Computing – knowledge overview (what will we learn and when)

	EYFS	Class 1 Knowledge	Class 2 Knowledge	Class 3 Knowledge
Online Safety		know that the internet is many devices connected to one another. know that you should tell a trusted adult if you feel unsafe or worried online. know that people you do not know on the internet (online) are strangers and are not always who they say they are. know that to stay safe online it is important to keep personal information safe. know that 'sharing' online means giving something specific to someone else via the internet / 'posting' online means placing information on the internet. know the difference between online and offline know what information I should not post online know what the techniques are for creating a strong password. know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' know that not everything I see or read online is true	know that not everything on the internet is true: people share facts, beliefs and opinions online. To understand that the internet can affect your moods and feelings. know that privacy settings limit who can access your important personal information, such as your name, age, gender etc. know what social media is and that age restrictions apply. understand some of the methods used to encourage people to buy things online. understand that technology can be designed to act like or impersonate living things. understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology. know what behaviours are appropriate in order to stay safe and be respectful online.	know different ways we can communicate online. understand how online information can be used to form judgements. understand some ways to deal with online bullying. know that apps require permission to access private information and that you can alter the permissions. know where I can go for support if I am being bullied online or feel that my health is being affected by time online. know that a 'digital footprint' means the information that exists on the internet as a result of a person's online activity. know what steps are required to capture bullying content as evidence. To understand that it is important to manage personal passwords effectively. To understand what it means to have a positive online reputation. To know some common online scams.
Programming	To know that being able to follow and give simple instructions is important in computing. To understand that it is important for instructions to be in the right order. To understand why a set of instructions may have gone wrong. To know that you can program a Bee-Bot with some simple commands. To understand that debugging means how to fix some simple programming errors. To understand that an algorithm is a set of clear and precise instructions	understand that an algorithm is when instructions are put in an exact order. know that input devices get information into a computer and that output devices get information out of a computer. understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'. know that coding is writing in a special language so that the computer understands what to do. understand that the character in ScratchJr is controlled by the programming blocks. know that you can write a program to create a musical instrument or tell a joke. understand the basic functions of a Bee-Bot. know that you can use a camera/tablet to make simple videos. know that algorithms move a bee-bot accurately to a chosen destination. understand what machine learning is and how that enables computers to make predictions. know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times. know that abstraction is the removing of unnecessary detail to help solve a problem.	know that Scratch is a programming language and some of its basic functions. To understand how to use loops to improve programming. To understand how decomposition is used in programming. To understand that you can remix and adapt existing code. To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. know what a conditional statement is in programming. To understand that variables can help you to create a quiz on Scratch. know that combining computational thinking skills (sequence, abstraction, decomposition etc) can help you to solve a problem. understand that pattern recognition means identifying patterns to help them work out how the code works. understand that algorithms can be used for a number of purposes e.g. animation, games design etc.	To know that a Micro:bit is a programmable device know that Micro:bit uses a block coding language similar to Scratch. understand and recognise coding structures including variables. know what techniques to use to create a program for a specific purpose (including decomposition). know that there are text-based programming languages such as Logo/Python know that nested loops are loops inside of loops. understand the use of random numbers and remix Python code. know that a soundtrack is music for a film/video and that one way of composing these is on programming software. understand that using loops can make the process of writing music simpler and more effective. know how to adapt their code while performing their music

