Celina Gool, January 07, 2015, Problem Solving

A Cat, a parrot, and a bag of seed:



A). The problem here is there is no room in the boat for the man and all three of his items. There is a possibility this is his business to deliver items from one part of the island to the next.

B). There is probably other items in the boat, which is preventing him for having enough space for these other important items.

C). Making the right decision for the first voyage so that in the end all the item are delivered to the other side.

2.

A). Space is the constraint here

B). Getting all items to the other side

3.

A). Rearrange the other items in the boat in order to create the space needed.

B). Set aside the items that can come on the second voyage, if necessary.

4.

A). Yes, a lot of time space can be added with minor rearranging and adjustments.

B). Yes, declutter and organization are life skills needed for success and completion.

5.

A). First, I would scan all items needed transport. Collecting measures of the space and the items need to go into the space would be needed. Then I would take the measurements and properly arrange all the items so that all can be accomplish for all items to be shipped.

B). With available software you can create this boat in a diaphragm with the correct measurements. The items needed to be placed on the boat as a puzzle to see how they should be arranged and then the actual stocking of the boat can be arranged.

Socks in a drawer:

1.

a). You have to make selections without any visual of the items.

b). This is a familiar situation because you do this every morning to avoid awakening the others in the room.

c). To get one pair of matching socks and one matching pair of each color.

2.

a). The constraints are a lack of visualization, limit on the amount of socks you choose, and no assurance until item is picked. This could be a problem if you need to have your selection in a certain time frame.

b). You need to pick the fewest number of socks

3.

a). One can organize the drawer when filling it with clean socks by making 3 rows, one for each color. This way, only 6 socks need to be selected, and they can be chosen quickly, by using the sense of touch, instead of sight.

4.

a). My solution meets the goals.

b). My solution works in every case.

5.

a). If I choose to organize my drawer by rows with black, brown, and white socks, whichever are more plentiful, I can easily select, in every case, the proper colors I need quickly, whether I can see them or not. I can put the black socks at the back of the drawer, the brown socks in the middle, and the white socks at the front of the drawer. After doing this, I can simply reach inside of the drawer and feel from the front to the back and select the socks based on the location of the socks. Furthermore, if I were to add 2 cardboard dividers in between the 3 rows, it would make it slightly easier, guaranteeing I know which row I am in, no matter where I place my hand first. If I feel two dividers (one on each side of my hand, then I know I am in the middle. If I feel the wood in front and a divider in back, then I know I am in the front. If I feel wood in the back and a divider in the front, then I know I am in the front.

b). I took my own drawer and used it in my testing. I have more white than black socks, so I reversed the color scenario, and I grabbed some blue socks and put them in the drawer, so I had 5 white pairs, 2 black pairs, and 3 blue pairs. I took 2 pieces of cardboard from a box and made them into dividers in the drawer. I put the white socks in the back of the drawer, the blue socks in the middle, and the black socks in the front of the drawer. I made sure they were all individual socks, separated. I rolled the socks up and placed them side-by-side. I turned off the lights and left the room. Then, I came into the room and went to the drawer and selected the socks. I was able to select only six socks and reach my goal. This was simple. I felt for the front of the drawer, and pulled out 2 socks directly behind the front of the drawer. Then, I moved my hand back to the closest divider, went directly past it, and picked out 2 socks. I then felt the next divider and picked out 2 socks. I turned the lights on and I had achieved my goals of having at least one matching pair and of having one matching pair of each color.

Predicting fingers:

1.

a). A mathematical formula needs to be devised to figure out which finger will be the last finger used when counting by fingers to a specific number with the method utilized by this girl.

b). The middle 3 fingers are utilized more often than the thumb and little finger.

c). The overall goal is to devise a formula that makes it easy to figure out which finger will be the last finger used by the girl when she is counting to any given number.

2.

a). The constraints of this problem are that only one hand is used and that the method of counting by fingers cannot be changed.

b). The formula must be reliable.

3.

Since after the count of 5, each time the little finger is used, a factor of 8 is applicable to get to the next use of the little finger, a formula can be devised based on this, as follows:

(x-5)/8 = L (L = little finger)

Using the remainder, the other fingers can be selected as the final finger used.

We can also count ourselves, all the way to 10, 100, and 1000, but after 10, the counting can become tedious and unnecessarily time consuming.

4.

a). Both solutions meet the goal of determining which finger.

b). Both solutions work for ALL cases.

5.

a). (x-5)/8 = L (L = little finger)

b). Whereas for absolute values of the following integers,

i. a remainder of 7 or 1 would equal the ring finger,

ii. a remainder of 6 or 2 would equal the middle finger,

iii. a remainder of 3 or 5 would equal the index finger,

iv. a remainder of 4 would equal the thumb,

…we can conclude that this formula should work to answer for a count of 100 and 1000.

6.

a). I tried this formula with 15, and then I tested it by hand. The remainder was 2, meaning that the middle finger would be the answer, and it was. I tested for 10, and the answer was 5/8, which is the mathematical equivalent of a remainder of 5 when 8 is the divisor. This meant that the index finger would be the answer, and it worked. Finally, I tested it for 30, and it worked, as both the formula and counting by hand yielded the ring finger as the answer.