Computing Progression Map (2023-2024)

Computing Systems and Networks

	EYFS Technology around us	Year 1 Information Technology around us	Year 2	Year 3 Connecting Computers	Year 4 The Internet	Year 5 Systems and searching	Year 6 Communication and collaboration
Learning Objectives	-To identify technology -To identify a computer and its main parts -To use a mouse in different ways -To use a keyboard to type on a computer -To use the keyboard to edit text	-To recognise the uses and features of information technology -To identify the uses of information technology in the school -To identify information technology beyond school -To explain how information technology helps us -To explain how to use information technology safely -To recognise that choices are made when using information technology		To explain how digital devices function To identify input and output devices To recognise how digital devices can change the way we work To explain how a computer network can be used to share information To explore how digital devices can be connected To recognise the physical components of a network	To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web To describe how content can be added and accessed on the World Wide Web To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content	-To explain that computers can be connected together to form systems -To recognise the role of computer systems in our lives -To experiment with search engines -To describe how search engines select results -To explain how search results are ranked -To recognise why the order of results is important, and to whom	-To explain the importance of internet addresses -To recognise how data is transferred across the internet -To explain how sharing information online can help people to work together -To evaluate different ways of working together online -To recognise how we communicate using technology -To evaluate different methods of online communication
Success criteria	-I can explain how these technology examples help us - I can explain technology as something that helps us - I can locate examples of technology in the classroom - I know the names of the main parts of a computer - I know how to switch on and log into a computer - I know how to use a mouse to click and drag - I know how to click and drag to make objects on a screen - I can use a mouse to create a picture - I can use a mouse to open a program - I can say what a keyboard is for - I can type my name on a computer -I can delete letters - I can use the arrow keys to move the cursor	-I can describe some uses of computers - I can identify examples of computers - I can identify that a computer is a part of IT -I can identify examples of IT - I can identify that some IT can be used in more than one way - I can sort school IT by what it's used for - I can find examples of information technology - I can sort IT by where it is found - I can talk about uses of information technology -I can demonstrate how IT devices work together - I can recognise common types of technology - I can say why we use IT -I can list different uses of information technology - I can say how rules can help keep me safe - I can talk about different rules for using IT -I can explain the need to use IT in different ways - I can identify the choices that I make when using IT - I can use IT for different types of activities		-I can classify input and output devices - I can describe a simple process - I can design a digital device - I can explain how I use digital devices for different activities - I can recognise similarities between using digital devices and non-digital tools - I can suggest differences between using digital devices and non-digital tools -I can discuss why we need a network switch - I can explain how messages are passed through multiple c -I can demonstrate how information can be passed between devices - I can explain the role of a switch, server, and wireless access point in a network - I can recognise that a computer network is made up of a number of devices connections - I can recognise different connections -I can identify how devices in a network are connected together - I can identify networked devices around me - I can identify the benefits of computer networks	-I can demonstrate how information is shared across the internet - I can describe the internet as a network of networks - I can discuss why a network needs protecting -I can describe networked devices and how they connect - I can explain that the internet is used to provide many services - I can recognise that the World Wide Web contains websites and web pages - I can describe how to access websites on the WWW - I can describe where websites are stored when uploaded to the WWW - I can explain the types of media that can be shared on the WWW - I can explain that internet services can be used to create content online - I can explain what media can be found on websites - I can recognise that I can add content to the WWW -I can explain that there are rules to protect content - I can explain that websites and their content are created by people - I can suggest who owns the content on websites -I can explain that not everything on the World Wide Web is true - I can explain why I need to think carefully before I share or re-share content - I can explain why some information I find online may not be honest, accurate, or legal	-I can describe that a computer system features inputs, processes, and outputs - I can explain that computer systems communicate with other devices - I can explain that systems are built using a number of parts -I can explain the benefits of a given computer system - I can identify tasks that are managed by computer systems - I can identify the human elements of a computer system -I can compare results from different search engines - I can make use of a web search to find specific information - I can refine my web search -I can explain why we need tools to find things online - I can recognise the role of web crawlers in creating an index - I can relate a search term to the search engine's index -I can explain that a search engine follows rules to rank results - I can give examples of criteria used by search engines to rank results - I can order a list by rank -I can describe some of the ways that search results can be influenced - I can explain how search engines make money - I can recognise some of the limitations of search engines	-I can describe how computers use addresses to access websites - I can identify that internet devices have addresses - I can recognise that data is transferred using agreed methods -I can explain that all data transferred over the internet is in packets - I can explain that data is transferred over networks in packets - I can identify and explain the main parts of a data packet - I can explain that the internet allows different media to be shared - I can recognise how to access shared files stored online - I can send information over the internet in different ways -I can explain how the internet enables effective collaboration - I can identify different ways of working together online - I can recognise that working together on the internet can be public or private - I can choose methods of communication to suit particular purposes - I can explain the different ways in which people communicate - I can identify that there are a variety of ways to communicate over the internet -I can compare different methods of communicating on the internet - I can decide when I should and should not share information online - I can explain that communication on the internet may not be private
Vocabulary	Technology Manmade Digital Screen Mouse Keyboard Program Click/Drag Cursor	Information Technology Computer Device Barcode Scanner Communication Entertainment Appliances Signal E-Safety		Digital Device Input Process Output Connection Network Network Switch WAP Server E-Safety	Network Internet World Wide Web Router Security Website Webpage Browser Domain Reliable	System Input Process Output Protocol IP Address Packet Reuse Explore Collaboration	Internet World Wide Web Search Engine Browser Keyword Google Tim Berners-Lee Ranking Crawlers Algorithm

