**OCR Computer Science   
Summer Preparation Work**

This work will prepare you for the start of year 12. The following answers need to be obtained **prior** to starting the course in September. You will be starting the A level Computer Science with OCR . Your answers and research is required to be handed in on the first lesson back.

**Your research task**

Research the following terms and then answer the questions below in as much detail as possible they are all in the OCR A level specification in the networks section 1.3.3

1. **Characteristics of networks** (NIC’s, Hubs, Cables , Switches, Routers)
2. **Importance of network protocols** (Why are they needed? How are they useful?)
3. **Importance of network standards** ( What are they? Why are they needed? How are they useful?)
4. The internet structure
   1. TCP/ IP stack
   2. DNS
   3. Protocol layering
   4. LAN’s and WAN’s
   5. Packet and circuit switching

**(What are each of the above? How are they useful ?)**

Once you have researched the topics above create your own notes on them you should aim for at least 2 A4 pages of notes . This could be typed or hand written but must be shown to your teacher in September

**Your programming task**

You will be programming in Python for this course you are therefore required to program the following prior to starting in September. You either download the program for free from <https://www.python.org/downloads/> or use it via Citrix at home.

Task 1

Find a definition for the following words as they relate to programming in python:-

* modularity
* argument
* function
* subroutine
* variable
* data type
* constant
* local variable
* parameter
* procedure
* scope
* global variable

**Task 2**

Make a game of rock, paper scissors against the computer.

**Algorithm**

**Tell user to enter either rock,paper or scissors**

**Get the response**

**Generate a random number from 1 to 3 *(1=rock,2=paper, 3=scissors)***

**Compare user selection and computer selection**

**Display who wins.**

**Extension**

Make sure the user enters a valid entry.

Add a loop structure to play several times and keep a running score

Make an enumerated variable type to store choices.

**Your programs will need to be shown to your teacher the first lesson back in September so save it to your user area / USB stick to bring in first lesson back**