

Solution to the Liar and the Truth Teller

By Philip S. Thomas, January 2011 (updated July 2014 and May 2017)

The solution to the original problem is: "If I were to ask the other guard which door leads to freedom, what would s/he say?" If you ask the liar, s/he will lie about what the truth-teller would say, and will point you to the door that leads to death. The truth teller would tell the truth that the liar would point to the door to death. So, both guards would point you towards the door to death, and so you take the other door.

Of course, the question above is not a yes/no question. However, it can easily be converted into one by pointing towards a door and asking "If I were to ask the other guard whether this door leads to freedom, what would s/he say?" If the response is "yes", then take the other door. If the response is "no", then take the door that you pointed to.

For the version with only one guard, we ask (in yes/no form): "If I were to ask you which door goes to freedom, what would you say?". The truth teller would tell the truth and point you to the door to freedom. The liar would lie about what s/he would say if you asked him or her. If you did ask him or her, s/he would tell you the door to death, so s/he lies about this and also points you towards the door to freedom. So, both types of guard would point you toward the correct door. Since this only uses one guard, this is also the solution to the problem with two guards, but where you do not know how many tell the truth and how many lie – you just ignore one of the guards.