Granular Knowledge

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
To know there are different types of technology (laptop, desktop, phone etc) To know the names of the different parts of a computer (screen / monitor, keyboard, mouse, base unit, track pad) To know how to make marks on a computer (brush tool, vary thickness, shape) To know where the delete and backspace buttons are and their different functions To be able to use cap locks or shift to type a capital letter To know the function of the space bar To use the number keys To know the cursor is a flashing line that shows where you are typing To know that I can use the arrow keys to move the cursor To recognise the undo button arrow to undo the last action	To know what computers are used in school To know what computers are used for (write, to type, to paint, to play games) To know how computers, iPads and laptops are similar (They all have a screen, They have buttons, They can be used for a number of different purposes) To know how computers, iPads and laptops are different (possible responses- Device X has a keyboard, Device X is portable, Device X needs to be plugged into a power source) To know computers have different parts, which we control to use the computer in different ways (buttons, keys, touch screen). To know computers also have different ways of letting us know what is happening (screens, lights, and sound) To know that information technology is anything that is a computer or works with a computer. To know forms of information technology that are used in school (computers, laptops, USBs, printers, cameras) To know information technology can be used for communicating, playing on (entertainment), and to help us. To know that to use a computer they need to switch it on using the power button, click in the username panel by hovering the cursor over it and clicking on it, enter their username and do the same for password. Then click on the arrow to login. To know how to access shared by clicking on the folder on the desktop/bottom bar. Identify the correct document and click twice on the document icon to open it. To know that to resize the images they need to click on the image, then click on and drag one of the squares at the side/corner of the image. To know that information technology is used outside of school (cash machine, street lights, pedestrian crossing, CCTV, debit card/card machine, barcode/scanner/till, speed camera) To know that information technology is used in shops, cafes, restaurants and offices To know examples of the sequence of how information technology is linked (pedestrian crossing, traffic lights) To know that when you go to a shop you scan the barcode on the item at the till and the price shows on the screen. To know how information technology works together (barcodes are scanned at the till, then a beep sounds, and the price appears on a display) To know common uses of technology (cash machine, street lights, pedestrian crossing, CCTV, debit card/ card machine, barcode/scanner/till, speed camera) To know the benefits of using IT (It can save humans time, It can make it easier to keep records, It makes it easier to do jobs / school work in different places, It can help people do difficult jobs more quickly and accurately, It can hold lots of information, which humans might forget) To know different uses of IT within and outside of school (suggested response for a tablet might include: paint a picture, write a story, read a story, play a game, talk with someone, send a message, video call someone, go online, watch videos/YouTube, etc.) To know the school online safety rules. DIFFERENT FOR EACH SCHOOL To know rules when using IT (could include some of the following examples: Using it when they are allowed, or not allowed, to use the device. For example, at a specific time of day, at the table, etc. Only watching suitable videos or using the device for suitable activities or games. Taking turns with a sibling. Looking after the device. For example, sitting down when using it, or always using two hands to carry it.) To know why they are following rules (Keeping them safe, Seeing appropriate content due to watershed or age ratings on games, Devices not getting broken.) To know they need permission before taking a photo of someone else. To know the digital 5 a day (connect, be mindful, be active, get creative, give to others) and how it gives a 'balanced digital diet'. Connect: messaging someone, talking on a video call, talking face-to-face with someone Be active: time away from using technology, physical play, running, skipping, etc. Get creative: using a computer or tablet to paint a picture, writing a story, etc. Give to others: doing things for other people, doing something kind, etc. Be mindful: taking a break, making space, being away from technology, colouring, drawing, etc.		To know examples of input devices (including mouse, pedestrian crossing buttons, webcam, microphone, keyboard, touch screen, games controller) To know examples of output devices (including speakers, printer, pedestrian crossing lights, screen/monitor) To know the uses of digital devices (including photography, entertainment, communication, research, data collecting, presenting information) To know the benefits of using a digital device such as the ability to edit, reproduce, sharing To know when it is appropriate to use or not use a digital device (including ease, speed, time, precision To know that a connection is a link between two or more people To know that a network is a group of many people or things connected together To know that a network switch passes messages around a network To know that a switch passes messages on without reading them To know that a network switch connects devices using wires To know that a server is a computer can store information (documents, sound files, video) on a network To know that a wireless device is portable (laptop, smart phone, tablet) To know that a wireless access point is a device connected to a wired network which sent and receives wireless signals To know what our school network comprises of (devices, printers/copiers, WAP, network cables, network sockets, switch, server) To know the benefits of a network (access and sharing files, registration/administration, communication)	To know that a network has a network switch which is connects computers with wires. To know that a router enables messages to be passed between networks via switches To know that networks are connected to other networks in different places. To know that network security is important To know that some information private To know that some information is not relevant to others To know that some information can be harmful to a network (viruses) To know that a router enables us to connect a network to the internet and to connect lots of networks together. To know that a route is a way of getting from one place to another. To know that the World Wide Web is only one part of the internet. To know that emails can be sent and files can be shared on the internet To know that a website is a collection of pages, under one name To know that a web page is a single page or document on the World Wide Web To know that the internet is connected by lots of routers. The World Wide Web is part of the internet where we can visit web pages and websites. To know that physical objects can not be shared on the internet To know that media (images and sounds) can be shared on the internet To know that a web address consists of three parts To know that www stands for the World Wide Web To know that the domain name is usually associated with the theme or organisation behind the website, and the end part of a web address indicates where a website originates from or the type of organisation To know that most websites are hosted in large data centres all around the world To know that the internet can be accessed from many different devices (computers, laptops, smart phones, smart TVs, tablet computers, games consoles) To know that a web browser allows you to look at web pages on the internet. To know that a website has different types of content, such as videos, pictures, or text. To know that websites have different features (Logo or title, Links to other websites/pages, A video, A picture, Text) To know that the content of a webpage can be added to by lots of different people, which has advantages and disadvantages (easy to add to/share information however not everything is accurate/quality can vary) To know that individuals, organisations or groups can be responsible for website content To know that all content on a website can be viewed but only some can be downloaded and used To know that sharing and owning website content is different To know that not everything on the World Wide Web is true. To know that content on the World Wide Web can be subjective to someone's opinion/influenced by adverts/out of date. To know that information can be shared vey quickly on the World Wide Web with billions of people To know that once information is shared in the World Wide Web, it can not be 'unshared'	To know that a system is a number of things (parts, components, people) that work together to complete or perform a task. To know in a digital system there must be an input which triggers a process and produces an output. To know where larger digital systems are used in a wide range of public contexts, e.g. arrival and departure boards, digital bus stop signs, sign-in at doctors' surgeries, 'next patient' boards in hospitals, and ordering and payment systems in shops and cafes. To know some benefits of using digital systems e.g. that computers are needed so that the different parts of the system can communicate with each other. To know that sensors can have effects on a system. To know examples of search engines e.g. Google, Bing, DuckDuckGo, Swisscows. To know that search engines are systems and that in a search engine system, the search engine looks for information. To know that the input is the entering of the search term and the outputs are the results displayed To know ways to refine a search: making search terms more specific, identifying the audience e.g. for KS2 To know hat there are two common ways to conduct a search: using the search box in the search engine itself or typing the term into the address bar of the browser (sometimes referred to as the 'omnibox'). To know that when using the search box, the search will be carried out by the search engine that you have chosen. To know that when using the address bar/omnibox, the search will be carried out in the default search engine. This is determined by a setting within the browser in use. To know that search engines use programs known as crawlers (they may also be referred to as web crawlers, spiders, or spiderbots). To know that crawlers create an index of the World Wide Web. They 'crawl' websites for searchable content and store where it is found in an index. It is important to emphasise that crawlers are programs, not physical objects. To know that the indices for large search engines are stored in huge data centres around the world. To know that as the search terms are narrowed, fewer results will be returned To know that search engines use ranking to determine the order in which search results are displayed. To know some features of a webpage: a URL, a heading, subheadings, paragraphs of information, links. To know how search engines use algorithms to rank webpages: the algorithm looks at a number of factors on the webpage and gives a score for each. To know that the webpage with the highest score ranks the highest. To know that search engine optimisation (SEO) is applied to websites to help them rank as highly as possible. To know what selection is: a search engine creates an index of the World Wide Web using web crawlers. When a search takes place, results are selected from the search engine's index and delivered to the user. To know the impact that searchers, search engines, and webpage creators have on the effectiveness of a search: ○ Searchers: the search term, the links that they click on, the location of the searcher, the choice of search engine, and the settings that they have chosen ○ Search engines: the rules that their web crawlers follow to create an index, adverts and sponsored results, and the settings available ○ Webpage creators: the terms, text, and images used; and the links in and out of a page To know that search engines make money using sponsors or where adverts are ranked highly because companies have agreed to pay search engines for their links to be prominent for certain search terms	To know that an Internet Data Transfer means that every time someone access a video, website or send a message data is transferred over the internet. To know that a protocol is an agreed set of rules. To know that computers communicate using set protocols. To know that an IP address is a special address used by network computers. To know that when a message is sent the start and destination address should be included. To know that Domain Name Server is a computer, but it works like an address book: it matches IP addresses to the domains. To know that data is sent across the internet in packets. To know that a packet is made up of a header and a data payload. To know that the header contains the address of the destination and sender, the packet number and total number of packets. To know that the data payload is the message being sent. To know that data you send or receive cannot fit in a single packet, so it is split into multiple packets. To know how different media (text, image, video) are sent via packets. To know that to log in to Office365 they need a username and password. To know that they can collaborate on document using PowerPoint in Office365. To know that they can use a variety of tools to add media to their project (text box, images, resize, animation or transitions, drawing tools) To know the advances and limitations of working collaboratively digitally and non-digitally (efficiency, ability to edit own and other people's contributions) To that plagiarism means to use someone else's work without their knowledge or consent. To know that plagiarising someone's work is unlawful. To know the most effective way to communicate different types of messages (this depends on the person/people you are communicating with, the type of media you wish to share and the limitations of different online platforms and apps). To know different methods of electronic communications (SMS, email, video call, Internet instant messaging, blog post, social networking sites). To know the features of different electronic communication methods (public or private, one or two way communication, age restrictions). To know that they have a responsibility to keep themselves and other safe online by following the SMART rules.

