Computing Progression of Knowledge and Skills-EYFS & Key Stage 1

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Skills Progression

	Computer Science			
Kapow-black Sonar-Red ELG-blue NC - Purple	**Reception-**	**Year 1**	**Year 2**	**End of Key Stage Expectations (taken from the National Curriculum and EYFS)**
Hardware	Learn how to operate a camera to take photographs of meaningful creations or moments. Learn how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary. Recognise and identify familiar letters and numbers on a keyboard. Develop basic mouse skills such as moving and clicking.	Learn how to operate a camera or tablet to take photos and videos. Learn how to explore and tinker with hardware to find out how it works. Recognise that some devices are input devices and others are output devices. Learn where keys are located on the keyboard.	Understand what a computer is and that it's made up of different components. Recognise that buttons cause effects and that technology follows instructions. Learn how we know that technology is doing what we want it to do via its output. Use greater control when taking photos with cameras, tablets or computers. Develop confidence with the keyboard and the basics of touch typing.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
Networks and data representation	N/A	N/A	N/A	

Turton & Edgworth C.E.M.P.S.

Computing Progression of Knowledge and Skills- Key Stage 2

	Computer Science				
Kapow-black Sonar-Red	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**End of Key Stage Expectations (taken from the National Curriculum)**
Hardware	Understand what the different components of a computer do and how they work together. Draw comparisons across different types of computers. Learn about the purpose of routers.	Use tablets or digital cameras to film a weather forecast. Understand that weather stations use sensors to gather and record data which predicts the weather.	Learn that external devices can be programmed by a separate computer. Learn the difference between ROM and RAM. Recognise how the size of RAM affects the processing of data. Understand the fetch, decode, execute cycle.	Learn about the history of computers and how they have evolved over time. Use the understanding of historic computers to design a computer of the future. Understand and identify barcodes, QR codes and RFID. Identify devices and applications that can scan or read barcodes, QR codes and RFID. Understand how corruption can happen within data during transfer (for example when downloading installing, copying and updating files).	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Networks and data representation	Understand the role of the key components of a network. Identify the key components within a network, including whether they are wired or wireless. Understand that websites and videos are files that are shared from one computer to another. Learn about the role of packets. Understand how networks work and their purpose. Recognise links between networks and the internet. Learn how data is transferred.	Understand that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.	Learn the vocabulary associated with data: data and transmit. Learn how the data for digital images can be compressed. Recognise that computers transfer data in binary and understanding simple binary addition. Relate binary signals (Boolean) to the simple character-based language, ASCII. Learn that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. Understand how bit patterns represent images as pixels.	Understand that computer networks provide multiple services.	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Computing Progression of Knowledge and Skills-EYFS & Key Stage 1

Skills Progression

	Computer Science			
Kapow-black Sonar-Red ELG-blue	**Reception-**	**Year 1**	**Year 2**	**End of Key Stage Expectations (taken from the National Curriculum and EYFS)**
Computational Thinking	Use logical reasoning to understand simple instructions and predict the outcome.	Learn that decomposition means breaking a problem down into smaller parts. Use decomposition to solve unplugged challenges. Use logical reasoning to predict the behaviour of simple programs. Develop the skills associated with sequencing in unplugged activities. Follow a basic set of instructions. Assemble instructions into a simple algorithm. Begin to develop an understanding of algorithms. Begin to understand that programs work by following instructions. Create simple programs and begin to debug them. Develop reasoning to predict the behaviour of simple programs.	Articulate what decomposition is. Decompose a game to predict the algorithms used to create it. Learn that there are different levels of abstraction. Explain what an algorithm is. Follow an algorithm. Create a clear and precise algorithm. Learn that programs execute by following precise instructions. Incorporate loops within algorithms. Understand what algorithms are. Understand how algorithms are implemented as programs on digital devices. Understand that programs execute by following precise and unambiguous instructions. Use logical reasoning to predict the behaviour of simple programs. Create and debug simple programs.	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs.

Programming	Follow instructions as part of practical activities and games. Learn to give simple instructions. Experiment with programming a Bee-bot/Blue- bot and learning how to give simple commands. Learn to debug instructions, with the help of an adult, when things go wrong.	Programme a Floor robot to follow a planned route. Learn to debug instructions when things go wrong. Use programming language to explain how a floor robot works. Learn to debug an algorithm in an unplugged scenario.	Use logical thinking to explore software, predicting, testing and explaining what it does. Use an algorithm to write a basic computer program. Use loop blocks when programming to repeat an instruction more than once.	

