

In Class Activity 1: Solver/Listener Paradigm

Pair Problem Solving

Problem 1:

What is the best way to get a peanut out of a tube that cannot be moved? Watch a chimpanzee solves this problem in the video here: [[Geert Stenissen, 2010](#)].

Describe several solutions and the steps to solve the problem.

Describe the series of steps you think the chimpanzee used to solve this problem.

Problem 2:

Four sisters, Prudence, Chastity, Temperance and Hope, have jobs in the big city as a lawyer, a surgeon, a chef and a detective (not necessarily in that order). Prudence shares a duplex with her sisters the surgeon and the lawyer. Chastity goes to the same gym as her sisters the lawyer and the detective. The detective lives alone. Hope envies her sister the lawyer. Which sister has which career?

Problem 3:

Four people wish to cross a bridge. It is dark, and it is necessary to use a torch when crossing the bridge, but they have only one torch between them. The bridge is narrow, and only two people can be on it at any one time. The four people take different amounts of time to cross the bridge; when two cross together they proceed at the speed of the slowest. The first person takes 1 minute to cross, the second 2 minutes, the third 5 minutes and the fourth 10 minutes. The torch must be ferried back and forth across the bridge, so that it is always carried when the bridge is crossed.

What is the shortest possible time for all four across the bridge?

Problem 4:

An apartment building has two floors, with three apartments on each floor. The Grays live in the top middle apartment. The Blues live directly above the Browns. If the Greens live on the top floor, then they live next door to the Blues. The Whites live to the left of the Greens, either on the top or bottom floor. The Blacks live on the top floor. Which family lives in which apartment?

Problem 5:

Acme Realtors sold 23 houses during the first quarter of the year and again during the last quarter. Sales during the middle two quarters were not quite as good, so that the annual sales total was 57 houses. B & B Realty company sold 50 houses during the second quarter and half that many during the fourth quarter, for a total annual sales of 75 houses. Arco sold as many houses during the third quarter as B & B sold during the entire year, but during the other three quarters they did no better than B & B during the first quarter. Together the three companies sold 79 houses during the third quarter. How many total houses did the three companies sell during the second quarter?

In this problem the “first quarter of the year” means January, February, and March. The “second quarter” is April, May, and June, and so on.

Problem 6:

There are three piles of pebbles on the table: the first pile contains two pebbles, the middle one contains three pebbles, and the last one contains four pebbles. There are two players **A** and **B**, who move alternately. Player **A** moves first. The rules of the game are the same for both players: at each move they can remove one or two pebbles provided that they are from the same pile. The loser is the player who takes the last pebble. What is the winning strategy for player A, if one exists?