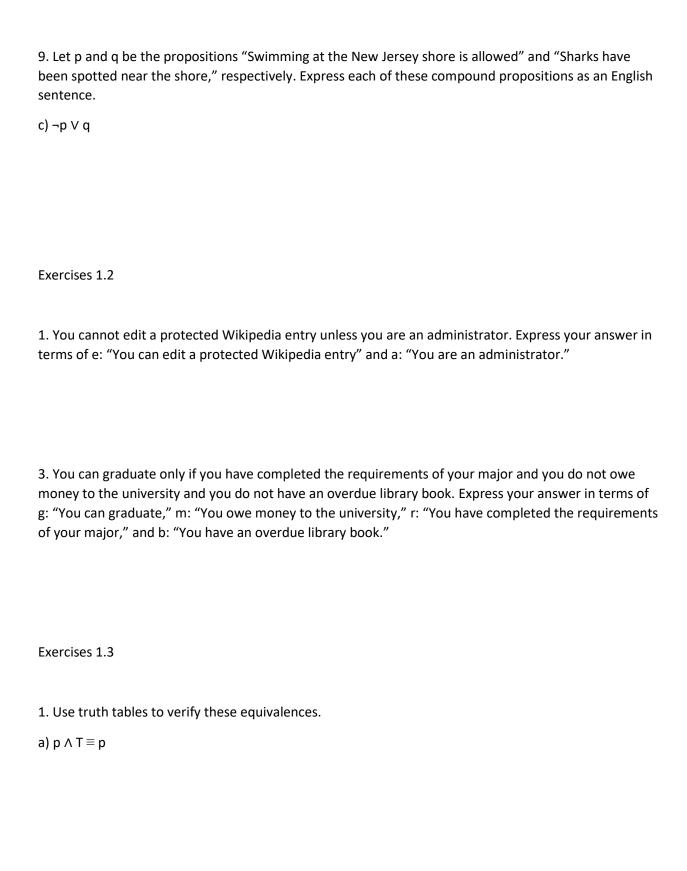
Exercises 1.1

1. Which of these sentences are propositions? What are the
truth values of those that are propositions?
a) Boston is the capital of Massachusetts.
d) 5 + 7 = 10.
3. What is the negation of each of these propositions?
a) Mei has an MP3 player.
b) There is no pollution in New Jersey.
c) 2 + 1 = 3.
C/ Z + I = 3.

d) The summer in Maine is hot and sunny.



3. Use truth	tables to	verify the	commutative	laws

a)
$$p \lor q \equiv q \lor p$$
.

- 7. Use De Morgan's laws to find the negation of each of the following statements.
- a) Jan is rich and happy.

- 9. Show that each of these conditional statements is a tautology by using truth tables.
- a) $(p \land q) \rightarrow p$

- 11. Show that each conditional statement in Exercise 9 is a tautology without using truth tables.
 - 9. Show that each of these conditional statements is a tautology by using truth tables.

a)
$$(p \land q) \rightarrow p$$