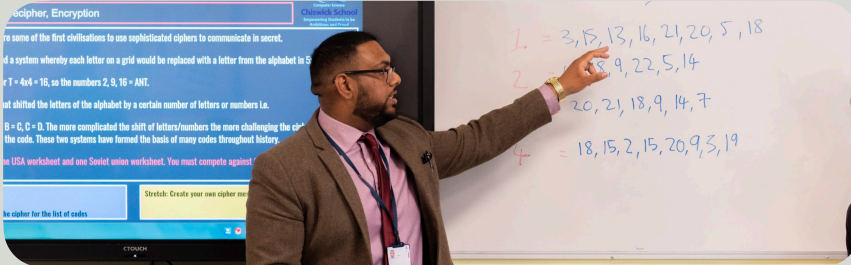




# Chiswick School Sixth Form

## COMPUTER SCIENCE



Transition Work

Year group: Year 12

Subject: Computer  
Science

Qualification:  
A Level

Examining Board:  
OCR

### 1. Clock Speed

The purpose of this activity is to understand the effect of changing the clock speed of a computer system. To complete this, you should know the function of a CPU in a computer system and know something about the fetch-execute cycle.

Your teacher will give you instruction during this activity that you have to follow to answer the questions below:

1. What is a clock speed?

2. What happens within a CPU cycle?

3. If my CPU processes data at 1,800,000,000 clock cycles per second, is that fast?

4. 'Fewer clock cycles with more work are better than more clock cycles with less work.' What advantages are there of setting your clock speed to be slower (under clocking it)?

5. What advantages are there of setting your clock speed to be faster (over clocking it)?

6. What are the dangers of over clocking a system?

## **2. Binary/Denary/Hexadecimal**

Revise Binary, Denary, And Hexadecimal. Create a lesson for year 6 students coming to join Chiswick School. They will need to be taught what binary, denary and hex is as well as being able to calculate binary.

The lesson should last 30 minutes with some fun elements as it is for younger students.

## **3. Individual Project**

Problem Definition - (roughly a couple of pages of A4 but more may be required)

**Your 'Problem Definition' starts with defining the following:**

- Who is the end user? What do they do? What are their needs?
- Role of the end user in an organisation?
- Brief description of their current system (it may be that the current system is manual or if software used already, what is it like? Why is it not meeting their needs?).
- Use a flowchart to show the processes in the current system.
- The issues with the current system and what the problem is that needs to be solved by you.
- Details or ideas you have which may solve the problem.
- Clear outline of the information that you need to find out in order to begin your investigation into how to solve the end users problem – briefly what sort of questions will you need answering.

**4.** This summer I'd like you to develop your understanding of and interest in Computer Science by learning something new about it. This could be something practical, e.g. experimenting with a new programming language or taking your Python skills further, or maybe even building your own PC. Alternatively you may take an interest in a more theoretical or historical aspect of Computer Science and do some research around this. What you do is up to you – the only requirement is that I'd like you to prepare a 10-minute presentation on it to share with the class in September. The list of resources below may help you, but you are by no means restricted to these! There is absolutely no need to spend money on this if you don't want to – the majority of the resources listed below are freely available online. Good luck, and have fun!

## 5. Critical Views

Answer the questions listed below. This requires critical thinking – this means to see things from different perspectives and to evaluate good and bad aspects. Can you do this and link ideas together.

- **What is computer science?**
- **Why is computer science important to society?**

## 6. Research: The components of a desktop PC

Evidence: Poster

Expected time commitment: 2 hours

List all the internal (e.g. motherboard) and external (e.g. monitor) components you will need to run a desktop PC. Include descriptions of the function and an image of each component. A3 looks better and you can fit more on.

### Key websites:

Brilliant - <https://brilliant.org/computer-science/computer-science/>

Think Like a Computer Scientist -

<http://www.openbookproject.net/thinkcs/python/english2e/index.html#>

Program Arcade Games -

<http://programarcadegames.com/>

CodeAcademy <https://www.codecademy.com/learn>

### Youtube Channels:

Craig & Dave -

[https://www.youtube.com/channel/UC0HzEBLLJxlrwBAHJ5S9JQg/playlists?shelf\\_id=10&sort=dd&view=50](https://www.youtube.com/channel/UC0HzEBLLJxlrwBAHJ5S9JQg/playlists?shelf_id=10&sort=dd&view=50)

Computerphile - <https://www.youtube.com/user/Computerphile/videos?view=0&sort=dd&flow=grid>

Introduction to Computer Science I", Harvard OpenCourseWare - <https://www.youtube.com/watch?v=z-OxzlC6pic&list=PLvJoKWRPIu8G6Si7LlvmBPA5rOJ9BA29R>

### Ted Talks

20 Must See TED Talks for Computer Scientists -

<https://www.youtube.com/watch?v=EF692dBzWAs&list=PLF7032F8EB1A4F9E2>

DUE	CONTACT DETAILS SHOULD HELP BE NEEDED	EXPECTED TIME NEEDED TO COMPLETE THE TASK
September	<a href="mailto:kma@chiswickschool.org">kma@chiswickschool.org</a>	25 hours