Computing Progression of Knowledge and Skills- Key Stage 2

	Computer Science				
Kapow-black Sonar-Red	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**End of Key Stage Expectations (taken from the National Curriculum)**
Computational Thinking	Use decomposition to explain the parts of a laptop computer. Use decomposition to explore the code behind an animation. Use repetition in programs. Use logical reasoning to explain how simple algorithms work. Explain the purpose of an algorithm. Form algorithms independently. Start to use reasoning to understand how algorithms work. Detect errors in algorithms and programs. Begin to solve problems by decomposing them into smaller parts. Start to use sequence and selection in programs.	Use decomposition to solve a problem by finding out what code was used. Use decomposition to understand the purpose of a script of code. Identify patterns through unplugged activities. Use past experiences to help solve new problems. Use abstraction to identify the important parts when completing both plugged and unplugged activities. Use logical reasoning to understand how algorithms work. Detect and correct errors in algorithms and programs. Start to use sequence, selection and repetition in programs. Begin to solve problems by decomposing them into smaller parts.	Decompose animations into a series of images. Decompose a program without support. Decompose a story to be able to plan a program to tell a story. Predict how software will work based on previous experience. Write more complex algorithms for a purpose. Solve problems by decomposing them into smaller parts. Use sequence, selection and repetition in programs. Use logical reasoning to understand how algorithms work and detect and correct errors in algorithms and programs.	Decompose a program into an algorithm. Use past experiences to help solve new problems. Write increasingly complex algorithms for a purpose. Solve problems by decomposing them into smaller parts. Use sequence, selection and repetition accurately in programs. Securely use logical reasoning to understand how algorithms work and detect and correct errors in algorithms and programs.	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how

Programming	Use logical thinking to explore more complex software; predicting, testing and explaining what it does. Incorporate loops to make code more efficient. Continue existing code. Make reasonable suggestions for how to debug their own and others' code. Begin to develop understanding of how to write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Begin to work with various forms of input/output.	Create algorithms for a specific purpose. Coding a simple game. Use abstraction and pattern recognition to modify code. Incorporate variables to make code more efficient. Write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Work with various forms of input/output.	Programme an animation. Iterate and develop their programming as they work. Confidently use loops in programming. Use a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. Write code to create a desired effect. Use a range of programming commands. Use repetition within a program. Amend code within a live scenario. Write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Accurately manipulate variables and various forms of input/output.	Debug quickly and effectively to make a program more efficient. Remix existing code to explore a problem. Use and adapt nested loops. Programme using the language Python. Change a program to personalise it. Evaluate code to understand its purpose. Predict code and adapt it to a chosen purpose. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Accurately manipulate a wide range of variables and various forms of input/output.	some simple algorithms work and to detect and correct errors in algorithms and programs.

Computing Progression of Skills-EYFS & Key Stage 1

Skills Progression

	Information Technology			
Kapow-black Sonar-Red ELG-blue	**Reception-**	**Year 1**	**Year 2**	**End of Key Stage Expectations (taken from the National Curriculum and EYFS)**
Using Software	Use a simple online paint tool to create digital art.	Use a basic range of tools within graphic editing software. Take and edit photographs. Develop control of the mouse through dragging, clicking and resizing of images to create different effects. Develop understanding of different software tools.	Develop word processing skills, including altering text, copying and pasting and using keyboard shortcuts. Use word processing software to type and reformat text. Use software (and unplugged means) to create story animations. Create and label images	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
Using email and internet searches	N/A	Recognise devices that are connected to the internet. Search and download images from the internet safely. Understand that we are connected to others when using the internet.	Search for appropriate images to use in a document. Understand what online information is.	Recognise common uses of information technology beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
Using data	Represent data through sorting and categorising objects in unplugged scenarios. Represent data through physical pictograms. Explore branch databases through physical games.	Understand that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. Use representations to answer questions about data. Use software to explore and create pictograms and branching databases.	Collect and input data into a spreadsheet. Interpret data from a spreadsheet.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Wider use of technology	N/A Recognise that a range of technology is used in places such as homes and schools.	Recognise common uses of information technology, including beyond school. Understand some of the ways we can use the internet. Begin to recognise common uses of information technology beyond school.	Learn how computers are used in the wider world. Recognise common uses of information technology beyond school.	Recognise common uses of information technology beyond school.

