Exercise 2.1. Based on Aristotle's description, which of the following are propositions? Justify your answer. If you have difficulty with a particular item, explain what the difficulty is.

(a) Let there be light.

(b) The number three.

(c) A square has five sides.

(d) Every coyote has four legs.

(e) This sentence is false.

Aristotle begins *Prior Analytics* with "We must first state the subject of our inquiry and the faculty to which it belongs: its subject is demonstration and the faculty that carries it out demonstrative science" [**?**, p. 65] [**?**]. A key tool in the demonstration, i.e., verification, of a proposition is what has become known as a syllogism. "A deduction [syllogism] is speech in which, certain things having been supposed, something different from those supposed results of necessity because of their being so" [**?**, p. 66] [**?**]. Aristotle discusses several types of syllogisms or rules of inference, beginning with the "first figure" of term arrangements: "If A is predicated of all B, and B of all C, A must be predicated of all C" [**?**, p. 68]. We will call this "Aristotle's first figure," while A, B and C are called terms. A property or quality A predicated of all B means that every B has property A, or every B is an A. Let's examine the use of this syllogism.

Exercise 2.2. Identify the terms A, B and C in the first figure for the statement: "Having four sides is predicated of every rectangle, and being a rectangle is predicated of every square." What conclusion can be drawn from these premises? How can the statement "A is predicated of every B" be written more directly beginning with "Every B ... "? How can "B is predicated of every C" be written more directly beginning with "Every C ... "? Find a more direct statement (in the active voice) of Aristotle's first figure using these simplifications. Rewrite "Having four sides is predicated of every rectangle, and being a rectangle is predicated of every square" using this reformulation.

Exercise 2.3. Let A, B and C be terms in the sense of Aristotle. Consider the statements:

(I) If C occurs, then B occurs; and if B occurs, then A occurs.

(II) If C occurs, then A occurs.

Would you claim that (II) is a logical inference from (I)? If so, support your position using the work of Aristotle. If not, find a counter example. Would you claim that (I) is a logical inference from (II)? If so, support your position using the work of Aristotle. If not, find a counter example.