Introduction to Logical Reasoning

Problem Set #1

Although I strongly suggest that you write out answers to all these problems, you do *not* have to turn in any written responses. You do, however, need to be prepared to do these types of problems, for questions on the weekly quizzes and exams will primarily be drawn from the problem sets. The solutions to these problems will be provided, so you can check your own work and seek help from me as necessary.

We will devote considerable time to these types of problems during the next in-class workshop. In order to make that workshop productive, please make a solid start on them. That way you can use the workshop to address the difficulties you are facing.

If you do the extra credit logic puzzle, you must turn in a computer-type-written solution at the beginning of class on Sunday, September 9ᵀᴴ.

Instructions

Each of the following problems presents a single statement. For each, statement indicate whether it is a simple or a compound statement. If it is simple, indicate whether it is negative or positive. If it is compound, indicate whether is it conjunctive, disjunctive, hypothetical, or some combination of these. Do not forget to indicate the type of simple statements that are involved for the compound ones.

Problems

1. All the journalists know logic.
2. Some marketing executives hate logic.
3. Most computer scientists do not hate logic.
4. Either the journalists or the computer scientists know logic.
5. The journalists know logic and the professor has an easy job.
6. Either the professor's wife will not enjoy Qatar or she will have fun.
7. The professor's wife certainly does enjoy Qatar.
8. The journalists know logic and the computer scientists are jealous.
9. If the business students do not love logic, then the professor is sad.
10. Either the professor is sad, or if his students are engaged in the class then the professor is happy.
11. If the journalists learn logic and the professor has an easy life, then the world is a better place.
12. If computer scientists know logic and they get better jobs, then either their lives are easy or they will make lots of money.
13. If the journalists like logic then the professor is not sad, and if the professor is not sad then his wife is happy.
14. If the journalists either have easy lives or make lots of money, then the computer scientists are jealous.
15. If the computer scientists knowing logic would cause the professor to be happy, then the world is a better place for the professor.

Note: There may a lot of exercises here. Do not feel obligated to do all of them. I often assign many exercises so that you have plenty of opportunities to practice the skills these exercises are trying to impart. I suggest doing just enough of them so that you are confident that you could use these skills on a quiz or an exam.

Extra Credit Logic Puzzle

The piloting crew on the Qatar Airways flight to Washington, D.C. consists of the pilot, the co-pilot, and the navigator. Their names listed alphabetically are Ayah, Hafsa, and Rayhan. Among the cabin (non-piloting) crew on this plane, there are also three flight attendants with corresponding names, Ms. Ayah, Ms. Hafsa, and Mr. Rayhan. The following facts are known:

1. Mr. Rayhan lives in Doha.
2. The pilot lives halfway between Doha and Medina.
3. Ms. Hafsa earns exactly QR 80,000.00 a year.
4. Ayah once beat the co-pilot at tennis.
5. The pilot's next-door neighbor is one of the three flight attendants mentioned, and this neighbor earns precisely three times as much money as the pilot.
6. The flight attendant living in Medina has the same name as the pilot.

Question: What is the pilot's name? What is the co-pilot's name? What is the navigator's name?

To receive full credit you must justify your answer with a logical argument showing why you are 100% right. That is to say, this question has a definitive answer that can be justified without *any* guessing on your part.