David Gaska

10-1-2013

WPF

Problem Solving Activity

A Cat, A Parrot, and A Bag of Seed

The problem in this case is the man wants to get to the other side of the boat with all of his things, but he can only take one thing at a time. His boat only holds two passengers at a time so he has to be careful of who leaves together. What is not stated in the problem is that he will be making multiple trips.

The constraints in this problem are that if certain things are left together they will not make it across. The cat would eat the bird if they are left alone, and the bird would eat the seed if left with it. So not only does the man want to get to the other side him self, he wants all of things alive on the other side as well. Also when he goes back to get the other item he has to make sure the two he got across will not have an issue

No matter what item is taken first he will run into a conflict when he brings the second one across. If he takes the bird first, he then has to bring the cat or the seed second. Which means that the cat or the seed will be left with the bird. He would have to make more trips then just three. He still has to be careful which item he takes first as it will not always work.

The solution is actually simple. The man must first take the bird across. Then go back across the river to get one of the other items. He then takes the cat across to the other side and leaves him there, but on his return to get the seed he brings the bird back with him. He then leaves the bird on the original side and takes the seed across and leaves it with the cat. He then must go back to get the bird and he will have all items to the other side of the river.

I first tried to take one item at time then realized that no matter what something would get eaten. Then I thought maybe the parrot could just ride on the man’s shoulder the whole time, but that kind of breaks the rules of only taking one item at a time. I then realized that the man would have to take the parrot first and actually bring him back, so the bird got an extra boat ride.

Socks in the Dark

The problem is you have ten pairs of socks with three different colors. It is dark in your room and you need to grab matching socks. You have five pairs of black sock, three pairs of brown, and two pairs of white. The overall goal is to make sure you grab a pair of matching socks and at least one pair of each color.

The issue is that it is dark and the socks all fell a like. A sub-goal would be to organize your sock drawer during the daytime.

If the socks are organized into three sacks you could grab one pair from each stack. You then would have at least one matching pair of each color. In this problem though we are assuming that the socks were just thrown into the drawer and they are mixed up. The solution of organizing them would work for all cases.

The solution for the current situation is a mathematical one. To make sure you have one matching pair of a single color you would have to grab three pair or six socks out. Since there are only two pair of white socks, or four white socks grabbing three pair would give you at least one matching pair. Too make sure you grab a matching pair for each color you would have to grab a total of 18 socks, which are all but two socks. If you crab less you could grab all black and brown and have no white socks. Using math I came up with solution. By totaling the number of socks and then taking away the number of each color I got to my answer.

Predicting Fingers

The problem here is you need to figure out what finger the girl would end on when she counts to 10, 100, 1000. She is also only using one hand for this situation.

The issue with trying to figure out what finger she ends on isn’t easy because she won’t always end on the same finger. What I have figured out is that every ten numbers she counts she finishes two fingers in front of the one she finished on the last ten. Going off of what I figured out I can then count by tens to figure out what she gets for 100 and 1000. Also any tenth digit always land on your ring finger or index finger.

This may not always work for a few reasons. Losing count could obviously affect the outcome. Also forgetting what finger you left off on could also affect the outcome.

The finger she would end on for 100 is her ring finger. For 1000 she would end up on her index finger. To figure it out I realized every 100 counted alternated index and ring fingers. So 100 ended on the ring finger, 200 on the index, 300 back on the ring finger and so on. Thus coming to the conclusion that 1000 would end up on the index finger.