Keddon Campbell

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SDI section 1

Problem Solving

A Cat, A Parrot and A Bag Of Seeds.

A man finds himself on a riverbank with a cat, a parrot and a bag of seed. He needs to transport all three to the other side of the river in his boat.However, the boat has room for only the man himself and one other item (either the cat, parrot or seed).In his absence, the cat could eat the parrot, and the parrot would eat the bag of seed. Show how he can get all the passengers to the other side, without leaving the wrong ones alone together.

1) Define the problem,

A man needs to take 3 entities across a river however he can only take himself and one of the three entities with him.

His overall goal us to get all three across the to the other side of the river.

Does he have to use the boat to begin with? Can the cat swim? Would the bird fly away of he was to not have the seeds with him? Can he get a bigger boat or find an alternative route?

2) Break the problem apart,

The boat itself is a constraint because it limits the method of transportation.

The entities themselves are constrains because they have destructive relationships.

A sub-gaol is to find a combination that prevents these destructive relationships from occurring using the man’s presents(If he is required).

A sub-goal is to get all entities across the river (If there is water in the river or if it is dried up, which if it is a dried up river bed then he should just put the cat in the boat and the seeds in his position and push the boat across (which would be hilarious to watch)).

3)Identify potential solutions

He could find an alternative route.

He could throw the bags of seed to the other side, place the cat in the boat and race the bird to the other side.

He could place the cat and the seeds into the boat while he swims.

He could put the bag of seeds in his pocket and place the cat in the boat.

He could leave the boat and walk over the bridge that’s near him.

The river might be so shallow that he could walk across the river with the seeds in his hands.

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.

Predicting Fingers:

A little girl counts using the fingers of her left hand as follows: She starts by calling her thumb 1, the first finger 2, middle finder 3, ring finger 4, and little finger 5. Then she reverses direction, calling the ring finger 6, middle finger 7, first finger 8 and thumb 9, after which she calls her first finger 10 and so on. If she continues to count in this manner, on which finger will she stop?

(a) What if the girl counts from 1 to 10

(b) What if the girl counts from 1 to 100

(c) What if the girl counts from 1 to 1000