# Questions for Exam 1

## Philosophy 270

## Spring 2010

*Exam 1 will consist of a selection of these questions.*

1. What are the features of Thales's work that make him count as the beginning of science? Explain how his work has each of these features.

2. In Euclid, how does a postulate differ from (a) a definition, (b) a common notion, and (c) a proposition?

3. What are the two kinds of proposition called and what is the difference between them?

4. Prove the following proposition from Euclid:

   *On a given finite straight line to construct an equilateral triangle.*

   You don't need to state the numbers of the definitions, postulates, etc., that you use but you should indicate where you are using one; e.g., you can write "[C.N.]" when you use a common notion.

5. In an ideal science, as conceived by Socrates, how would one explain why the earth is spherical? According to the "second best" method that Socrates actually uses, what is the explanation for why the earth is spherical?

6. For each of the following, say (i) whether Plato would classify it as knowledge or opinion, and (ii) what kind of knowledge or opinion he would classify it as. Explain why he would classify them in these ways.

   (a) Thinking there is a desk at the front of the room on the basis of seeing it.
   (b) Thinking that the angles in a triangle make two right angles on the basis of reading the proof in Euclid.

7. Socrates said "let's study astronomy by means of problems, as we do in geometry, and leave the things in the sky alone." What are problems in geometry? What problems of this sort are relevant to astronomy? In light of this, would you understand Socrates to be saying that astronomers need not look at the sky? Why, or why not?

8. State Aristotle's definition of deduction. Give an example of something that is a deduction and something that isn't. Say why your non-example doesn't satisfy the definition.

9. Can there be a deduction that is not a demonstration? Can there be a demonstration that is not a deduction? Explain.

10. When Aristotle says that a demonstration is from things that are prior to the conclusion, what does he mean by "prior"?

11. Which of the following terms of Aristotle apply to which of Euclid's terms?

| Aristotle | Euclid |
| --- | --- |
| Principle | Definition |
| Axiom | Postulate |
| Posit | Common notion |
| Supposition | Proposition |
| Definition | |

12. How did skeptics use the concept of demonstration to argue that understanding is impossible? What does Aristotle think is right and wrong in this argument?

13. Can non-necessary truths be demonstrated, according to Aristotle? What is Aristotle's argument for his view about this?

14. Give an example of something that Aristotle would regard as necessary and something he would regard as not necessary.

15. On Aristotle's view, can we demonstrate that a particular person got ill? Why, or why not? If the answer is "no," does it follow that medicine is not a demonstrative science? Explain.

16. State a similarity and two differences between the views of Plato and Aristotle on how the principles of a science are known.

17. For each of the following pairs of concepts, say how they are alike (other than in being attributes of a thing) and how they differ.

    (a) Definition and property.
    (b) Definition and genus.
    (c) Property and accident.

18. What is Aristotle's definition of nature? Give an example of something that has a nature and something that doesn't.

19. If a stone is thrown upwards, is its motion in accordance with nature? Explain.

20. Does Aristotle think that the nature of a thing is identifiable with its matter or its form? What reason does he have for his view?

21. How does Aristotle's view of the subject matter of mathematics differ from Plato's?

22. What are the four causes of an automobile?

23. Give Ptolemaic arguments for the following propositions. If Ptolemy responds to objections to the argument, give that also.

    (a) The earth is in the middle of the heavens.
    (b) The earth has the ratio of a point to the heavens.
    (c) The earth doesn't move, either as a whole or by rotating once/day.

24. Draw a diagram showing a deferent and an epicycle. Under what conditions will this system produce retrograde motion?

25. Explain what an eccentric is and what it can be used for in Ptolemy's astronomy.

26. What did Osiander say in the Foreword to *On the Revolutions*? Did Copernicus agree with this? Support your answer to the latter question with a quotation from Copernicus.

27. One argument against the rotation of the earth was that falling bodies are seen to fall straight down, which would not happen if the earth were rotating. How did Copernicus answer this objection?

28. How did Ptolemy argue that the earth cannot move as a whole (i.e., from place to place, as opposed to merely rotating in one place)? What was Copernicus's reason for saying that Ptolemy's argument was not conclusive?

29. State three reasons Copernicus gives for believing that it is the earth that rotates once a day, not the heavens.

30. How does Copernicus explain the following facts? How could Ptolemy explain them? Draw diagrams as appropriate.

    (a) Mercury and Venus always appear close to the sun.
    (b) The superior planets are closest to the earth when they are in opposition to the sun.
    (c) The distance traveled in retrograde motion increases in the following order: Saturn, Jupiter, Mars.
    (d) The frequency of retrograde motion increases in the following order: Mars, Jupiter, Saturn.

31. What are the qualities of Copernicus's theory that Copernicus thinks make it more probable that the earth orbits the sun rather than vice versa, as in Ptolemy's theory? Give an example to illustrate each quality that you mention.

32. Describe the methods that Bacon calls "anticipation of nature" and "interpretation of nature". Which did Bacon think was the method in use in his time? What is Bacon's attitude to these two methods?

33. What is Bacon's purpose in discussing the idols of the mind?

34. Give the names of the four types of idol that Bacon discusses and explain what these names mean.

35. Give two examples of each kind of idol.

36. Bacon says science should aim to discover (a) forms, (b) latent processes, and (c) latent configurations. Explain what he means by these three things.

37. Bacon says that for the discovery of forms, instances should be arranged in three tables. What are these tables called and what do they contain? How is each used in the exclusive part of induction?

38. What does Bacon mean by the "first vintage"? How does this differ from a hypothesis arrived at by the method Bacon calls anticipation of nature?