1.5 Exercises

1. Create and justify your own definition of artificial intelligence.

2. Give several other examples of Aristotle's distinction between *matter* and *form*. Can you show how your examples might fit into a theory of abstraction?

3. Much traditional Western thought has dwelt on the mind–body relationship. Are the mind and body:
   a. distinct entities somehow interacting, or
   b. is mind an expression of "physical processes", or
   c. is body just an illusion of the rational mind?

   Discuss your thoughts on the mind–body problem and its importance for a theory of artificial intelligence.

4. Criticize Turing's criteria for computer software being "intelligent".

5. Describe your own criteria for computer software to be considered "intelligent".

6. Although computing is a relatively new discipline, philosophers and mathematicians have been thinking about the issues involved in automating problem solving for thousands of years. What is your opinion of the relevance of these philosophical issues to the design of a device for intelligent problem solving? Justify your answer.

7. Given the differences between the architectures of modern computers and that of the human brain, what relevance does research into the physiological structure and function of biological systems have for the engineering of AI programs? Justify your answer.

8. Pick one problem area that you feel would justify the energy required to design an expert system solution. Spell the problem out in some detail. Based on your own intuition, which aspects of this solution would be most difficult to automate?

9. Add two more benefits for expert systems to those already listed in the text. Discuss these in terms of intellectual, social, or financial results.

10. Discuss why you think the problem of machines "learning" is so difficult.

11. Discuss whether or not you think it is possible for a computer to understand and use a natural (human) language.

12. List and discuss two potentially negative effects on society of the development of artificial intelligence technologies.