairs of white. You select the socks in the dark and can check them only after a selection has been made. What is the smallest number of socks you need to select to guarantee getting the following:

1. At least one matching pair

So there is 20 socks all together which to me means 10 pairs as indicated in the problem. There is 5 pairs of black socks which we could use x as a variable. Then there is 3 pairs of brown which we will use y. There is only 2 pairs of white which we will use z. So after each selecting is made(two socks) then you cant check to see what selection was made. So to think outside the box it never indicates that you have to put the “wrong” pair of socks back in the drawer. So the probability would be x = 10/20, y = 6/20 and z = 4/20. The question is the smallest number of socks which would be 2 because you could get a matching pair right off the bat.

b) At least one matching pair *of each color.*

*This one is also not very descriptive as stated above it would be 6 socks because you could match each pair.*

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