



Computer Science Key Stage 3 Levels (YEAR 7, 8 & 9)

|  Systems & Using IT |  Development |  Programming |  Modelling |  Analysis |
|---|--|--|--|---|
| Use technology safely, respectfully, responsibly. Protecting their online identity and privacy | Understand what an algorithm is | Understand what a computer program is | Understand what a database is and the basic definitions | N/A |
| Understand the hardware and software components that make up computer systems | Create basic computer instructions. Follow teacher led instructions to write a simple algorithm. | Use an IDE to create a simple program. | Create basic digital artefacts. Create a simple database (flat-file) | N/A |
| How systems communicate with one another and with other systems. Use binary, conversion to and from denary. | Check that programs written operate correctly and understand how to debug a sequence of instructions | Understand computational abstractions that model the state and behaviour systems | Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability. | Define analysis and what it means in the context of problem solving. |
| Understand that computer systems work step-by-step and only do what we tell them. | Independently be able to create a sequence of instructions and improve it if necessary. | Be able to plan a sequence of instructions for something that you want to happen. | Be able to read a sequence of instructions and predict what the result will be. | Be able to describe the goals of a given problem. |
| Be able to explain why we must be accurate when working with computers. | Write sequences of instructions and data in a way that a computer will understand. | Use selection and repetition correctly in your programs. | Be able to trace instructions using variables, selection and repetition and predict what the result will be. | Understand what is meant by a computational problem. |
| Understand how data, such as numbers, sound and images are physically stored on a computer system. | Be able to plan, create, test and reflect on a solution to a problem that a computer could solve. | Correctly use variables, lists and simple procedures in your programs. | Be able to recognise similarities between simple problems and the ways in which they can be solved. | Be able to take a problem and divide it into its main sub-problems. |

MAT STUDENTS (YEAR 9)

Understand how instructions are run inside a computer.



Understand how instructions can be written efficiently and be able to describe the efficiency of your programs.



Be able to show how elements of real life can be represented in programs and the difficulties that sometimes exist when doing this.

Be able to develop solutions for problems that are described to you by someone else.



Be able to test the different modules of your programs as you are developing them, reflect on the results and then improve them.



Make sure that the programs you develop have been written so they are unlikely to crash or cause errors.

Correctly use procedures and functions with parameters in your programs.



Be able to write programs in a text-based language like Python and be able to create your own data structures.



Be able to create your own relational databases and use them in your programs and be able to find, understand and use techniques for specific tasks.

Be able to take solutions to one problem and adapt them for similar problems.



Be able to create a simple model for a complex problem.



Be able to create an accurate, detailed model for a complex problem.

Be able to take a problem and divide it into all its sub-problems and show this as a diagram.



Be able to define an outline of a solution in terms of functions and global values.



Be able to analyse real world problems and develop low-level and high-level plans for a solution.