

Last Name (Please Print): Moreland

Problem 3

This week is a 'puzzle' week. We will test our problems solving skills and wit as well as our math skills. There are two puzzles. Just solve one and turn your answer in for full credit. Try the other one for fun, or maybe you need to prove to yourself that you are as smart as the other guy or girl. If you have seen and solved one of them before, then try to solve the other one.

Puzzle 1: You are on the first floor of the house. There are three electrical switches on the wall. Only one of them turns on and off the table lamp on the second floor. The three switches are at the 'off' position now, and you can not see the second floor lamp light from the first floor. You are allowed to go to the second floor to check the table lamp and come back to the first floor once, and you are allowed to flip any of the three switches (turn on or off). You can only flip three times in total. Can you figure out which switch controls the table lamp on the second floor?

Assumptions: One light switch will not control more than one floor. All light switches will turn on something.

Flip two switches to see which one (or both) turns on lights on that floor.

- a) If both turn on lights on the first floor, then assume remaining switch is the switch.
- b) If one comes on and the other doesn't, assume that the one which came on will not turn on the second floor lamp also, then check the second floor. If the lamp does not turn on, assume it is the remaining switch. If light comes on assume that it is the switch which produced no result on the first floor. Come down flip third switch for added verification.

Puzzle 2: Three rival crime syndicate bosses and their only sons are being chased by the FBI. They have to cross the Hudson River to shake off the FBI agents. When they reached the pier, they found a lone motor boat that carries up to two people including the driver. What is the minimum number of crossings they must make to transport all of them safely to the other side of the Hudson? Or is it impossible to do that? It is impossible to remotely control the boat, and only a father can drive the boat. A son can take care of himself around the other son(s), but if he is without his father, one of the other father(s) will kill him. A son or sons can not harm anyone.

11 times (as long as a father is required to remain with the boat while at the pier; otherwise it is impossible to do so safely, because a father could leave the boat at one point to kill another man's son).