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 and making sure everything is intact when the man leaves for the next thing.
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.

Predicting Fingers:

1. Counting finger in different ways until you reach 10, 100, and 1000. At each one which finger do you stop at?
2. Constraints are you need to keep counting on your hand from one side of your hand to other side of it and back until you reach each of the goals. Sub-goals are that you need to count until 10 to see with finger you are on and do the same for 100 and 1000.
3. Potential solution for counting to 10 is to actually count to 10 and end up on that finger. A Solution for 100 is to count to 5 as the problem says you always skip a finger when continuing to count so you add 4 to the 5 making 9 you continue until you reach 100 which is 24 times. Making the 100th count on your ring finger. For the 1000th count I just multiplied 24 by 10 and then 240. I counted 80 times and got my middle finger.
4. The solutions do meet all goals. I am certain that my solutions will work for all cases since I did them myself.
5. I used math for the last two goals using the first goal as guidance. Potential solution for counting to 10 is to actually count to 10 and end up on that finger. A Solution for 100 is to count to 5 as the problem says you always skip a finger when continuing to count so you add 4 to the 5 making 9 you continue until you reach 100 which is 24 times. Making the 100th count on your ring finger. For the 1000th count I just multiplied 24 by 10 and then 240. I counted 80 times and got my middle finger.