Creating Media 1

	EYFS	Year 1 Digital writing	Year 2 Digital photography	Year 3 Stop-frame animation	Year 4 Audio production	Year 5 Video production	Year 6 Web page creation
Learning Objectives		-To use a computer to write -To add and remove text on a computer -To identify that the look of text can be changed on a computer -To make careful choices when changing text -To explain why I used the tools that I chose -To compare typing on a computer to writing on paper	-To use a digital device to take a photograph -To make choices when taking a photograph -To describe what makes a good photograph -To decide how photographs can be improved -To use tools to change an image -To recognise that photos can be changed	-To explain that animation is a sequence of drawings or photographs -To relate animated movement with a sequence of images -To plan an animation -To identify the need to work consistently and carefully -To review and improve an animation -To evaluate the impact of adding other media to an animation	-To identify that sound can be recorded -To explain that audio recordings can be edited -To recognise the different parts of creating a podcast project -To apply audio editing skills independently -To combine audio to enhance my podcast project -To evaluate the effective use of audio	-To explain what makes a video effective -To identify digital devices that can record video -To capture video using a range of techniques -To create a storyboard -To identify that video can be improved through reshooting and editing -To consider the impact of the choices made when making and sharing a video	-To review an existing website and consider its structure -To plan the features of a web page -To consider the ownership and use of images (copyright) -To recognise the need to preview pages -To outline the need for a navigation path -To recognise the implications of linking to content owned by other people
Success criteria		-I can identify and find keys on a keyboard - I can open a word processor - I can recognise keys on a keyboard -I can enter text into a computer - I can use backspace to remove text - I can use letter, number, and space keys -I can explain what the keys that I have learnt about already do - I can identify the toolbar and use bold, italic, and underline - I can type capital letters -I can change the font - I can select all of the text by clicking and dragging - I can select a word by double-clicking -I can decide if my changes have improved my writing - I can say what tool I used to change the text - I can use 'undo' to remove changes - I can explain the differences between typing and writing - I can make changes to text on a computer - I can say why I prefer typing or writing	-I can explain what I did to capture a digital photo - I can recognise what devices can be used to take photographs - I can talk about how to take a photograph -I can explain the process of taking a good photograph - I can explain why a photo looks better in portrait or landscape format - I can take photos in both landscape and portrait format -I can discuss how to take a good photograph - I can identify what is wrong with a photograph - I can improve a photograph by retaking it -I can experiment with different light sources - I can explain why a picture may be unclear - I can explore the effect that light has on a photo -I can explain my choices - I can recognise that images can be changed - I can use a tool to achieve a desired effect -I can apply a range of photography skills to capture a photo - I can identify which photos are real and which have been changed - I can recognise which photos have been changed	-I can create an effective flip book—style animation - I can draw a sequence of pictures - I can explain how an animation/flip book works -I can create an effective stop-frame animation - I can explain why little changes are needed for each frame - I can predict what an animation will look like -I can break down a story into settings, characters and events - I can create a storyboard - I can describe an animation that is achievable on screen -I can evaluate the quality of my animation - I can review a sequence of frames to check my work - I can use onion skinning to help me make small changes between frames -I can evaluate another learner's animation - I can explain ways to make my animation better - I can improve my animation based on feedback -I can add other media to my animation - I can evaluate my final film - I can explain why I added other media to my animation	-I can explain that the person who records the sound can say who is allowed to use it - I can identify the input and output devices used to record and play sound - I can use a computer to record audio -I can discuss what sounds can be added to a podcast - I can inspect the soundwave view to know where to trim my recording - I can re-record my voice to improve my recording -I can explain how sounds can be combined to make a podcast more engaging - I can plan appropriate content for a podcast - I can save my project so the different parts remain editable -I can improve my voice recordings - I can record content following my plan - I can review the quality of my recordings -I can arrange multiple sounds to create the effect I want - I can explain the difference between saving a project and exporting an audio file - I can open my project to continue working on it -I can choose appropriate edits to improve my podcast - I can listen to an audio recording to identify its strengths - I can suggest improvements to an audio recording	-I can compare features in different videos - I can explain that video is a visual media format - I can identify features of videos -I can experiment with different camera angles - I can identify and find features on a digital video recording device - I can make use of a microphone -I can capture video using a range of filming techniques - I can review how effective my video is - I can suggest filming techniques for a given purpose -I can create and save video content - I can decide which filming techniques I will use - I can outline the scenes of my video -I can explain how to improve a video by reshooting and editing - I can select the correct tools to make edits to my video - I can store, retrieve, and export my recording to a computer -I can evaluate my video and share my opinions - I can make edits to my video and improve the final outcome - I can recognise that my choices when making a video will impact on the quality of the final outcome	-I can discuss the different types of media used on websites - I can explore a website - I know that websites are written in HTML -I can draw a web page layout that suits my purpose - I can recognise the common features of a web page - I can suggest media to include on my page -I can describe what is meant by the term 'fair use' - I can find copyright-free images - I can say why I should use copyright-free images -I can add content to my own web page - I can evaluate what my web page looks like on different devices and suggest/make edits - I can preview what my web page looks like -I can describe why navigation paths are useful - I can explain what a navigation path is - I can make multiple web pages and link them using hyperlinks -I can create hyperlinks to link to other people's work - I can evaluate the user experience of a website - I can explain the implication of linking to content owned by others
Vocabulary		Word Processor Text Font Keyboard Text Cursor Enter Spacebar Toolbar Undo Icon	Photography Editing Software Digital Portrait Landscape Scene Subject Lighting Colour	Animation Frame Illusion Sequence Onion Skinning Playback Storyboard Audio Consistency Text	Audio Input Output Microphone Speaker Podcast Waveform Jingle Track Presenter	Video Audio Themes Message Dialogue Plot Props Zoom Angle Plan/Tilt	Web Page Website Domain Hypertext Purpose Browser Copyright Homepage Navigation Pathways Audience

