Problem Solving

**Problem 1: A Cat, Parrot and a Bag of Seed**

Defining the problem and breaking it apart: We have a man, a cat, a parrot and a bag of seed that need to be transported across the river.

However, the boat only has enough room to hold the man and one other for each trip. He cannot leave the cat alone with the parrot because the cat will eat the parrot and the parrot will eat the seed if left alone with it.

Thinking of Possible Solutions: The man could take the parrot across the river first because the cat won’t eat the seed. But then when he returns to bring either the seed or the cat across, you now have the dilemma of the cat alone on the other side with the parrot or the parrot with the seed.

It would seem that this is truly an impossible feat!

Finding the Solution: The boat only has enough room to seat the man and one other.

So the man will ride in the boat and can take the cat in the boat on the first trip. The parrot can ride on his shoulder so it isn’t taking up the seat.

The parrot will stay on his shoulder while he returns to get the seed and will ride on his shoulder on that trip as well. This way no one is left alone that shouldn’t be and everyone makes it across safely.

**Problem 2: Socks in the Dark**

You have 20 socks, 5 pairs are black, 3 pairs are brown and 2 pairs are white. You need to match them up in the dark. So we need to find out what the smallest number of socks we need to select to guarantee getting at least one matching pair and also at least one matching pair of each color.

In order to do this we need to use the following equation:

Probability of an event happening = # of ways it can happen/total # of outcome

Total number of outcome= 20 total socks

Number of ways it can happen= number of sock color

So the answer using that equation is:

Number of socks to pull out for each pair:

4 socks= black pair

6 socks= brown pair

10 socks= white pair

So to pull out at least one matching pair the answer is 4 socks.

**Problem 3: Predicting Fingers**

We have a little girl who is using her fingers to count. She starts out using her thumb for #1, first finger 2, middle 3, ring finger 4 and pinky finger 5. She then reverses the direction and calls the pinky 6, ring 7, middle 8, first 9 and thumb 10. We need to figure out what finger she will end up on.

So if she counts 1 to 10 she will as has already been stated end up on her thumb.

If she counts 1 to 100 she will end up on her thumb because it increases by 10