# Inspector Gadget in Transylvania

**Names of students in your group:**

**Submission:** Each student must submit their answer separately in PDF form to Moodle by the end of the class. No email submissions are allowed. Google how to convert a Google doc to a PDF if you haven't done it before.

**The Problem**
Inspector Gadget was called to Transylvania to solve some cases of vampirism. Arriving there, he found the country inhabited by vampires and humans. Vampires always lie and humans always tell the truth.

However, half the inhabitants, both human and vampire, are insane and totally deluded in their beliefs: all true propositions they believe false, and all false propositions they believe true. The other half of the inhabitants are completely sane: all true statements they know to be true, and all false statements they know to be false.

*Thus, sane humans and insane vampires make only true statements; insane humans and sane vampires make only false statements.*

Inspector Gadget met two sisters, Lucy and Minna. He knew that one was a vampire and one was a human, but knew nothing about the sanity of either.

Here is the investigation:
Gadget (to Lucy): Tell me about yourselves.
Lucy: We are both insane.
Gadget (to Minna): Is that true?
Minna: Of course not!

**Question**
From this, Gadget was able to prove which of the sisters was the vampire. Which one was it and how did you arrive at your conclusion?