Problem #1: A Cat, a Parrot, and a Bag of Seed

**Define The Problem**

The problem at hand is that there is a man who needs to cross a river. However, he has an issue. Two animals, a cat and a parrot, accompany this man. The man is also carrying a bag of seed. To get across the river the man has a boat but it can only carry him and one of these three. The man cannot leave the cat and bird alone, because the cat could eat the bird. On the other hand he can’t leave the bird with the seed, because the bird would eat the seed.

Somehow, the man needs to be able to get both animals and the seed over the river without leaving the wrong animals together. However, the problem never says anything about not leaving the cat and the seed together. It also does not state that the parrot is in a cage or that it cannot fly for any reason. If the bird is in a cage, they cat could not eat the parrot.

**Break the Problem Apart**

The constraints of the problem are as such:

* The cat **could** eat the parrot.
* The parrot and the seed cannot be left together
* Only one can fit in the boat with the man.

The sub-goals are the following:

* Don’t leave the cat with the bird.
* Don’t leave the seed with the bird.
* Only one other “item” an go in the boat with the man.

**Identify Potential Solutions**

Sub-goal #1: Don’t leave the cat with the bird.

* Possible solution to this is to take the bird over first. This would eliminate the possibility of leaving the cat and bird alone on the riverbank.
* Another solution would be to take the cat over first. This would also keep the two animals from being alone.

Sub-goal #2: Don’t leave the bird and the seed alone.

* Take the seed over first. This would keep the bird from eating the seed.
* Take the bird over so the parrot cannot eat the seed.

Sub-goal #3: Get each over without having more than one in the boat with then man.

* You could allow the bird to fly over to the other side of the river.
* Could have the bird sit on the man’s shoulder while he takes the seed or the cat over to the other side.

**Evaluate Each Potential Solution**

* Take the cat over first
* Take the bird over first
* Take the seed over first
* Have the bird fly over
* Have the bird ride on the man’s shoulder