

## 1. Goals



Source: <http://heythrop.su/logic-society/>

By the end of this week, you should be able to:

- Understand the terminologies associated with the study of Propositional Logic and Truth Tables
- Use notations to represent arguments of various forms (injunction, conjunction, inverse, converse, negation, contrapositive, implication, bi-conditional)
- Determine the truth value of a statement using truth tables
- Use inductive and deductive reasoning to solve logic puzzles.

## 2. Theoretical Components

1. Read through Chapter 9 (9A, 9B & 9C). Go through all the terminologies and examples. Make a list of all new terms you come across. Chapter 9 is on google classroom.

2. Watch this only after you have studied examples from Chapter 9:

[http://www.youtube.com/watch?v=Wnc3\\_AekOno](http://www.youtube.com/watch?v=Wnc3_AekOno)

3. Basic Concepts of Propositional Logic:

<http://www.youtube.com/watch?v=qV4htTfow-E>

4. Modus Tollens & Modus Ponens:


<https://www.youtube.com/watch?v=NTSZMdGlo4g>

5. Read through this site on what is a Logic Puzzle, how to solve such puzzles and attempt to solve at least 2 puzzles. Keep a record of the puzzles you have solved in your portfolio.

<http://www.logic-puzzles.org/>

You may find more puzzles here:

<http://www.puzzlersparadise.com/page1034.html>



not (a and b)  $\Rightarrow$  (not a) or (not b)  
not (a or b)  $\Rightarrow$  (not a) and (not b)

## 3. Practical Components

Complete Exercises 9A and 9B from Chapter 9.

EX9A: 1,3,7,9,10,12,13,14,15.

EX9B: 4,5,7,11,12,13,14,15,16,17.

EX9C: 1, 3, 5, 6, 8, 14, 18, 19.

## 4. Investigation

$\sqrt{2}$  is an algebraic integer, as it is a root of the polynomial  $f(x) = x^2 - 2$ .

Investigate/research about algebraic numbers.

Define it in a way it makes sense to you. Then prove that  $\sqrt{2} + \sqrt{3}$  is irrational. Prove further that it is algebraic.

20 marks (see the rubric)

## 5. QFO

Quiz/Forum/Other

Do these quizzes:

<http://goo.gl/3X7JJb>

<http://goo.gl/jpaVIN>

You may make notes while doing these quizzes.