



Exercise 1. Determine the prime constituents of each of the following statements, and use them to express these statements symbolically.

- a. If I am tired or hungry, then I cannot study.
- b. If it is foggy tonight, then either John must take a taxi or he can't go out.
- c. If the Pirates or the Cubs lose and the Giants win, then the Dodgers will be out of first place and, furthermore, I will lose a bet.
- d. The sum of two odd integers is even. [*Hint:* This is an implication.]

Exercise 2. Let P , Q and R be statements. Construct truth tables for the following compound statements.

- a. $P \Rightarrow (Q \vee R)$
- b. $P \Rightarrow (Q \wedge R)$
- c. $(P \Rightarrow Q) \vee R$
- d. $(P \Rightarrow Q) \wedge R$

Exercise 3. You visit an island with two types of people: knights (who always tell the truth) and knaves (who always lie). You are approached by two islanders, A and B . Islander A tells you “ B is a knight.” Islander B then says “ A and I are of opposite type.” Determine (with justification!) what types A and B are. A truth table may or may not be helpful.

Exercise 4. Textbook exercise 1.5.4.