A Cat, a Parrot, and a Bag of Seed

Define the problem:

1. The problem is that the man needs to cross the river with all 3 of his items, but can only transport any one item at a time on his boat. In the same instance he cannot leave the cat and parrot together nor the parrot and the seed.
2. Insight that I can give that is not immediately apparent is that the man can make multiple trips with the same animal.
3. The overall goal of the problem is for the man to transport all the animals across the river without anyone of them eating the other.

Break the Problem apart:

1. The constraints are that the cat will eat the parrot and the parrot will eat the seed if left alone with it all while the man can only transport one item at a time.
2. The sub goal is keeping the cat from eating the parrot and the parrot from eating the seed.

Identifying potential solutions:

1. Potential solutions could be that he places the animals in cages if he has them. Considering he’s travelling with a cat, a parrot, and a bag of seed, and just traverse the water one item at a time.
2. Another potential solution would be to take the parrot over the water first. Next take the cat over but bring the bird back, once back to the other side leave the Parrot and take the seed, lastly go back grab the Parrot and continue on your way.

Evaluate each potential solution:

1. Each solution does meet the goals.
2. The first solution may not meet the goals due to needing extra equipment not described in the word problem. The second problem meets the word problems solution meeting the guidelines left by the word problem.

Choose a solution and develop a plan to implement it

1. The solution is for the man to take the parrot over the water first. Next go back for the cat leave the cat, but bring the Parrot back with him over the water. Leave the bird and take the seed over the river. Lastly go back for the Parrot and now everyone is over the water and nothing was eaten.

Socks in the Dark

Define the problem:

1. The problem is that it is dark and you have a number of different colored socks in your drawer and it is dark inside your room. You must now try to figure out the probability of getting a certain match of socks.
2. What is the not immediately apparent with the problem is that the socks are actually percent of the total problem that there are 3 sets of socks in the drawer.
3. The overall goal of the problem is to find the probability of getting a certain pair of socks that match.

Break the problem apart

1. The constraints of the problem are that it is dark and you cannot see what you are grabbing out of the drawer. Also you have some pairs of socks that you have more of then others.
2. The sub goals of the problem are to, at least match one pair of socks and at least matching 3 sets o different color socks.

Identify potential solutions

1. A solution for the first sub question is to count the number of colors you have and add 1 extra sock to the number of colors you have total. You do this because if there are three colors and you add 1 more selection from the drawer then you are guaranteed to have a match of some kind.
2. A solution for the second question would be to add the three colors and multiply that by four(since that’s the number you would need to find a single match) of you would need to pull out12 socks to get a match for all 3 colors.

Evaluate each potential solution

1. Each potential solution does meet the goals of the question since really all your doing is simple addition and multiplication to find your answer.
2. Each solution will not work in all cases if the number of colors and amount of matches they have changes the numbers will change. What will work though is sticking to adding and multiplying by the correct numbers though.

Choose a solution and Implement it

1. The solutions I am choosing is the two I described above in subsection (Identify potential solutions) the reason I am choosing these two is because they are the two solutions that make the most since to me adding 1 to the 3 colors gives us a guarantee match, as well as taking the 4 from the previous and multiplying that by 3 which is the amount of colors we have in total.

Define the Problem

1. A little girl counts on her fingers she starts at her thumb with one and ends on her index finger with ten.
2. Insight for the problem that is not immediately visible is that the girl for the first 1-10 is that both the index and ring finger always land with even numbers.
3. The overall goal of the problem is to help her solve which finger 100 and 100 will land on when she gets to them without having to count them all out in singles.

Break the Problem apart

1. The constraints of the problem are that you do not know which finger the number will land on when you first start the question.
2. The sub goals of the problem are to find what finger the numbers will land on at 100 and 1000.

Identify potential Solutions

1. A possible solution for finding out the answers to the questions would be to just add all the numbers up on your fingers all the way up to 1000 and writing down the solution to each.
2. Another Solution would be to add up your fingers to 100 and notice that when you get to 100 that it ends on your ring finger as well as 110 this will let you see a pattern that every 20 increase it will be on the opposite finger this being between the ring and index finger.

Evaluate each potential solution

1. Each solution does meet the goal
2. Each solution will work for 2 of the 3 solutions

Choose a solution and develop a plan to implement it

1. The solution is to add your fingers up to 100 using the little girls pattern. Notice the pattern between your index finger and ring finger once you notice the pattern you can for the third question add your number in increments of 20 between your index and ring finger starting at 100 on your ring finger. Next once you reach 200 on your index finger add another 100 to that and switch to your ring finger add 200 and then switch back until you reach 1000 this will give you which finger she would have landed on using her method.
2. I tested this solution by noticing the pattern up to 200 by adding on my fingers then I broke the problem down and noticed the pattern was also prominent in adding from 1-100 on my fingers .