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chapter no: 1

section no: 1

Exercise 9 :

Let p and q be the propositions "swimming at the New Jersey shore is allowed" and "Sharks have been spotted near the shore", respectively. Express each of these compound propositions as an English sentence:

a) $\neg q$

b) $p \wedge q$

c) $\neg p \vee q$

d) $p \rightarrow \neg q$

e) $\neg q \rightarrow p$

f) $\neg p \rightarrow \neg q$

g) $p \leftrightarrow \neg q$

h) $\neg p \wedge (p \vee \neg q)$

Solution:

a) sharks have not been spotted near the shore.

b) Swimming at the New Jersey shore is allowed, and sharks have been spotted near the shore.

c) Swimming at the New Jersey shore is not allowed, and sharks have been spotted near the shore.

d) If swimming at the New Jersey shore is allowed, then sharks have not been spotted near the shore.

e) If sharks have not been spotted near the shore, then swimming at the New Jersey shore is allowed.

f) If swimming at the New Jersey shore

is not allowed, then sharks have not been spotted near the shore.

g) swimming at the New Jersey shore is allowed if and only if sharks have not been spotted near the shore.

h) swimming at the New Jersey shore is not allowed, and either swimming at the New Jersey shore is allowed or sharks have not been spotted near the shore.