Data Handling	To know that sorting objects into various categories can help you locate information. To know that using yes/no questions to find an answer is a branching database. To know that a pictogram is a way of showing information.	know how that charts and pictograms can be created using a computer. understand that a branching database is a way of classifying a group of objects. know that computers understand different types of 'input'. know that you can enter simple data into a spreadsheet know what steps you need to take to create an algorithm. know what data to use to answer certain questions. know that computers can be used to monitor supplies.	know that a database is a collection of data stored in a logical, structured and orderly manner. know that computer databases can be useful for sorting and filtering data. know that different visual representations of data can be made on a computer. know that computers can use different forms of input to sense the world around them so that they can record and respond to data. This is called 'sensor data'. know that a weather machine is an automated machine that responds to sensor data. know that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.	know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock. know what numbers using binary code look like / identify how messages can be sent in this format understand that RAM is Random Access Memory and acts as the computer's working memory. know what simple operations can be used to calculate bit patterns. know that data contained within barcodes and QR codes can be used by computers. know infrared waves are a way of transmittingdata. know that Radio Frequency Identification (RFID) is a more private way of transmitting data. know that data is often encrypted so that even if it is stolen it is not useful to the thief. know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'. know that devices or that are not updated are most vulnerable to hackers. know the difference between mobile data and WiFi
Computer systems and networks	know what a computer keyboard is and recognising some letters and numbers. know that a mouse can be used to click, drag and create simple drawings. know that to use a computer you need to log in to it and then log out at the end of your session. know that different types of technology can be found at home and in school. know that you can take simple photos with a camera or iPad. know that you must hold the camera still and ensure the subject is in the shot to take a photo	know that "log in and log out" means to begin and end a connection with a computer. know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art. know that passwords are important for security. know that when we create something on a computer it can be more easily saved and shared than a paper version. know some of the simple graphic design features of a piece of online software. know the difference between desktop and laptop computers know that people control technology. know that buttons are a form of input that give a computer an instruction about what to do (output). To know that computers often work together. know that touch typing is the fastest way to type. know I can make text a different style, size and colour. know "copy and paste" is a quick way to duplicate text	know what a tablet is and to understand that email stands for 'electronic mail.' know that an attachment is an extra file added to an email. understand that emails should contain appropriate and respectful content. know that cyberbullying is bullying using electronics such as a computer or phone. understand that software can be used collaboratively online to work as a team. know what type of comments and suggestions on a collaborative document can be helpful. know that you can use images, text, transitions and animation in presentations. know what a tablet is and how it is different from a laptop/desktop computer. understand what a network is and how a school network might be organised. know that a server is central to a network and responds to requests made. know how the internet uses networks to share files. know that a router connects us to the internet know what a packet is and why it is important for website data transfer. know the roles that inputs and outputs play. know what some components inside a computer are e.g. CPU, RAM, hard drive, and how they work together	know the difference between ROM and RAM. understand the importance of having a secure password and what "brute force hacking" is. know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. know about some of the historical figures that contributed to technological advances in computing understand what techniques are required to create a presentation using appropriate software. know how search engines work. understand that anyone can create a website and therefore we should take steps to check the validity of websites. To know that web crawlers are computer programs that crawl through the internet. To understand what copyright is.

Creating Media		understand that holding the camera still and considering angles and light are important to take good pictures. know that you can edit, crop and filter photographs. know how to search safely for images online. understand that an animation is made up of a sequence of photographs. know that small changes in my frames will create a smoother looking animation. understand what software creates simple animations and some of its features e.g. onion skinning.	know that different types of camera shots can make my photos or videos look more effective know that I can edit photos and videos using film editing software. understand that I can add transitions and text to my video. know some of the features of web design software. know that a website is a collection of pages that are all connected. know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks. know that websites should be informative and interactive.	know that radio plays are plays where the audience can only hear the action so sound effects are important. know that sound clips can be recorded using sound recording software. know that sound clips can be edited and trimmed. understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photo know that decomposition of an idea is important when creating stop-motion animations. know that editing is an important feature of making and improving a stop motion animation.

Ongoing opportunities throughout the curriculum
At Brompton and Sawdon we intend for our pupils to regularly use and develop core computing and ICT skills through ongoing opportunities to:

- **Save and retrieve their work**
- **Research topics to support learning across the curriculum**
- **Present their findings in MS Powerpoint and MS Publisher**
- **Develop their typing and editing skills on MS Word**
- **Use technology to efficiently check or improve word choices and spelling**
- **Develop their ability to be creative through use of art programs (See Art Long Term Planning)**
- **Develop mouse and keyboard (laptop) skills (such as drag, drop, selections, menu systems)**