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SDI – Problem Solving

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**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. The cat could eat the parrot, the parrot could eat the seed, and he only has room for himself and one other item on the boat. His overall goal is to transport all the three items across the river.
2. Constraints: Cat could eat parrot, parrot could eat seed, and the boat isn’t big enough; Sub-Goals: Figuring out which item to take first.
3. Potential Solutions: The cat could eat the parrot and the parrot could eat the seed, but the cat doesn’t eat seed. The cat could be carried across first.
4. This solution meets all of the goal needs and will work for all cases.

**Socks in the Dark:**

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:

a) At least one matching pair

b) At least one matching pair of each color.

**Predicting Fingers:**

A little girl counts using the fingers of her left hand as follows: She starts by calling her thumb 1, the first finger 2, middle finder 3, ring finger 4, and little finger 5. Then she reverses direction, calling the ring finger 6, middle finger 7, first finger 8 and thumb 9, after which she calls her first finger 10 and so on. If she continues to count in this manner, on which finger will she stop?

a) What if the girl counts from 1 to 10

b) What if the girl counts from 1 to 100

c) What if the girl counts from 1 to 1000