Example1 : Consider the following four statements:

(1) Ice floats in water **and** 2 + 2 = 4.
(2) Ice floats in water **and** 2 + 2 = 5.
(3) China is in Europe **and** 2 + 2 = 4.
(4) China is in Europe **and** 2 + 2 = 5.

Only the first statement is true. Each of the others is false since at least one of its sub statements is false.

Example2: Consider the following four statements:

(1) Ice floats in water **or** 2 + 2 = 4.
(2) Ice floats in water **or** 2 + 2 = 5.
(3) China is in Europe **or** 2 + 2 = 4.
(4) China is in Europe **or** 2 + 2 = 5.

Only the last statement (iv) is false. Each of the others is true since at least one of its sub statements is true.

Example3 : Consider the following six statements:

(*a*1) Ice floats in water.
(*a*2) It is false that ice floats in water.
(*a*3) Ice does not float in water.
(*b*1) 2 + 2 =5
(*b*2) It is false that 2 + 2 = 5.
(*b*3) 2 + 2 ≠5

Then (*a*2) and (*a*3) are each the negation of (*a*1); and (*b*2) and (*b*3) are each the negation of (*b*1).

Since (*a*1) is true, (*a*2) and (*a*3) are false; and since (*b*1) is false, (*b*2) and (*b*3) are true.

4. Proposition AND Truth Tables

The truth table for the compound proposition ¬(p∧¬q) is:

p	q	$\neg q$	$p \wedge \neg q$	$\neg(p \wedge \neg q)$
T	T	F	F	T
T	F	T	T	F
F	T	F	F	T
F	F	T	F	T