Turton & Edgworth C.E.M.P.S.

Computing Progression of Skills- Key Stage 2

	Information Technology				
Kapow-black Sonar-Red	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**End of Key Stage Expectations (taken from the National Curriculum)**
Using Software	Take photographs and recording video to tell a story. Use software to edit and enhance their video adding music, sounds and text on screen with transitions.	Build a web page and creating content for it. Design and create a webpage for a given purpose. Use online software for documents, presentations, forms and spreadsheets. Use software to work collaboratively with others.	Use logical thinking to explore software more independently, making predictions based on their previous experience. Use software programme Sonic Pi/Scratch to create music. Use the video editing software to animate. Identify ways to improve and edit programs, videos, images etc. Independently learn how to use 3D design software package TinkerCAD.	Use logical thinking to explore software independently, iterating ideas and testing continuously. Use search and word processing skills to create a presentation. Create and edit sound recordings for a specific purpose. Create and edit videos, adding multiple elements: music, voiceover, sound, text and transitions. Use design software TinkerCAD to design a product. Creating a website with embedded links and multiple pages.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Using email and internet searches	Learn to log in and out of an email account. Write an email including a subject, 'to' and 'from.' Send an email with an attachment. Reply to an email. Use some search technologies effectively and appreciate how results are selected. Decide which questions to ask when using search engines.	Understand why some results come before others when searching. Use keywords to effectively search for information on the internet. Understand that information found by searching the internet is not all grounded in fact. Search the internet for data. Use search technologies effectively and appreciate how results are selected and ranked. Evaluate the reliability of digital content. Begin to ask and answer questions based on the reliability of digital content.	Develop searching skills to help find relevant information on the internet. Learn how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns. Use a wide range of search technologies effectively and appreciate how results are selected and ranked. Be discerning in evaluating the reliability of digital content.	Understand how search engines work. Appreciate how results are selected and ranked and use this to retrieve accurate content. Be discerning in evaluating the reliability of digital content.	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Using data	Understand the vocabulary to do with databases: field, record, data. Learn about the pros and cons of digital versus paper databases. Sort and filter databases to easily retrieve information. Create and interpret charts and graphs to understand data.	Understand that data is used to forecast weather. Record data in a spreadsheet independently. Sort data in a spreadsheet to compare using the 'sort by…' option. Design a device which gathers and records sensor data.	Understand how data is collected in remote or dangerous places. Understand how data might be used to tell us about a location.	Understand how barcodes, QR codes and RFID work. Gather and analyse data in real time. Create formulas and sort data within spreadsheets.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Wider use of technology	Understand the purpose of emails. Recognise how social media platforms are used to interact. Show emerging understanding of computer networks including the internet and how they provide multiple services such as the World Wide Web.	Understand that software can be used collaboratively online to work as a team. Understand computer networks including the internet and how they provide multiple services such as the World Wide Web.	Learn about different forms of communication that have developed with the use of technology. Recognise the opportunities computer networks offer for communication and collaboration.	Learn about the Internet of Things and how it has led to 'big data'. Learn how 'big data' can be used to solve a problem or improve efficiency. Use the opportunities computer networks offer for communication and collaboration.	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.

Digital Literacy			
Reception	**Year 1**	**Year 2**	**End of Key Stage Expectations**
Recognise that a range of technology is used for different purposes. Learn to log in and log out.	Log in and out and save work on their own account. When using the internet to search for images, learn what to do if they come across something online that worries them or makes them feel uncomfortable. Understand how to interact safely with others online. Recognise how actions on the internet can affect others. Recognise what a digital footprint is and how to be careful about what we post.	Learn how to create a strong password. Understand how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable. Identify whether information is safe or unsafe to be shared online. Learn to be respectful of others when sharing online and ask for their permission before sharing content. Learn strategies for checking if something they read online is true.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Year 3	Year 4	Year 5	Year 6	
Recognise that different information is shared online including facts, beliefs and opinions. Learn how to identify reliable information when searching online. Learn how to stay safe on social media. Consider the impact technology can have on mood. Learn about cyberbullying. Learn that not all emails are genuine, recognise when an email might be fake and what to do about it. Use a variety of software on digital devices.	Recognise that information on the internet might not be true or correct and that some sources are more trustworthy than others. Learn to make judgements about the accuracy of online searches. Identify forms of advertising online. Recognise what appropriate behaviour is when collaborating with others online. Reflect on the positives and negatives of time spent online. Identify respectful and disrespectful online behaviour. Select and use a variety of software on digital devices.	Identify possible dangers online and learning how to stay safe. Evaluate the pros and cons of online communication. Recognise that information on the internet might not be true or correct and learning ways of checking validity. Learn what to do if they experience bullying online. Learn to use an online community safely. Express own ideas by selecting, using and combining a variety of software on digital devices to design and create programs.	Learn about the positive and negative impacts of sharing online. Learn strategies to create a positive online reputation. Understand the importance of secure passwords and how to create them. Learn strategies to capture evidence of online bullying in order to seek help. Use search engines safely and effectively. Recognise that updated software can help to prevent data corruption and hacking. Express own ideas by selecting, using and combining a variety of software on a range of digital devices to design and create programs.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Knowledge Progression

