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

1. Ok, so this man needs to get a cat, a parrot and a bag of seed to the other side of the river. His boat is small; he can only transport one item at a time. However if he is not careful and he leaves the cat alone with the parrot, the cat will eat it. If he leaves the parrot alone with the seed the parrot will eat the seed. How will he get all 3 and himself across the river?
2. The cat cannot be left with the parrot and the parrot can’t be left with the seed. The boat can only carry the man and one other thing at a time. His goal is to get all 4 of them across the river.
3. Possible solution: First take over the parrot, and then go get the cat, however when you drop the cat off, take the parrot back to the original side. Drop the parrot off at the original side and take the bag of seed over to the destination side and leave the seed with the cat. Then go back across and pick the parrot back up and return to the destination.
4. This solution meets all the goals.
5. At first I thought this was easy, just take the parrot over first and drop him off. But then I realized that, that wouldn’t work cause no matter what I brought over next one would either be eaten by the parrot or the other would eat the parrot. So then I came to my final solution. The man will take the parrot over and drop him off. Then he will go get the cat. Once he drops the cat off, he will take the parrot back over to the side with the seed. He will drop the parrot back off and take the seed over to the side with the cat. After he drops the seed off he will go back over and pick up the parrot and bring him to where the cat and seed are.

**Socks In the Dark:**

1. So there’s 10 black socks, 6 brown socks and 4 white socks. It’s dark in the room and you can only look at them in the light once the selection has been made. What is the least amount of socks will you have to grab in order to:
2. Have at least one matching pair
3. Have at least one matching pair of each color.
4. So we have two goals in this one. Have at least one matching pair and then have a matching pair of each color.
5. Possible solution for goal **a:** Since there are three different colors and you only need one matching pair; the least amount of socks you will need to grab is 4. However this solution will not work for goal b.

Possible solution to goal **b:** Since the solution for goal a will not work for this one. I came to the conclusion that the least amount of socks that will need to be grabbed is 18. Since there are only 4 white socks the only way to ensure that you have a matching pair of white ones you need to grab all but 2.

1. The solution to goal a will not work for both since 4 socks isn’t even enough to get 3 whole pairs of socks regardless of color. The solution for goal b will work for both. 18 socks is way more then enough to achieve goal a, and just the right amount for goal b.
2. Final solution to achieve both goals: In order to achieve both goals in this problem you will need to grab at least 18 socks from the drawer.

**Predicting Fingers**

1. A girl counts on her fingers in the following way: her thumb is 1, her first finger is 2, her middle finger is 3, her ring finger is 4 and her pinky is 5. She then reverses and her ring finger is 6, middle finger is 7, first finger is 8, thumb is 9 and her first finger is 10. What finger will she land on for numbers 10, 100 and 1000?
2. So in this riddle we have 3 answers to solve for. What finger will the number 10 land on, what finger will 100 land on and what finger will 1000 land on?
3. Potential solutions:
4. This one is given to us in the riddle. The answer is her first finger.
5. What I did for this solution is, I got a piece of paper out and made a chart. I listed the finger types on the top. In the first row I put 1 under thumb, 2 under first finger, 3 under middle finger, 4 under ring finger and then 5 under pinky finger. I had already figured out that each row would go up by 8. So I just filled in the rows till I reached 100. I found out that number 100 would land on the ring finger.
6. While the chart worked out ok with the number 100, 1000 would have taken way to much time. So while I was looking at the chart I realized that there were only a 4 number difference between the thumb and pinky. I also realized that all the thumb numbers were odd and all the pinky numbers were even. So instead of use using 5 fingers each round we are only using 4. So what I did was subtracted the initial 5 fingers from 1000 and got 995. I then divided 995 by 4. The number I got was 248 with a remainder of 3. The thumb and pinky are the turn

around points and represent a whole round. So when the reminder turned out to be 3 I started on my thumb and counted to 3 the way the girl counts. I came to the conclusion that the number 1000 will land on the ring finger.

1. The solution I used for goal b will work for all of them but it is not the best solution. I used my solution for goal c with goal b and came up with the same answer as I did when I used the chart. So my solution for goal c works with all the goals.

**5)** You take the number that you are solving for and subtract the initial 5 fingers from that number. After you have subtracted the 5 fingers you take that new number and divided it by 4, since that is how many fingers you will count for each additional round. If the reminder is an odd number you start from the thumb and count the remainder amount in the order that the girl counts and the finger you land on is the answer. If the remainder is even you start at the pinky and count the remainder number the way the girl counts from the pinky and the finger you land on is your answer.