

Solutions to the February Mill problems.

1. It is easiest to start by working out what to do if you are presented with two people, one of whom always tells the truth, and the other of whom always lies. You ask one of them – “If I were to ask you if the left-hand path led to glory, would you say yes?”. If the left-hand path leads to glory, either would answer “yes”. If the right-hand did then they would both answer “no”.

Now we need to use the first question to weed out the random politician so that we can ask the second question as above. So, you ask one of the three (called A) – “Which of the other two is more likely to tell the truth?”. Call the person thus indicated B, and the other one C. You choose C.

If A was the random politician then the choice of B and C does not matter. If A tells the truth, then C must be the liar. If A lies, then C must be the truthful one.

I did say it was hard!

2. Both ants should crawl along the diagonal of the rectangle, formed by two faces of their respective boxes.

In Alice’s case all three rectangles measure 3 by 6.

In Miles’ case they are 2 by 7, 3 by 6, and 4 by 5.

The diagonal of a 4 by 5 rectangle is $\sqrt{41}$ while the diagonal of a 3 by 6 rectangle is $\sqrt{45}$.

So, Miles wins.