

UW Math Circle
October 1, 2015

Tucked away in a secret corridor of Hogwarts School of Witchcraft and Wizardry, there are a number of magical closet doors. If you open one of these closet doors, you might find Harry Potter, who will teach you everything you need to know about magic. You might also find Voldemort, who ... won't.

Because Hogwarts is a magical place, you might find Harry behind multiple doors. You might also find Voldemort behind multiple doors.

Professor Snape has put a sign on each door telling you what's inside, but not all of the signs are true!

1. When you enter the secret hall, you encounter two closet doors. "One of the signs is true," says Professor Snape, "and the other is false."

I
Harry Potter is behind this door. Voldemort is behind the other one.

II
Harry Potter is behind one of these doors. Voldemort is behind the other.

Which door should you open?

2. When you enter the secret hall, you encounter two closet doors. "This time, either both signs are true or both signs are false," says Snape.

I
Harry Potter is behind at least one of these doors.

II
Voldemort is behind the other door.

Which door should you open?