Granular Knowledge					
I know that I can use pens, paper, chalk and pencils, fingers, paint, sand and salt to write. I know that a word processing document is a page that you can write on. I know that the keyboard is used to add letters to the page. I know that buttons are called keys. I know how to find the letters for my name and my friends name on a keyboard. I know how to login. I know how to find the word processor. I can find the keys abcdef. I know what backspace, return and spacebar do. I know how to choose whether to save my work or not. I know how to use the arrow keys to move the cursor and enter to move to the next line I know how to save a word document by clicking file, save as and choosing destination I know where the caps lock key is and that I press it to turn on, and again to turn off I can identify the toolbar and the bold, italic and underline icons. I know when they are pressed they change in appearance and to click them again to turn the function off. I know that font means the style and appearance of the text I know how to use a drop down menu to select a different font I know that I move my cursor to the word I want to change and double left click to select it before changing the font I know and can use key vocabulary (see PowerPoint) I know the difference between the undo and redo buttons and know that I can click them more than once to undo or redo more than one action I know how to apply my digital writing skills to edit existing text adding spaces, capital letters as needed. I know that it is easier to make changes to writing on a computer than on paper I know similarities and differences between writing on a computer or writing on paper- see PowerPoint I know how to use bold, italic, underline, change the size and font of my text	To know what a photograph is (in comparison to an animation/cartoon picture) To know which devices can take photographs (digital camera, CCTV, iPad/tablet, laptop, smart phone, speed camera) and which devices cannot take photographs (printer, USB, desktop computer, interactive whiteboard To know that you have to have someone's permission to take their photo To know how to take a good photograph (Hold the device firmly with both hands, Point the camera lens at the subject, Look into the viewing window or screen, Move the device until you see everything clearly, Press the capture button.) To know we can hold the camera in two ways: upright or sideways To know if the device is held vertically or upwards, you capture the image in portrait To know if the device is held horizontally or sideways, you capture the image in landscape To know that a portrait and landscape photo may be more appropriate for certain images (portrait: person, door, pencil pot. Landscape: place/building, display board, outside view) To know what makes a good photograph (Positioning: Is it obvious what the main subject of the photograph is?, Framing: Have you included everything you wanted to?, Subject: Are you close enough that you can see the detail?) To know what retaking is (retaking a photograph to make it better) To know when to retake a photo (after evaluating it again the criteria above and spotting mistakes) To know that light can effect photographs. To know different locations that may affect the lighting on a photo (Suggested locations: On the windowsill (with blinds open), On the windowsill (with blinds closed), Under the table, On the table, In a partially opened cupboard, Outside (e.g. in the playground or on the field), In front of a light source) To know that you can add a light source when taking a photo (flash or torch) To know that moving the light source can affect the photo differently To know how to take a clear image (Hold the camera really still, Take your time and don't rush, When you've pressed the capture button, count to three before you move) To know that the colour on an image can be changed To know that to open https://pixlr.com/x you need to input the link into the address bar or scan a QR code (set-up by teacher in advance) To know that to open an image in pixlr you need to click on 'open image' button and find chosen image and select it by clicking on it with the cursor or touch screen or select 'stock image' and search in the search bar. To know that to add a filter you need to click on this symbol (effect) then select 'colours' and click on a filter option. You must then enter a name for your photo into the 'file name' box and click on the 'save' button to download the new image. Applying all previous knowledge to take and edit new photos. To know if an image is real or fake, looking for changes in colour, inconsistencies in the background/foreground image, unrealistic size of objects compared to others in the photo.	To know that an animation is a number of pictures are drawn or taken of an object or picture and the pictures are shown quickly which makes it appear to be moving To know what makes an effective flipbook animation (keep it simple, makes small changes, draw at the edge of the page) To know that an animation is made up of frames To know that small changes create the appearance of movement To know how to open the Imotion app (new movie, manual, title) To know that onion skinning allows you to see the previous frame To know the elements required to plan an animation (setting, characters, events) To know the restrictions of an animation (characters cannot change direction, open doors etc, a setting cannot change) To know which elements of an animation need to be consistent (characters, background, IPad in same place) To know that media comes in different forms (audio, text, picture) To know that a transition is the way a film moves from one picture to the next To know that to apply an transition in Imotion you click on the transition button at the bottom of the screen	To know that sounds can be recorded and played back on several different devices (laptop, tablet, Dictaphone, smartphone, desktop computer, answerphone) To know that sound is recorded through an input device called a microphone and that these can take various forms To know that speakers are an output devices and that these can be in the form of a loud speaker or a set of headphones. To know that some devices are both input and output devices (headsets, smart speakers, laptops, smartphones, tablets) To know that a good sound recording is clearly spoken, one at a time, near to the microphone. To know that a bad sound recording is spoken too quickly, with background/fiddling noise To know that each recording can be added to its own track To know that additional voice recordings can be added using another track. To know that sound recordings can be shown as waveforms To know that the peaks on a waveform are the loudest parts and the flat lines are the quietest. To know that sound recordings can be edited by deleting sections. To know that audio can be aligned and moved so they play in a desired order To know that sounds can be voices, jingles, background music or sound effects To know that more than one sound playing at the same time (e.g. background music or sound effects) is known as layering sounds. To know that saving a sound recording means it can be added to and edited at a later date. To know what makes a good recording (see pervious lessons) To know that a track should be deleted if a re-recording is needed To know that when recording a second track, the first track should be muted To know that unwanted sections of audio can be deleted To know that when sections of audio are deleted, tracks need to be aligned To know that to open a saved project, you need to click on 'file' and 'open' To know that to add an audio file, you click on 'file' and then 'import' To know that to move an imported audio fine to a desired place, you need to use the double arrow head button and drag the file. To know that to trim an audio file, you need to select the section to be deleted and play it back to check it is the correct part before deleting it. To know that the volume of an audio file can be increased and decreased To know that a project can be exported and played on different devices To know that an evaluation will help improve yours and others work.	To know that video is the recording, reproducing, or broadcasting of moving visual images. To know examples of different types of videos: watching other people play games, livestreams, reaction videos, video lessons, advertisements, TV/films, product reviews, vlogs To know a number of filming techniques: ● Close up – filming one person, emphasising the expression on their face ● Mid range – filming one person with some background detail ● Long shot – filming one person, showing their whole body and where they are ● Moving subject – a person moving from one place to another ● Side by side – filming two people at the same time ● High angle – makes a person look smaller than they are ● Low angle – makes a person look bigger than they are ● Normal angle – makes a person look their actual size To know that a 'static camera' means the camera is fixed and the composition of the shot (the area that is being filmed) does not change. To know that Zooming means making the subject of the shot larger (by zooming in) or smaller (by zooming out) without moving the camera. To know that pan and tilt means the camera is in a fixed location, but can pivot either vertically or horizontally. To use prior knowledge from previous sessions on filming techniques to decide which techniques are best for each section of their own video. To know how to assess the effectiveness of their video: is the audio clear? Is there background noise? Is the imagery clear or blurred? To know that to connect an iPad to a laptop, they will require a USB cable. To know that import means to move or copy content from one device to another. To know that to open Video Editor on Windows, they can type in Video Editor in the search box and select the appropriate icon. To know that to begin a new project, they will need to select '+ New' and name the project using an appropriate/recognisable name. To know that to upload files to Video Editor they will need to, from the relevant folder, click on Add videos and photos or click on the thumbnail window. The selected videos will appear on the screen in the Timeline. To know that they can track the progression of each video on each thumbnail image. To know that the preview window will allow learners to watch the entire sequence of videos. To know that a video can be edited and improved by trimming clips, deleting or reshooting clips and adding filters and text. To know that when their video is in edit, it should be saved as a *.wmv file. To know that when imported, each section of video they have shot is imported as a distinct clip. To know that to trim a section, the clip needs to be split so that the unwanted part is isolated from the rest of the clip, the isolated section can then be deleted. To know that once finished, it should be saved and exported as a completed *.mp4 file.	To know that a website is a collection of information relating to a particular topic that can be accessed on a range of devices (PC, tablet, laptops, smart phone) To know that a website can be made up of lots of different web pages. To know that a browser allows you to navigate around the WWW. To know that websites are made up of code called Hypertext Markup Language or HTML for short. To know some features of a website (search tool, menu, media such as text/information and images) To know that websites are created for a purpose and have an intended audience. To know the capabilities of the software being used to create a webpage. To know that Copyright law protects the control you have over the things that you create. It also protects the work of others. To know the rules you must follow if you want to use someone else's work you should e.g. ask permission, give credit to the person who made it, buy it — if it has a cost attached (e.g. from an online resource library) To know that fair use means that you can use part of someone's work, you can't make money from it, it looks completely different in your piece of work than in the original piece, you credit the owner. To know that you can select copy-right free images in a browser. To know how to edit the features of their website e.g. change the colour of the header, add an image, change font or background. See above for knowledge that will be applied in web-page creation. To know that a breadcrumb trail (navigation path) allows users to keep track of where they have been on the website or how it is structured. To know that a hyperlink allows different web pages to be linked together. To know that to add a subpage they must click 'pages', select the drop down menu from 'Home' and click 'add a subpage' which they should name. To know that when you link to someone else's website online this is called an external link. To know that it is important to consider the safety aspects of linking to external websites e.g. the content may change and we have no control over this, the link may change and not work, the site may not be secure, it may or may not use reputable sources,

Programming A

	EYFS	Year 1 **Moving a robot & Robot algorithms**	Year 2	Year 3 **Sequencing sounds**	Year 4 **Repetition in shapes**	Year 5 & Year 6 **Selection in physical computing**	Year 6 **Variables in games**
Learning Objectives		-To explain what a given command will do -To act out a given word -To combine forwards and backwards commands to make a sequence -To combine four direction commands to make sequences -To plan a simple program -To find more than one solution to a problem -To describe a series of instructions as a sequence -To explain what happens when we change the order of instructions -To use logical reasoning to predict the outcome of a program -To explain that programming projects can have code and artwork -To design an algorithm -To create and debug a program that I have written		-To explore a new programming environment -To identify that commands have an outcome -To explain that a program has a start -To recognise that a sequence of commands can have an order -To change the appearance of my project -To create a project from a task description	-To identify that accuracy in programming is important -To create a program in a text-based language -To explain what 'repeat' means -To modify a count-controlled loop to produce a given outcome -To decompose a task into small steps -To create a program that uses count-controlled loops to produce a given outcome	-To control a simple circuit connected to a computer -To write a program that includes count-controlled loops -To explain that a loop can stop when a condition is met -To explain that a loop can be used to repeatedly check whether a condition has been met -To design a physical project that includes selection -To create a program that controls a physical computing project	-To define a 'variable' as something that is changeable -To explain why a variable is used in a program -To choose how to improve a game by using variables -To design a project that builds on a given example -To use my design to create a project -To evaluate my project
Success criteria		-I can match a command to an outcome - I can predict the outcome of a command on a device - I can run a command on a device -I can follow an instruction - I can give directions - I can recall words that can be acted out - I can compare forwards and backwards movements - I can predict the outcome of a sequence involving forwards and backwards commands - I can start a sequence from the same place -I can compare left and right turns - I can experiment with turn and move commands to move a robot - I can predict the outcome of a sequence involving up to four commands -I can choose the order of commands in a sequence - I can debug my program - I can explain what my program should do -I can identify several possible solutions - I can plan two programs - I can use two different programs to get to the same place -I can choose a series of words that can be enacted as a sequence - I can follow instructions given by someone else - I can give clear instructions -I can show the difference in outcomes between two sequences that consist of the same commands - I can use an algorithm to program a sequence on a floor robot - I can use the same instructions to create different algorithms -I can compare my prediction to the program outcome - I can follow a sequence - I can predict the outcome of a sequence - I can explain the choices I made for my mat design - I can identify different routes around my mat - I can test my mat to make sure that it is usable - I can create an algorithm to meet my goal - I can explain what my algorithm should achieve - I can use my algorithm to create a program - I can plan algorithms for different parts of a task - I can put together the different parts of my program - I can test and debug each part of the program		-I can explain that objects in Scratch have attributes (linked to) - I can identify the objects in a Scratch project (sprites, backdrops) - I can recognise that commands in Scratch are represented as blocks -I can choose a word which describes an on-screen action for my plan - I can create a program following a design - I can identify that each sprite is controlled by the commands I choose -I can create a sequence of connected commands - I can explain that the objects in my project will respond exactly to the code - I can start a program in different ways -I can combine sound commands - I can explain what a sequence is - I can order notes into a sequence -I can build a sequence of commands - I can decide the actions for each sprite in a program - I can make design choices for my artwork -I can identify and name the objects I will need for a project - I can implement my algorithm as code - I can relate a task description to a design	-I can create a code snippet for a given purpose - I can explain the effect of changing a value of a command - I can program a computer by typing commands -I can test my algorithm in a text-based language - I can use a template to create a design for my program - I can write an algorithm to produce a given outcome -I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome -I can choose which values to change in a loop - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop -I can explain that a computer can repeatedly call a procedure - I can identify 'chunks' of actions in the real world - I can use a procedure in a program -I can design a program that includes count-controlled loops - I can develop my program by debugging it - I can make use of my design to write a program	-I can create a simple circuit and connect it to a microcontroller - I can explain what an infinite loop does - I can program a microcontroller to make an LED switch on - I can connect more than one output component to a microcontroller - I can design sequences that use count-controlled loops - I can use a count-controlled loop to control outputs -I can design a conditional loop - I can explain that a condition is either true or false - I can program a microcontroller to respond to an input - I can explain that a condition being met can start an action - I can identify a condition and an action in my project - I can use selection (an 'if…then…' statement) to direct the flow of a program -I can create a detailed drawing of my project - I can describe what my project will do - I can identify a real-world example of a condition starting an action -I can test and debug my project - I can use selection to produce an intended outcome - I can write an algorithm that describes what my model will do	-I can explain that a variable has a name and a value - I can identify a program variable as a placeholder in memory for a single value - I can recognise that the value of a variable can be changed -I can decide where in a program to change a variable - I can make use of an event in a program to set a variable - I can recognise that the value of a variable can be used by a program - I can choose the artwork for my project - I can create algorithms for my project - I can explain my design choices -I can choose a name that identifies the role of a variable - I can create the artwork for my project - I can test the code that I have written -I can identify ways that my game could be improved - I can share my game with others - I can use variables to extend my game
Vocabulary		Programmed/program Robot Algorithm Button Direction Forward Backward Left Right Route Obstacle Design Error Chunking Debugging		Programming Scratch Block Commands Code Sprite Stage Costume Backdrop Debugging	Programming Logo Turtle Commands Code Cursor Algorithm Pattern Sequence Debugging	Programming Circuit Electricity Microcontroller Code LED Algorithm Motor Modify Debugging	Programming Variable Scratch Events Code LED Algorithm Motor Modify Debugging

