1. 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

b) At least one matching pair of each color.”

1. Define Problem: Calculate probability of fulfilling the problems requirements
2. Break problem Apart: Calculate the probability for a single selection of each color. Determine total number of each sock color.
3. Identify Potential Solutions
4. Calculate odds of selecting 1 of each color, for a pair, your odds are compounded.
5. Perform physical experiment, analyze results, repeat until average answer is stable
6. Evaluate Potential Solutions
7. Calculate Odds
8. Black socks = 10, Brown Socks = 6, White Socks = 4
9. Odds of selecting black sock with single hand selection = 50%
10. Odds of selecting brown sock with single hand selection = 30%
11. Odds of selecting white sock with single hand selection = 20%
12. Perform Physical experiment

(a) Process = Tedious and inefficient

1. Choose a Solution
2. The odds of getting a matching pair on initial selection are 25% in favor of black. There is a 50% chance of getting a black sock on each selection, needing to do so moves your odds to 25% (There is a 9% chance of getting brown alone, and 4% for white alone)
3. For fun, I believe the best chances you have of sequentially selecting a pair of black socks followed by a pair of brown socks followed by a pair of white socks is 9/100% (0.09%) I did this by compounding the chances. 25%\*9%\*4%
4. Predicting Fingers
5. Define Problem: Determine a method predicting finger landing based on given interger
6. Break problem Apart: Need to find repeating pattern that can be followed for counting in a not 10 based system
7. Identify Potential Solutions:

A, Determine a repeating pattern and see if you can apply it exponentially

B, Search the internet for help

1. Evaluate Potential Solutions

A, Seems possible, need to explore

B, Seems like cheating

1. Choose a Solution
2. I built an excel document to help with this.

10 = Index 100 = Ring 1000 = Index