1) Chapter 1.1, Question 49:

The \( n \)th statement in a list of 100 statements is “Exactly \( n \) of the statements in this list are false.”

a) What conclusions can you draw from these statements? (List the truth value of each statement.)

b) Answer part (a) if the \( n \)th statement is “At least \( n \) of the statements in this list are false.”

c) Answer part (b) assuming that the list contains 99 statements.
2) Chapter 1.2, Question 15:

Each inhabitant of a remote village always tells the truth or always lies. A villager will give only a “Yes” or a “No” response to a question a tourist asks. Suppose you are a tourist visiting this area and come to a fork in the road. One branch leads to the ruins you want to visit; the other branch leads deep into the jungle. A villager is standing at the fork in the road. What one question can you ask the villager to determine which branch to take?

3) Chapter 1.3 Question 61:

Determine whether each of these compound propositions is satisfiable.

a) \( (p \lor \neg q) \land (\neg p \lor q) \land (\neg p \lor \neg q) \)

b) \( (p \rightarrow q) \land (p \rightarrow \neg q) \land (\neg p \rightarrow q) \land (\neg p \rightarrow \neg q) \)

c) \( (p \leftrightarrow q) \land (\neg p \leftrightarrow q) \)