Problem Solving

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.

Problem 1: A cat, a parrot, and bag of seed.

1. There is a man who needs to cross the river. He needs to take three items (a cat, a parrot, and bag of seed.) He can only take one item at a time. If he leaves the parrot and the cat together, the cat will eat the parrot. If he leaves the parrot with the bag of seed, the parrot will eat the seed. He needs to find a way to cross the river without losing the cat, parrot, or seed.
2. The constraints are as follows:
   1. Cat will eat the parrot if left alone
   2. Parrot will eat the seed if left alone
   3. Only the man and one item can cross at a time.
3. Potential solutions
   1. Man crosses with parrot first, leaves cat and seed, comes back, carries cat across, leaves cat and parrot, comes back, carries bag of seed across, finished.
   2. Man crosses with parrot first, leaves cat and seed together. Then the man comes back to get cat, takes cat across to the parrot. He then brings the parrot back to the seed. He will then take the seed to the cat and leave the cat and seed together. Lastly he will go back to get the parrot and cross the river with all three.
4. Evaluation
   1. Solution a: Man crosses with parrot first, leaves cat and seed, comes back, carries cat across, leaves cat and parrot, comes back, carries bag of seed across, finished.
      1. Man cannot leave cat and parrot together. Cat will eat the parrot.
   2. Solution b: Man crosses with parrot first, leaves cat and seed together. Then the man comes back to get cat, takes cat across to the parrot. He then brings the parrot back to the seed. He will then take the seed to the cat and leave the cat and seed together. Lastly he will go back to get the parrot and cross the river with all three.
5. Conclusion