To know how to switch the Beebot on	To know the different elements of a scratch project (programming blocks, area and stage, sprites and backdrops)

Column 1:

To know how to switch the Beebot on
To know that pressing a button acts as an instruction to the robot and causes movement
To know what left, right, forwards and backwards means and can move my body in response
To know how to give an instruction verbally using left right forwards and backwards
To know to use the X button to clear previous instructions
To know how to predict what a given set of instructions will do to the Beebot
To know how to input a given series of instructions into the Beebot to test my prediction
To know that pressing forwards or backwards once moves the Beebot forwards or backwards one square
To know that I need to press Go to make the Beebot follow the instructions
To know that the turn buttons make the Beebot turn a quarter turn in that direction but that the Beebot doesn't move other than that
To know how to program the Beebot to move to a specific destination using up to four commands
To know how to predict what a given set of instructions will do to the Beebot
To know how to plan a set of instructions to move the Beebot to a specific location by using command cards
To know that debugging means fixing any mistakes in the program
To can tell my partner what should have happened and what went wrong
To know that there are different routes that the Beebot can take to get to the same destination
To know that two different routes to get the Beebot to the same destination
To know how to program the Beebot to follow the planned routes

To know the vocabulary used to give clear instructions (Forwards, Backwards, Turn Right, Turn Left)
To know that instructions need to be precise, specifying exactly how many of each move need to be done.
To know that when giving 2 or more instructions you must also direct them to 'go' once you have completed the set of instructions
To know what an algorithm is (a set of instructions)
To know the four instructions that can be included in an algorithm (↑ forwards, ↓ backwards, ← turn left, → turn right)
To know that ↑ makes the Beebot move one square forwards, ↓ makes the Beebot move one square backwards, ← makes the Beebot make a 90° turn left, → makes the Beebot make a 90° turn right
To know that the Beebot follows the algorithm in the exact order it is inputted
To know that when you use what you know about Beebot instructions and read through a given algorithm in comparison to the start position and direction to find out where it will end you are making a prediction
To know that predictions may not always be correct
To know that predictions are more difficult when there are more steps in the algorithm
To know to press the direction buttons then the 'GO' button to make the Beebot follow the instructions inputted with the buttons
To know to press the 'X' to clear all previous instructions.
To know that Beebot mats are made up of objects spread out on a given template (15cmx15cm boxes)
To know that some mats have obstacles that the Beebot cannot move through
To know that computer programmes all include code and artwork
Time spent applying all previous knowledge on how to program a Beebot
To know that algorithms don't always work (the Beebot doesn't arrive at the specified destination) and changes are needed to fix the program (get to the destination). This is called 'debugging'.
To know how to debug a program by looking at the algorithm step-by-step to identify where the mistake is and make changes to correct it.
To know how to create longer algorithms by chunking them into two or more stages or the journey.
To know to test the program between each stage.
To know that when completing several stages of a journey my second algorithm must start where my previous one ended.

Column 2:

To know the different elements of a scratch project (programming blocks, area and stage, sprites and backdrops)
To know that sprites have attributes that can be changed (code, costume, sound)
To know that a stage have attributes that can be changed (code, backdrops, sound)
To know that to navigate around scratch, you need to click on the tabs in the programming blocks area
To know that each block in scratch is a command

To know that a command produces an output (motion, looks, sound, events, control, sensing, operators, variables)
To know that two or more command blocks connected together produce a sequence
To know that a sequence is a pattern or process in which one thing follows another
To know that sequences can be found in the real word (traffic lights)
To know that an event block starts a sequence
To know that sound blocks produced a sound
To know that the order in a sequence will impact the outcome
To know that it is possible to combine different types of command blocks in the same sequence

To know that debugging is finding errors in programming, specifically sequencing

Column 3:

To know that a command is an instruction
To know it is important for commands to be accurate
To know that the command box is where commands are typed
To know that the drawing box is where the turtle carries out the commands
To know that pixels are the dots that make up a screen
To know the commands (fd=forwards, bk=backwards, cs=clear screen, rt=right turn, lt=left turn, pu=pen up, pd=pen down)
To know that a sequence is more than one command
To know that An algorithm is an ordered set of precise instructions
To know that debugging is the process of finding and correcting errors in your code
To know that the 'home' command will make the turtle return to its original place on the screen
To know that repeat means 'to do or say something again'.
To know that repeated instructions can be found in algorithms using the 'repeat' command
To know that a repeated instruction needs to be within square brackets
To know that the number before the loop tells you how many times a repeat with happen
To know that an angle is an amount of turn
To know that the angle of a regular shape is 360 divided by the number of sides the shape has
To know that decompose means to break something down into smaller parts
To know that a procedure is a named code snippet that can be run multiple times
To know that a procedure will save time in future
To know that repeated procedures can make patterns
To know that procedures can include different sizes
To know that 'setpc' is the short cut to change pen colour

Column 4:

