A Cat, a Parrot, and a Bag of Seed

1. The Problem: The man needs to transport all three things to the other side, the cat, the parrot and the bag of seed but he can only transport one thing at a time. The man needs to transport all three to the other side without anything getting ate in his absence.
2. The constraints of the problem are that the man cannot leave any of the two behind without something going wrong. He is only allowed to bring one thing at a time across.
3. Taking one thing at a time.
4. The man and the parrot cross the river. He leaves the parrot there and goes back. The man takes the cat across the river. He drops off the cat and takes the parrot back across with him and drops off the parrot and takes the seed across and drops off the seed with the cat seeing that the cat will not eat the seed. He then goes back for the parrot and take him across. All three animals are safely across the river.

Socks in the Dark

1. The Problem: There are 20 socks in a drawer 5 pairs are black, 3 pairs are brown, and 2 pairs are white can only select the socks in the dark and can check them only after a selection has been made.
2. The constraints are that there are different colors of socks and that it is dark and you cannot see. Sub-goals are to have the smallest number of socks you need to select to guarantee to get at least one matching pair and at least one matching pair of each.
3. Some potential solutions are to grab out 4 socks at random. If you grab out four socks you are most likely to grab a double meaning you would have a pair of matching socks. For getting a pair for each color I think you would need to pull out 18 socks seeing that you need to pull out 6 different socks and that there are three different types of socks.
4. Yes I think the solution meets the goals of both. Yes the both solutions will work in all cases due to the fact that it is impossible to not have the matching sock in hand.
5. The solution for getting at least one matching pair is to pull out 4 socks. If you pull out three and they are all different that fourth sock will match one of the three and you have your matching pair. For the getting at least one matching pair for each color you will need to pull out 6 socks seeing that you will need to pull out 18 to make it to where it works all the time.