Computing systems and networks			
Reception	**Year 1**	**Year 2**	**End of Key Stage Expectations**
Understand 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 photographs 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 a desktop and laptop computer. To know that people control technology. Know that buttons are a form of input that give a computer an instruction about what to do (output). Know that computers often work together. Know that touch typing is the fastest way to type. Know that I can make text a different style, size and colour. Know that "copy and paste" is a quick way of duplicating text.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses of information technology beyond school.

Year 3	Year 4	Year 5	Year 6	
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 on computers. 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 what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.	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 presentation slides.	Know how search engines work. Understand that anyone can create a website and therefore we should take steps to check the validity of websites. Know that web crawlers are computer programs that crawl through the internet. Understand what copyright is. 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.	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration.

Programming			
Reception	**Year 1**	**Year 2**	**End of Key Stage Expectations**
Know that being able to follow and give simple instructions is important in computing. Understand that it is important for instructions to be in the right order. Understand why a set of instructions may have gone wrong. Know that you can program a Bee-Bot with some simple commands. Understand that debugging means how to fix some simple programming errors. 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. Know that we call errors in an algorithm 'bugs' and fixing these 'debugging'. 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 coding is writing in a special language so that the computer understands what to do. To understand that the character in ScratchJr is controlled by the programming blocks. To know that you can write a program to create a musical instrument or tell a joke.	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs.

Year 3	Year 4	Year 5	Year 6	
Know that Scratch is a programming language and some of its basic functions. Understand how to use loops to improve programming. Understand how decomposition is used in programming. Understand that you can remix and adapt existing code.	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. 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.	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. 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 and Python. Know that nested loops are loops inside of loops. Understand the use of random numbers and remix Python code.	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Creating Media			
Reception	**Year 1**	**Year 2**	**End of Key Stage Expectations**
N/A	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.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Year 3	Year 4	Year 5	Year 6	
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.	Understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. 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.	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.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Data Handling			
Reception	**Year 1**	**Year 2**	**End of Key Stage Expectations**
Know that sorting objects into various categories can help you locate information. Know that using yes/no questions to find an answer is a branching database. 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'.	Understand that you can enter simple data into a spreadsheet. Understand 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.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

Year 3	Year 4	Year 5	Year 6	
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. Understand 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 and be able to 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 that infrared waves are a way of transmitting data. 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 that are not updated are most vulnerable to hackers. Know the difference between mobile data and WiFi.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Online Safety			
Reception	**Year 1**	**Year 2**	**End of Key Stage Expectations**
Recognise that a range of technology is used in places such as homes and schools.	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 and 'posting' online means placing information on the internet. Develop an understanding of how to use technology safely. Know where to go for help/support when they have concerns about content/contact on internet.	Understand the difference between online and offline. Understand 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.' Understand that not everything I see or read online is true. Use technology safely and respectfully, keeping personal information private. Identify where to go for help/support when concerned about content/contact on internet/other online technologies.	Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Year 3	Year 4	Year 5	Year 6	
Know that not everything on the internet is true: people share facts, beliefs and opinions online. 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. Use technology safely, respectfully and responsibly. Recognise acceptable/unacceptable behaviour and identify ways to report concerns about content and contact.	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. Understand what behaviours are appropriate in order to stay safe and be respectful online. Recognise acceptable/unacceptable behaviour and identify ways to report concerns about content and contact.	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. Confidently, competently and responsibly use information and communication technology.	To know that a 'digital footprint' means the information that exists on the internet as a result of a person's online activity. To 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. Confidently, competently and responsibly use information and communication technology.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.