To know that a microcontroller is a programmable device that can control outputs and respond to inputs.
To know that a Crumble is a microcontroller.
To know that a Sparkle is a multi-colour LED (light-emitting diode).
To know that the positive and negative power pads on the Sparkle need to be connected with the positive and negative power pads on the Crumble controller. These are the + and – pads with the word 'power' written next to them (on one side of the Crumble controller), adjacent to the USB port.
To know that the Sparkle's D pad needs to be connected to the D pad on the Crumble controller.
To know that dragging blocks from the block palette on the left of the screen to the main programming area allows commands to be snapped together to make a program.
To know that once the Crumble is connected, programs written in the Crumble software can be sent to the Crumble by clicking on the green triangular play button.
To know that ● Clicking on the red square on the set sparkle(0) to [red] block allows you to change the colour of the Sparkle
● Clicking on the time value on a wait 0.5 seconds block allows you to change the duration of the wait command
To know that the commands placed inside a do forever loop will be repeated until the program is stopped.
To know that a Crumble can be programmed to make a motor spin forwards and backwards at different speeds.
To know that that clicking on the word in the centre of the motor command block makes the command change. The command will cycle through forwards, backwards, and stop.
To6 know that that the % value on the right-hand end of the block sets the motor's power.
To know that when the sequence of commands is placed inside a count-controlled loop, the block will be run multiple times.
To know that the number shown on the block can be changed by the programmer; this number is how many times the command sequence inside the block will be run.
To know that an algorithm is a precise set of ordered steps, which can be followed by a human or a computer in order to do a task.
To know that a condition is a statement that can only be true or false.
To know that programmers use conditions in programs to trigger actions.
To know that the 'do...until' loop, is a type of loop where a programmer can set their own condition.
To know that in programming, we use conditions to change what actions the computer does.
To know that a switch can be used as an input for a Crumble controller.
To know that that a push switch being pressed is a condition, and this is represented by the command block [A] is [HI].
To know that selection in computing is when a decision or choice is made as part of the program. E.g. they may want a set of actions to be carried out if the condition is met (rather than stopped).
To know that the 'if...then…' structure is used for selection.
To know that "if" is used to give the condition, and that "then" is used to give the actions to carry out (when the condition is true).
To know that in programs, you need to instruct the device to repeatedly check if the condition (the button being pressed) has been met, otherwise it will only be checked once.
To know that that by using an infinite loop, we can instruct the computer to continuously check if the condition has been met, allowing the actions to be carried out.
To know that an algorithm can be made more precise by including specific details such as timings, number of repeats, motor direction, and power.

Column 5:

To know that a variable is defined as something that can be set and changed throughout the running of a program.
To know that minus numbers and positive numbers can be used to change the value of the variable.
To know that variables can hold numbers or letters.
To know that a program variable is a placeholder in memory for a single value
To know that a variable has a name and a value
To know that the name of a variable should identify the role of the variable.
To know that the value of a variable can be changed
To know that variables are named so that you know what they contain.
To know that variable names should contain underscores instead of spaces
To know some possible variables appropriate to a game: score, timer, lives
To know that if a score was never reset, it would keep changing and would never return to the original value.
To know that 'operator blocks in Scratch' can be used as a way for a program to use the value of a variable to perform different tasks.
To know that for a Sprite to move vertically down the screen, the value of the 'y' axis should be changed.
To know that each Scratch project has a unique nine-digit number at the end of the project's URL that can be shared with others for them to easily access the project e.g. scratch.mit.edu/projects/123456789.
To know that when I leave feedback on my peer's games that they should be positive, kind and constructive.

Data and Information

|	EYFS Grouping data	Year 1	Year 2	Year 3 Branching databases	Year 4 Data logging	Year 5 Flat-file databases	Year 6 Spreadsheets
Learning Objectives	To label objects To identify that objects can be counted To describe objects in different ways To count objects with the same properties To compare groups of objects To answer questions about groups of objects			-To create questions with yes/no answers -To identify the attributes needed to collect data about an object -To create a branching database -To explain why it is helpful for a database to be well structured -To plan the structure of a branching database -To independently create an identification tool	-To explain that data gathered over time can be used to answer questions -To use a digital device to collect data automatically -To explain that a data logger collects 'data points' from sensors over time -To recognise how a computer can help us analyse data -To identify the data needed to answer questions -To use data from sensors to answer questions	-To use a form to record information -To compare paper and computer-based databases -To outline how you can answer questions by grouping and then sorting data -To explain that tools can be used to select specific data -To explain that computer programs can be used to compare data visually -To use a real-world database to answer questions	-To create a data set in a spreadsheet -To build a data set in a spreadsheet -To explain that formulas can be used to produce calculated data -To apply formulas to data -To create a spreadsheet to plan an event -To choose suitable ways to present data
Success criteria	I can describe objects using labels I can identify the label for a group of objects I can match objects to groups I can count a group of objects I can count objects I can group objects I can describe an object I can describe a property of an object I can find objects with similar properties I can count how many objects share a property I can group objects in more than one way I can group similar objects I can choose how to group objects I can describe groups of objects I can record how many objects are in a group I can compare groups of objects I can decide how to group objects to answer a question I can record and share what I have found			-I can create two groups of objects separated by one attribute - I can investigate questions with yes/no answers - I can make up a yes/no question about a collection of objects -I can arrange objects into a tree structure - I can create a group of objects within an existing group - I can select an attribute to separate objects into groups -I can group objects using my own yes/no questions - I can select objects to arrange in a branching database - I can test my branching database to see if it works - I can compare two branching database structures - I can create yes/no questions using given attributes - I can explain that questions need to be ordered carefully to split objects into similarly sized groups -I can create a physical version of a branching database - I can create questions that will enable objects to be uniquely identified - I can independently create questions to use in a branching database -I can create a branching database that reflects my plan - I can suggest real-world uses for branching databases - I can work with a partner to test my identification tool	-I can choose a data set to answer a given question - I can identify data that can be gathered over time - I can suggest questions that can be answered using a given data set -I can explain what data can be collected using sensors - I can identify that data from sensors can be recorded - I can use data from a sensor to answer a given question -I can identify the intervals used to collect data - I can recognise that a data logger collects data at given points - I can talk about the data that I have captured -I can explain that there are different ways to view data - I can sort data to find information - I can view data at different levels of detail -I can plan how to collect data using a data logger - I can propose a question that can be answered using logged data - I can use a data logger to collect data -I can draw conclusions from the data that I have collected - I can explain the benefits of using a data logger - I can interpret data that has been collected using a data logger	-I can create a database using cards - I can explain how information can be recorded - I can order, sort, and group my data cards - I can choose which field to sort data by to answer a given question - I can explain what a field and a record is in a database - I can navigate a flat-file database to compare different views of information -I can combine grouping and sorting to answer specific questions - I can explain that data can be grouped using chosen values - I can group information using a database - I can choose multiple criteria to answer a given question - I can choose which field and value are required to answer a given question - I can outline how 'AND' and 'OR' can be used to refine data selection -I can explain the benefits of using a computer to create charts - I can refine a chart by selecting a particular filter - I can select an appropriate chart to visually compare data -I can ask questions that will need more than one field to answer - I can present my findings to a group - I can refine a search in a real-world context	-I can collect data - I can enter data into a spreadsheet - I can suggest how to structure my data -I can apply an appropriate format to a cell - I can choose an appropriate format for a cell - I can explain what an item of data is -I can construct a formula in a spreadsheet - I can explain which data types can be used in calculations - I can identify that changing inputs changes outputs -I can apply a formula to multiple cells by duplicating it - I can calculate data using different operations - I can create a formula which includes a range of cells -I can apply a formula to calculate the data I need to answer questions - I can explain why data should be organised - I can use a spreadsheet to answer questions -I can produce a chart - I can suggest when to use a table or chart - I can use a chart to show the answer to questions
Vocabulary	Information Data Search Label Group Describe Program Properties Similar Different			Information Data Attributes Groups Branching Database Multiple Classify Structure Present	Information Data Collection Sensor Logging Analysis Data Logger Software Interpret Conclusion	Information Data Collection Database Search Sort Filter Software Fields Records	Information Data Spreadsheet Format Formula Accounting Filter Software Tax Business

