**Problem Solving**

**Scenario 1 A Cat, a Parrot, and a Bag of Seed**

1. **Define the problem**

a) The problem here is how the man can get the cat, the parrot, and the bag of seed across the river as a whole but he has only room for himself and one of them.

b) The insight I can offer is how the man finds himself in a puzzle because he needs each of them to be whole in order for them to count as a puzzle piece.

c) The over all goals are to get the cat, parrot, and bag of seed to the other side of the river without leaving them unattended together.

1. **Break the problem apart**

a) The constraint is he only has room for himself and either the cat, parrot, or the bag of seed.

b) The sub-goals are he needs to get them over without leaving the cat to eat the parrot, or the parrot to eat the bag of seed.

1. **Identify potential solutions**a) A possible solution to the sub-problems is to take the bag of seed across first, then the cat, then the parrot. But if by doing that, the cat and parrot would be left alone, resulting in the cat eating the parrot. Another solution would be to take the cat over first, but by doing so, it would result in the parrot eating the bag of seed. The third solution would be to take the parrot over first, then the cat or the bag of seed, but if he took the cat over second, the cat would eat the parrot, if he took the bag of seed over second, then the parrot would eat the bag of seed.
2. **Evaluate each potential solution**

a) No, each of the solutions do not meet the goals, the solutions would cancel each other out.

b) Each solution would not work for all cases.

1. **Choose a solution and develop a plan to implement it.**

a) The solution would be:

* 1. Take the parrot over first.
  2. Come back.
  3. Take the bag of seed over second.
  4. Bring back the parrot.
  5. Get the cat and leave the parrot.
  6. Take the cat over.
  7. Come back
  8. Get the parrot.
  9. Take the parrot over.

b) A little diagram of how the solution works is as follows:

Key:

C=Cat P=Parrot S=Bag of Seed R=Riverbank

O=Other side of river

Solution:

CPSR

P--------------🡪O

CSR🡨----------O

S--------------🡪O

P🡨--------------O

PCR

C--------------🡪O

R🡨--------------O

P--------------🡪O

**Scenario 2 Socks in the Dark**

**&**

**Scenario 3 Predicting fingers**

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 2 pair because when selecting a pair of socks in the dark, no matter color it is, they are in the dark and you can’t see it, it is going to be black, so it will be a pair.

 b) At least one matching pair of each color. 3 because there is three colors.

In the scenario it did not say have many were being selected at a time. I really was confused on this one.

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? First finger, the answer is in the scenario.

b) What if the girl counts from 1 to 100? Ring finger, because I counted.

c) What if the girl counts from 1 to 1000?

8 / 1000=125 The Ring finger is 100, so I counted the extra 25 and ended on the middle finger. So I think the middle finger is 1000.

**These were really hard for me but I really did try to solve them and finger them out. I am not very good at doing math, I am sorry, and I submitted the activity on FSO, just so you would know that this is in my Git Repo.**