# Aside: Logic

Question 1:

Statements: If Alex is a good programmer, then his code will compile.

If his code compiles, then he will keep his job.

Conclusion 1: Alex will lose his job.

Conclusion 2: Alex is a good programmer.

Conclusion 3: Alex will lose his job if his code doesn’t compile.

**Which of the following statements are true? And why?**

Question 2:

1. Nathan, the murdered man, was killed by a blow on the head.
2. Either Suzanne or Martin was in the dining room at the time of the murder.
3. If Peter was in the kitchen at the time of the murder, then Ian killed Nathan using Poison.
4. If Suzanne was in the dining room at the time of the murder, then Steve killed Nathan.
5. If Peter was not in the kitchen at the time of the murder, then Martin was not in the dining room when the murder was committed.
6. If Martin was in the dining room at the time of the murder, then Paul killed Nathan.
7. If Kevin was in the hall at the time of the murder, then Suzanne killed Nathan by a blow to the neck with a saucepan.

**Who murdered Nathan? Any why?**

Question 3:

Alice, Bob and Charlie are each wearing a hat, they cannot see their own hat but they can see the others’ hats. They are then told that each of their hats is either green or yellow and that they **don’t all have the same colour hat**. Charlie then says, “​*I know that my hat is yellow*​”.

**What colour is Bob’s hat? And why?**

Question 4:

“As I was going to St. Ives,  
I met a man with seven wives,  
Each wife had seven sacks,  
Each sack had seven cats,  
Each cat had seven kits:  
Kits, cats, sacks, and wives,  
**How many were there going to St. Ives?”**

**Extension: Search up some more famous riddles and try and solve them without looking at the answer**