Granular Knowledge						
I know that a label is a name given to an object so that people know what it is. I know how to give groups of objects labels by naming them (see groups on PowerPoint.) I know how to count/ subitise the groups on the PowerPoint. I know it's easier to count objects by grouping. I know that computers do this too. I know that I can use colour, size and shape to describe different objects. I know when objects are similar/the same. I know that humans can tell computers how to arrange objects. I know that properties means labels. I know that objects can be grouped using a range of properties. I know how to group objects in more than one way. I know how to say how many is in a group and compare amounts and use the words more than, less than, same as, most, least. I know how to left click on an object and drag it to move it. I know how to recognise how objects have been grouped. I know how to left click on an object and drag it to move it.			To know that question can be open-ended and give a wide range of answers To know that some questions can be closed and only offer a yes or no answer To know that an attribute is a way of describing something (colour, diet, habitat, size, pattern, number of legs) To know that objects can be grouped according to their attributes To know that data is information To know that a branching database is used to classify and identify objects To know that a branching database starts at the top To know that each branch of a database has two possible outcomes To know that to use a branching database, you must follow the questions until you reach the answer To know how to open the j2e software through a link To know how to select the end objects first before grouping them using common attributes To know the importance of asking question that split objects into equal groups To know the importance of ordering questions to ensure there is only one object at the end of each branch To know that branching databases can use in the real world (identifying objects, finding faults, health problems)	To know that data is information To know that data can be collected over time To know that data table headings indicate the content of the table To know that data can be used to answer 'what' and 'when' questions To know that data can be incorrect (due to human error/misinterpretation etc) To know that a data logger is a digital device that can collect data over time and store it To know that input devices allow data to be entered into a computer To know that a sensor is a type of input designed to allow computers to capture data from the physical environment To know that a data logger can be used both manually and automatically To know that data collected from a data logger can be downloaded at a later date To know that a logging interval is the time between data being logged To know that a data logger can record a variety of information including light, temperature, and sound data To know that to download data from a data logger, it must be connected to a computer and click on 'Logger Files' To know that If you click the Show Points button, then the Hide Joins button, you will see a dot for each reading your logger took To know that data can be saved and shared with other people. To know that it is possible to view specific data by clicking 'track 1, 2 or 3' at the top of the graphs. To know that a specific reading for a specific time can be viewed by clicking on the graph To know that data is collected for a reason (to answer a question) To know that a data logger should be placed in a specific place to get the best readings and answer a question To know that a data logger can be tested to check it is working correctly before starting a collection. To know that after data has been collected, it needs to be analysed To know that data collected can sometimes tell us different information in addition to the question we wanted to answer To know that the zoom tool at the bottom of the screen can be used to view data more closely To know that dips in a line graph indicate the coldest/quietest/darkest times of the collection	To know that 'data' can be letters, words, numbers, dates, images, sounds. To know that 'Information' is data that has been processed so a human can read, understand, and use it. To know that a database is a collection of organised data that is usually stored on a computer. To know that databases allow people to search and sort large quantities of data to find information. Data can be added or removed, edited, or viewed using the structure that was originally used to set up the database. To know that in computer science, a record is a basic data structure: it is a collection of fields. To know that a 'field' is a section (column) of a record e.g. name, gender, age. To know that when you use a computer database, you can view the data in different ways: records in form/card view and table view To know that 'Sorting' means putting data values in order. To know that data can be sorted by field. In J2E, a field can be sorted from A to Z or High to Low by clicking the field heading. To know some benefits of using a computer database: - To keep our data secure - To keep a large amount of data organised easily - To allow us to search our data more quickly - To sort our data easily - To prevent manual errors being made To know that when using a computer database, the search function can be used to quickly group data. To know that they will need to select a field to group and the symbol + <> To know that once a field has been grouped, that the remaining data can then be sorted to meet a second criteria. To know some limitations of databases and that sometimes data can be incorrect: ● It's entered by a human — maybe it's a typo ● Someone entered the wrong information on purpose to mislead us ● The data is out of date ● The data is labelled incorrectly and is about another record To know that you can search a database for a field containing a specific value. To know that records can be narrowed down by searching for more than one criteria. To know that a computer database can search using two fields to find all the records matching both criteria using the 'AND' tool. To know that the 'OR' tool can be used to group any data which matches one of two criteria. To know that an 'AND' search will look at different fields in the same record, whereas an 'OR' search will look at different values in the same fields. To know that the OR tool will produce less results than the AND tool as more criteria need to be met in the latter. To know that using charts can make it easier to display and present data. To know that in J2E, you must select the chart tab to represent the data in a chart and then select the most suitable chart to answer a question.	To know that data is information that is stored on a computer. To know some examples of data: numbers, letters, pictures To know that a table can be used to organise data. To know some advantages of organising data: easier to identify specific sections of data, easier to compare pieces of data To know examples of software that can be used to create tables to organise data: word processing packages, such as MS Word or Google Docs; presentation tools, such as MS PowerPoint or Google Slides; or spreadsheet packages, such as MS Excel or Google Sheets. To know that a spreadsheet is an electronic document in which data is arranged in the rows and columns of a grid and can be manipulated and used in calculations. To know that each box that makes up a table in a spreadsheet is called a cell. To know that each cell has a unique cell reference. This allows you to say where a particular piece of data is held. To know that there are several formats that can be selected for cells: Plain text, Date, Number, Duration, Currency To know that spreadsheets format the duration into hour hour : minute minute : second second. E.g. 3 hours and 3 minutes looks like this 03:03:00 To know the benefits of formatting cells: easier to use, easier to read, shows what each cell contains. To know that common mathematical operations can be performed in a spreadsheet using the symbols + - * / To know that some data types cannot be used in calculations e.g. letter or words To know that a formula is an expression that operates on values in a range of cells. These formulas return a result. To know that a formula can tell a computer which mathematical operation to use for a calculation and which pieces of data to use within the calculation To know that cell references are used in formulas To know that a formula begins with = To know that a formula can be duplicated by typing it into one cell then dragging down to each of the cells in the column. To know that Functions can be used to complete more complex processes such as: Calculating average, finding the sum of multiple cells, counting a number of objects. To know that the functions available in a spreadsheets can be found by clicking on this button. ∑ The symbol is called sigma and it represents the function of adding many numbers together. To know that spreadsheets can be used to create graphs. To know that to produce a chart you should click and drag over the cells that you want to present in a graph/chart, select 'insert', select 'Chart' To know some of the advantages of using a table: sort data, perform calculations, make changes to data easily, view individual figures. To know some of the advantages of using a chart: visual, easily see differences between the data, compare data.

Creating Media 2

	EYFS	Year 1	Year 2 Digital music	Year 3 Desktop publishing	Year 4 Photo Editing	Year 5 Vector Drawing	Year 6
Learning Objectives			-To say how music can make us feel -To identify that there are patterns in music -To experiment with sound using a computer -To use a computer to create a musical pattern -To create music for a purpose -To review and refine our computer work	-To recognise how text and images convey information -To recognise that text and layout can be edited -To choose appropriate page settings -To add content to a desktop publishing publication -To consider how different layouts can suit different purposes -To consider the benefits of desktop publishing	-To explain that the composition of digital images can be changed -To explain that colours can be changed in digital images -To explain how cloning can be used in photo editing To explain that images can be combined -To combine images for a purpose -To evaluate how changes can improve an image	-To identify that drawing tools can be used to produce different outcomes -To create a vector drawing by combining shapes -To use tools to achieve a desired effect -To recognise that vector drawings consist of layers -To group objects to make them easier to work with -To apply what I have learned about vector drawings	
Success criteria			-I can describe music using adjectives - I can identify simple differences in pieces of music - I can say what I do and don't like about a piece of music -I can create a rhythm pattern - I can explain that music is created and played by humans - I can play an instrument following a rhythm pattern -I can connect images with sounds - I can relate an idea to a piece of music - I can use a computer to experiment with pitch -I can explain how my music can be played in different ways - I can identify that music is a sequence of notes - I can refine my musical pattern on a computer -I can add a sequence of notes to my rhythm - I can create a rhythm which represents an animal I've chosen - I can create my animal's rhythm on a computer -I can explain how I changed my work - I can listen to music and describe how it makes me feel - I can review my work	-I can explain the difference between text and images - I can identify the advantages and disadvantages of using text and images - I can recognise that text and images can communicate messages clearly -I can change font style, size, and colours for a given purpose - I can edit text - I can explain that text can be changed to communicate more clearly -I can create a template for a particular purpose - I can define the term 'page orientation' - I can recognise placeholders and say why they are important - I can choose the best locations for my content - I can make changes to content after I've added it - I can paste text and images to create a magazine cover -I can choose a suitable layout for a given purpose - I can identify different layouts - I can match a layout to a purpose -I can compare work made on desktop publishing to work created by hand - I can identify the uses of desktop publishing in the real world - I can say why desktop publishing might be helpful	-I can explain why I might crop an image - I can improve an image by rotating it - I can use photo editing software to crop an image - I can experiment with different colour effects - I can explain that different colour effects make you think and feel different things - I can explain why I chose certain colour effects -I can add to the composition of an image by cloning - I can identify how a photo edit can be improved - I can remove parts of an image using cloning -I can experiment with tools to select and copy part of an image - I can explain why photos might be edited - I can use a range of tools to copy between images -I can choose suitable images for my project - I can create a project that is a combination of other images - I can describe the image I want to create - I can combine text and my image to complete the project - I can review images against a given criteria - I can use feedback to guide making changes	-I can discuss how vector drawings are different from paper-based drawings - I can experiment with the shape and line tools - I can recognise that vector drawings are made using shapes -I can explain that each element added to a vector drawing is an object - I can identify the shapes used to make a vector drawing - I can move, resize, and rotate objects I have duplicated -I can explain how alignment grids and resize handles can be used to improve consistency - I can modify objects to create a new image - I can use the zoom tool to help me add detail to my drawings -I can change the order of layers in a vector drawing - I can identify that each added object creates a new layer in the drawing - I can use layering to create an image -I can copy part of a drawing by duplicating several objects - I can recognise when I need to group and ungroup objects - I can reuse a group of objects to further develop my vector drawing -I can compare vector drawings to freehand paint drawings - I can create a vector drawing for a specific purpose - I can reflect on the skills I have used and why I have used them	
Vocabulary			Music Emotions Pulse Rhythm Patterns Pitch Tempo Instrument Sound Note	Publishing Text Images Font Templates Orientation Placeholders Software Purpose Audience	Photography Editing Software Crop Rotate/Flip Copy Brightness Contrast Enlarge Reduce	Vector Object Handles Rotate Enlarge/Reduce Layering Gradient Zoom Alignment Grouping	

