**Tutorial – Propositional Logic**

1. Which of the following sentences are statements?

1. In 1990 John Major was Prime Minister of Great Britain.
2. x+3 is a positive integer.
3. If only every morning were as sunny and bright as this one!
4. Fifteen is an even number.
5. If I am late for the party, then my friend will be quite angry.
6. What time is it?
7. From the west coast to the East Coast.
8. As from this year, Serena Williams retired from Grand Slam tennis.
9. Shut the door!
10. I name this ship the RMS Titanic.

2. For each of the following sentences, represent the sentence in symbolic form using appropriate connectors in each case stating what the symbols mean.

Example: **I am hot and bothered**.

**p = I am hot**  
**q= I am bothered**.

**p ∧ q**

1. It is cold and wet.  
   c = cold  
   w = wet  
   c ∧ w
2. She is either an accountant or an auditor.  
   a = accountant  
   b = auditor  
   a V b
3. I am not cold.  
   c = cold  
   ¬c
4. It is not sunny.  
   s = sunny  
   ¬s
5. The audioguide is available in French and English.  
   f = French  
   e = English  
   f ∧ e
6. I can speak French, German and Italian.  
   f = French  
   g = German  
   i = Italian  
   f ∧ g ∧ i
7. It is warm and not wet.  
   w = warm  
   b = wet  
   w ∧ ¬b
8. If I study, I will pass my first year.  
   p = study  
   q = pass  
   p → q
9. The only way you can cross that is to fly.  
   p = cross  
   q = fly  
   p ↔ q

3. Represent the following compound statements as truth tables:

|  |  |  |
| --- | --- | --- |
| p | q | P V q |
| 0 | 0 |  |
| 0 | 1 |  |
| 1 | 0 |  |
| 1 | 1 |  |

1. **p ∨ q**
2. **¬p ∨ q**
3. **(p ∧ q) → r**
4. **(p ∨ q) → (¬r → p)**