

Problem 1: A cat, a Parrot, and a Bag of Seed

1) Define the problem

a) Do this in your own words.

A man is trying to cross a river with his cat, parrot, and bag of seed, using his boat. But, the boat can only carry the man and one other things at a time. He is worried that the cat may eat the parrot, or that the parrot may eat the seed. He needs a solution to get all 3 and himself across the river intact.

b) What insight can you offer into the problem that is not immediately visible from the word problem alone?

There must be an order to move each item across the river without endangering the other items.

c) What is the overall goal?

To move the cat, parrot, and bag of seed across the river without losing any of them.

2) Break the problem apart

a) What are the constraints?

The parrot and the cat may not be left alone together.

The Parrot and the bag of seed may not be left alone together.

b) What are the sub-goals?

Keep each item safe

Move each item individually across the river

3) Identify potential solutions

a) For each of the sub-problems you've discussed in #2, what is a possible solution?

No possible Solutions (According to the initial word problem)

4) Evaluate each potential solution

a) Does each solution meet the goals?

No

b) Will each solution work for ALL cases?

No

5) Choose a solution and develop a plan to implement it.

a) Explain the solution in full.

No Solution

b) Describe some test cases you tried out to make sure it works.

(You can include drawings and diagrams as part of your explanation as long as they are clearly communicating the solution)

According to the word problem, the man is moving each item to the other side of the river. Because there is only 1 extra spot in the boat, the man must move the items 1 at a time. In order to try to preserve the goal of keeping each item intact (assuming the cat is going to eat the parrot, and the parrot is going to eat the seed), the Parrot must be moved first, so it is not eaten by the cat, and does not eat the seed. This being the only rational option, it is also proof that there is no solution. Upon moving the parrot to the other side, he must leave it there, and go back to get another item (the cat or the seed). No matter what item he picks, he must leave it on the other side with the parrot to get the last remaining item. Upon returning for the last item, the cat would eat the parrot, or the seed would get eaten by the parrot. Following the terms setup by the word problem, there is no viable solution to make sure every item gets across safely.