Granular Knowledge							

Column 1:

To recognise how music can make people feel: scared, happy, loud, relaxed, soft, gentle.
To know that a spectrogram is a visual way of representing the signal strength, or "loudness", of a signal over time
To know that pulse is a steady beat, like a ticking clock or your heartbeat.
To know that rhythm is a pattern of long and short sounds.
To know that Chrome Music Lab is a website that can be used to create music on a computer.
To know that the 'Monkey icon' can be used to experiment with different musical instruments.
To know that you can press play (grey triangle) to hear your rhythm.
To know that the pulse is shown by the moving line
To know that the grey right arrow can be used to scroll through the different instruments.
To know that each line has three instruments and they can select an instruments at different points on a line.
To know that the 'drawing icon' on Chrome Music Lab can be used to link drawings to music.
To know that instruments can be changed by selecting the two colour button.   To know that music is a sequence of notes
To know that the smiley face on Chrome Music Lab opens Song Maker.
To know that to add another, you need to click on a blank rectangle on the grid.
To know that to remove a note, you should click on the rectangle again.
To know that they can play their music by clicking the white triangle in the blue circle.
To know that by clicking on the circle containing the musical instrument, you can scroll to a new instrument.
To know that to change the 'Tempo' (how fast the notes are played) by dragging the blue circle by 'Tempo'.
To know that to save work they should click the 'tick' with save written beneath it.
To know that when a piece of music is saved, they will be provided with a link to their work. Click on 'Copy Link'. Open our shared document, then paste your link by your name.   To know that a rhythm pattern can be selected by choosing between the circles and triangles at the bottom of the screen. To know some of the benefits of creating music with a computer: work can be reviewed and changed (edited), being able to access the work on different computers and from different places.
To know that they can retrieve their work from previous lessons by clicking on the link that you saved.

Column 2:

To know that **text** is written words
To know that image is a picture that has been created or copied and stored in electronic form.
To use insert tools to place an image, including clipart or a photo, on a document or slide
To know that font is the style of text
To know how to change the font style and font colour
To know how to change the font size (using both drop down menu and keyboard shortcut   CTRL+[or CTRL +])
To know how reach a place in a piece of text by placing cursor
To know that the HOME key takes you to the start of a line
To know that the END key takes you to the end of a line
To know that backspace key deletes the text to the left
To know that DELETE deletes the text to the right
To know that page orientation is the direction of the page (either landscape or portrait)
To know that a template is a document that has already been layout out in certain way (column for text, spaces for pictures)
To know that placeholders are the boxes that hold the place of the text of image
To know to open Microsoft publisher and select an existing template
To know the importance of saving work in a specific folder with an appropriate name
To know how to retrieve the saved file from last lesson
To know that to copy text, it needs to be highlighted and copied (either right click - copy or shortcut Ctrl + C)
To know that to paste text, you need to move the cursor to the desired place and click and paste (either right click - paste or shortcut Ctrl + V)
To know that to search for an image, you need to use key words to generate appropriate pictures.
To know that text and images are arranged in different ways depending on the document
To know that desktop publishing is used in the real world to help people do their jobs (estate agents, card companies, posters)
To know the benefits of desktop publishing (reproduction, editing, sharing, cost saving, appearance)

Column 3:

To know that editing an image means making changes and reviewing
To know that editing an image can include colour, flipping an image, objects relocated/removed, rotating, straightening and cropping
To know that images can be rotated clockwise and anticlockwise in 90 degree increments
To know that cropping an image can be used to make a picture central or to cut out part of a picture.
 To know that editing photos can change what people see, think, or feel when they look at the image
To know that the colour of an image can be changed in several different ways (original, black & white, brightness & contrast, hue & saturation, sepia, vignette)
To know that 'save as' will save a new version of something with a new name, whereas 'save' will override
To know that cloning is a process of using one area of a photo to change another area
To know that the 'clone stamp' tool can be used to clone part of an image
To know that the brush size can be increased or decreased
To know that an 'anchor point' allows you to use the background of an image as a copying point
To know that cloning can be used to add objects as well as remove them
To know that the zoom tool can be used to look more closely at an image
To know that combining is when an image is made from two or three other images.
To know that to combine more than one image, you need to select, copy, paste and adjust
To know there are different tools for selecting, depending on what you need (rectangle, lasso, ellipse and magic wand)
To know that Enter needs to be pressed to fix the pasted area in place.
To know that editing an image can change the way a person feels about it
To know that a 'real' image is one that has not been altered in any way
To know that a "fake" image is "made up" and has been altered in some way
To know that a a 'composite' image is when two images have been combined so that the image is made up of different parts.
To know that 'landscape' and 'portrait' refers to the orientation of a page
To know how to apply skills learnt in previous lessons (rotate, crop, clone, select, copy, paste)
To know how to add text to an image
To know how to evaluate to effectiveness of previously learnt skills

Column 4:

To know that vector drawings are drawings that are made on a computer on software such as Google Drawing, PowerPoint and Adobe Illustrator.
To know that vector drawings are made of lines and shapes, which are put together to make a complete image.
To know that to add shapes, you should use INSERT - choose shape - drag and draw.
To know that lines can be added by going to INSERT - line drawing - drag
To know that the colour of lines and shapes can be changed by selecting the line or shape using the curser, clicking on FORMAT and then selecting the appropriate colour from the line or shape colour tab.
To know that gradient colours can be used to colour the same object in different colours.
To know that each shape in a vector drawing is called an object.
To know that shapes can be duplicated by copying the object that you want to duplicate (hold ctrl + c) and pasting (hold ctrl + v) a new one.
To know that you can enlarge/reduce an object by clicking on it and dragging the handles to the desired size.
To know that you can rotate an object by dragging the circular handle at the top.
To know that to 'undo' the shortcut Ctrl + Z can be used.
To know that when dealing with small and intricate objects, it is important to use the zoom tool. Zooming in allows you to work with more precision. Zooming
To know that you may need to scroll the screen to see other parts of your image when you are zoomed in.
To know that when moving shapes, red alignment guide lines will appear to help you to align and size objects.
To know that the alignment lines can be used to align them with the centre of another object or to align them with the edge of another object.
To know that the blue/black lines around the edge of a shape are used as a size guide. As you resize objects, you can use these lines to match them with other objects width and/or height.
To know that the line tools can be used to help you change the colour and weight (thickness) of the line, and to make dotted lines.   To know that that each added object creates a new layer in the drawing.
To know that objects can be layered in different ways using advanced Layering: Right-click on objects and use the 'send to back' and 'bring to front' tools (in 'order') to ensure that your layering is in the correct order.
To know that to select multiple objects together Click, drag and drop a box around all of the objects in an image. When you perform an action (e.g. copy and paste) it will now apply to all.
To know that objects can be grouped by Select all images. 2. Right-click 3. Choose 'group.'
To know that once grouped, all of the objects can be moved, copied and changed at the same time.
To know that when selecting to 'Rotate' an object, there is the option to flip a drawing.
To know that a background can be added by copying an image and pasting to the slide. To know that the background image should be 'send to back' after it has been inserted.
To know some real-life contexts where vector drawing are used and useful: illustrations, labels, presentations, advertisements and logos.
To know that an advantage of vector drawings over paint packages is that they are made of shapes therefore they can be resized without losing their clarity. Other advantages - shapes can be grouped, easily changed colour or size and layered in different orders.