

Introduction to Logical Reasoning

Problem Set #7

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 problems during the next in-class workshop. In order to make that workshop productive, please make a solid start on them. That way we can use the workshop to look at the problems that presented the most difficulties.

If you do the Extra Credit Logic Puzzle, you must turn in your *type-written* solution at the *beginning* (i.e., within the first ten minutes) of class on Sunday, March 6th.

Part A Instructions

Each of the following problems presents an argument. Use the truth table method from class to determine whether it is a valid or invalid argument.

Part A Problems

Do arguments 1–20 in Exercise 6.8 on pages 242–243 from *The Power of Critical Thinking* by Lewis Vaughn.

Part B Instructions

Each of the following problems presents an argument in English. Translate each into the language of symbolic logic, putting it into argumentative form. Then use the truth table method from class to determine whether it is a valid or invalid argument.

Part B Problems

Do arguments 1–11 in Exercise 6.9 on page 244 from *The Power of Critical Thinking* by Lewis Vaughn.

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 (Hard)

The body of Austin Powers, international man of mystery, was found floating in the Arabic Gulf, two miles from Doha, Qatar, at 3:30AM on December 18 of last year. The cause was death by man eating sharks equipped with lasers on their heads. After considerable effort on the part of Interpol, five suspects—one of whom *is* guilty—were brought before the lead detective of Scotland Yard, who asked them what they had to say for themselves. Each suspect made four statements, exactly three of which are true and exactly one of which is false. Their statements were:

Dr. Evil: I was in Dukhan when Powers was murdered. I never killed anyone. The Frau is the guilty one. Number Two and I are pals.

Number Two: I did not kill Powers. The Frau has never been in Doha. I never saw Dr. Evil before. Fat Man was in Al-Khor with me on the night of December 18.

Mini Me: Fat Man is lying when he says he never owned any man-eating sharks. The murder was committed on Qatar's National Day. Dr. Evil was in Dukhan at this time. One of us is guilty.

Fat Man: I did not kill Powers. I never owned any man-eating sharks in my life. The Frau knows me. I was in Al-Khor the night of December 18.

The Frau: I did not kill Powers. I have never been in Doha. I never saw Fat Man before. Dr. Evil erred when he said I am guilty.

Question: Who murdered Austin Powers?

To receive any 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.