

## STUDENT PROBLEM CORNER

Students are encouraged to examine the problem presented below. Send your explanation or solution to:

The Editor  
*delta-K*  
c/o 2510 - 22 Avenue S  
Lethbridge, Alberta  
T1K 1J5

*delta-K* will publish the names of students who successfully solve the problem.

# The Big Steal

Hank Boer

It was a cool morning in June as Inspector Marchand looked over the scene in the Bronxton Mansion. The imperial diamond was gone, taken the night before, sometime between 21:00, Thursday, and 22:00, Friday. He thought about the method the burglar used to enter the grounds, because the mansion was surrounded by a 4 metre electrified fence some 134 metres from the house. A pathway lead from the garden to a small pool measuring 3 metres by 4 metres and 1 metre deep. The back edge of the pool stopped 0.5 metres from the patio doors at the rear of the house. The burglar had entered the house through the back patio doors and made his or her way to the upstairs reading room, where the diamond was kept in a safe. The safe was not damaged, but somehow the burglar had dialed the correct computer-controlled combination. Inspector Marchand suspected an inside job.

The yard between the fence and house was patrolled by 5 guard dogs. The inspector found no evidence that the dogs had been drugged. However, close to the front of the house, he found the bone to a tenderloin roast.

The inspector sat on the bench by the pool as he reviewed his suspect list. Each had a possible motive and a good alibi.

- Mary was the chambermaid; her alibi was that she and her cousin had gone out to the movies. At the time, Mary was suffering from bad lung flu.
- Sebastian was the butler; he had evidence that he was visiting his mother during the robbery. It was a well-known fact that he had a deathly fear of heights.
- Ronald was an internationally known jewel thief, who had been in the area

during the last three months. He said that he had been at a dance at the convention centre. His height was 1.94 metres.

- Jean was Mr. Bronxton's daughter, who had left home to attend college in the next city. She said that she was studying in the college library. She enjoyed collecting art.
- Freddie was the gardener; he said he was shopping at Rainbow Mall on the other side of town. He was almost blind in one eye.
- Sharon was Mr. Bronxton's wife; she said that she was visiting a friend in the hospital at the time. She was somewhat overweight at 165 kilograms.
- Earle was a close friend of Mr. Bronxton, and he said that he was playing squash at the country club at the time. Earle enjoyed deep sea diving as a hobby.

The inspector looked at the edge of the pool. A waterline was quite visible along the entire edge of the pool. He pulled out his measuring tape and measured the distance from the top of the calm water in the pool to the waterline that appeared above it. He wrote down 2.1 centimetres in his notebook.

The inspector walked around the pool. At the far end of the pool, away from the house, he noticed a white cloth tangled in the branches of a tall lilac bush. Upon closer inspection he found a parachute hidden behind the bush. The instruments on the parachute pack indicated that the burglar had fallen about 1020 metres. Looking up, the inspector saw a wristwatch caught in the branch of the same bush. He measured the distance from the watch to the ground; it was 2.05 metres.

The inspector now knew how he would catch the thief. He arranged to have all the suspects meet at the Bronxton house at 13:00. The suspects gathered around the pool. The inspector asked Earle to go into the house to change into a bathing suit. When Earle came back, the inspector asked him to go into the water in the pool and completely submerge himself. While Earle was under the water, the inspector measured the depth of the water with his measuring tape. The depth was 1.04 metres.

The inspector then announced to the crowd that all the evidence was now in, and that he now knew who had committed the robbery. Who did it, and how did the inspector know?

---

*Hank Boer is the mathematics and science consultant with the Lethbridge Public School System. Hank was president of the South Western Regional of MCATA, and was responsible for the highly successful annual meeting held in Lethbridge in October 1985.*