

Make sure you answer every part of the question. Write out your answers (neatly!) and bring them to class on Tuesday. Some of these questions are closely related to questions from SZE but they are not identical—be sure that you are doing the right question!

- A.
- i) Give an example of a valid argument, in premise-conclusion form. Do not use an example from SZE or from class; make up your own example. (Your premises and conclusion should be declarative sentences that are grammatically correct.)
  - ii) Give an example of an invalid argument, following the same guidelines.
  - iii) What test could I apply to find out which of your arguments is invalid? Tell me how to apply the test and what I would find.
  - iv) What is a sound argument?
  - v) How do I tell if a set of statements (e.g. a collection of premises) is consistent or inconsistent?
  - vi) Can I deny the conclusion of a valid argument? If so, how?
  - vii) Can I deny the conclusion of a sound argument? If so, how?
- B. Give an example of an abductive justification of a scientific theory. What are the laws? What consequence is tested? Explain why the inference from experimental outcome to the truth of the theory is not (logically) valid. Is the inference reasonable? Why (not)?
- C. While a plane is a model of the Euclidean axioms, it is not the only one. Consider a “lattice” of points lined up in regular rows and columns, each one 1cm away from the next. If we consider “lines” to be composed of these lattice points only, and that the points are their normal distances apart, show that the Definitions 1-4 of Book I also hold in the lattice. Why does Proposition 1 fail?
- D. The regressive form of the Dichotomy argues that to reach any point one must first go halfway, and that to reach halfway one must first go a quarter of the way, and so. In other words, before Atalanta can even get started on her run she must cover an infinity of finite distances; hence, Zeno argues, she cannot start moving. Logically analyze this argument in premise-conclusion form. Explain how you would go about denying Zeno’s conclusion. Draw any diagrams that would be helpful to explain, and refer to SZE if necessary.