

<h1>Year 8</h1> <h2>Computing</h2>			
1. History of Computing	<ul style="list-style-type: none"> Be able to define a computer and identify computers in everyday life. Explain key events in the evolution of computers between 19th and 21st Century. Explain how processing speed and storage have increased between 1950 - 2017. 	<ul style="list-style-type: none"> Define a computer and explain the basic architecture of a computer system with reference to everyday devices. Explain the role of key people and events in the development of general purpose computers. Understand how increases in processing power and memory storage have changed modern computers. 	<ul style="list-style-type: none"> Define computer systems and explain what happens at each stage of the input, process and output of a system. Identify and explain the importance of key events and people involved in the development of general purpose computers and other digital devices. Explain the meaning of processing and memory in computer systems and the impact of changes in the capacity of both on modern devices.
2. High Level Programming and Artificial Intelligence	<ul style="list-style-type: none"> Understand and explain with examples what is meant by a High Level Programming Language . Plan, design and create and test a simple program that allows users to input data, processes and outputs information. Use basic programming techniques such as print, variables and selection (if statements). 	<ul style="list-style-type: none"> Explain the different types of high and low level programming languages and how these are used in a computer systems. Analyse a problem, use simple algorithms to design, develop, test and evaluate a program with a simple user interface. Understand, use and explain a range of data types and programming techniques including variables, selection, iteration and Boolean logic. 	<ul style="list-style-type: none"> Explain with examples the different types of high and low level programming languages and how these are used in a computer systems using consistent techniques but different syntax. Analyse a problem, identifying existing solutions, use flowchart algorithms and pseudocode to design, develop, test and evaluate a program with a graphic user interface. Understand, use and explain string, float, integer data types and programming techniques and functions including variables, selection, iteration, Boolean logic, arrays and functions.
3. Website design using HTML and CSS	<ul style="list-style-type: none"> Understand and be able to describe the difference between the Internet and WWW. Design and create a two page website using HTML with hyperlinks between pages, text and graphics. Understand and explain how to effectively use search engines to safely find, save and use web resources. 	<ul style="list-style-type: none"> Understand and explain the difference between, and development of the structure of the Internet and subsequent creation of the WWW. Plan, design, create and test a website using HTML and CSS with effective navigation, text, images and multimedia. Be able to evaluate the reliability of web resources, efficiently search, find, save and use images, information and other resources safely. 	<ul style="list-style-type: none"> Describe the key people, events and technology involved in the development of networks associated with the Internet and WWW. Analyse a problem, plan, design, create, test and make improvements to a functional website using HTML, CSS and Java Script with links between pages and external resources. Recommend means by which the reliability and safety of web resources can be effectively evaluated. Identify and use advice on how the above can be used to search, find, save and use resources.
4. Ubiquitous Computing and the Internet of Things	<ul style="list-style-type: none"> Explain the term Ubiquitous Computing with reference to school and home life. Understand and explain how the Internet of Things (IoT) is connecting everyday objects to the internet. Describe the advantages and disadvantages of linking everyday devices to the internet. 	<ul style="list-style-type: none"> Understand and explain the technology and effect of Ubiquitous Computing on everyday life at home, school and society. Define, understand and explain the technology by which the IoT connects everyday objects to internet services for consumers, businesses and education. Explain a range of opportunities and Cyber threats associated with proliferation of devices linked to the internet. 	<ul style="list-style-type: none"> Understand and explain the technology and effect of Ubiquitous Computing on everyday life at home, school and society, describing and forecasting potential areas for further developments. Identify, understand and explain the network hardware and software by which the IoT connects everyday objects to internet services for consumers, businesses and education. Discuss the positive and negative social implications of proliferation of linking more home, school and other external devices to the internet.
5. Representing Data in Computer Systems	<ul style="list-style-type: none"> Understand why computer systems use binary data to store information and be able to convert decimal to binary values. Understand and be able to explain how digital images such as photographs can be stored using binary data. Understand and explain how sound can be converted into, and stored as binary data. 	<ul style="list-style-type: none"> Understand how and why computer systems convert analogue to digital data and use binary data to store information and be able to convert and add decimal to binary values. Understand and be able to explain how digital images such as photographs can be stored using binary data and the difference between bitmap and vector images. Understand and explain how sound can be converted into, and stored as binary data and the effect of converting analogue recordings to digital files. 	<ul style="list-style-type: none"> Understand how and why computer systems convert analogue to digital data and use binary data to store information and be able to convert decimal to binary values. Understand and be able to explain how digital images such as photographs can be stored using binary data and the effect of colour depth and resolution on quality of images. Understand and explain how sound can be converted into, and stored as binary data and the effect of bit depth and sampling frequency on sound quality.