



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
Computing systems	<p><b>Skills</b></p> <p>To identify different technology and what it may be used for.</p> <p>To begin to use a keyboard to type letters.</p> <p>To use a mouse and/or tracker pad to move a cursor and select.</p> <p><b>Knowledge</b></p> <p>To begin to name the parts of a computer and what they are used for.</p> <p>To know why information technology is used and give some examples.</p> <p>To know what capital letters look like.</p>	<p><b>Skills</b></p> <p>To identify different technology.</p> <p>To identify the toolbar and use bold and change font and size.</p> <p>To type capital letters, use the space bar and find letters on a keyboard to type words.</p> <p>To insert a picture from a picture box.</p> <p>Follow rules for using technology responsibly and understand how they keep me safe and help.</p> <p>To recognise the uses and features of information technology: describing some uses of computers and examples of computers.</p> <p>To identify information technology in school and at home and say what it is used for.</p> <p>To explain the benefits of IT and how devices work together.</p> <p><b>Knowledge</b></p> <p>To Identify what a computer is and what its main parts are called.</p> <p>To know how to change the keyboard output to upper and lowercase letters.</p> <p>To change and use different fonts and sizes to change the appearance of my work.</p> <p>To identify what information technology is and how it helps people at home, in school and in the wider world.</p> <p>To explain what networks are and that devices are often linked and work together.</p>	<p><b>Skills</b></p> <p>To classify input and output devices; design a digital device and model a simple process.</p> <p>To recognise similarities and differences between using digital devices and non-digital tools.</p> <p>To explain how a computer network can be used to share information and that messages pass through multiple connections.</p> <p>To explain how digital devices can be connected and what the role of a switch, server and wireless access point is.</p> <p>To recognise the physical components of a network and how they are connected.</p> <p>To explain how the internet is made up of connected networks.</p> <p>To explain how websites are stored on the www, what types of media can be shared and how to access websites on the WWW.</p> <p>To explain that that content of the www is created by people.</p> <p>To evaluate the consequences of unreliable content.</p> <p>To name the different parts of a desktop computer and know what the function of the different parts of a computer is. E.g. Make a leaflet labelling a computer.</p>	<p><b>Skills</b></p> <p>To explain how computers are connected together to form systems.</p> <p>To explain the role that computers have in our lives and how information is transferred over the internet.</p> <p>To work collectively on a shared project online.</p> <p>To evaluate different ways of working together online.</p> <p>To search the web for specific information and identify and compare results from different search engines.</p> <p>To explain that web crawlers are the digital bots that search the internet for index pages for web address.</p> <p>To explain web pages are ranked and how search engines make money.</p> <p>To identify that there are different ways to communicate over the internet</p> <p><b>Knowledge</b></p> <p>To know that connect devices can allow is to access shared files stored online.</p>



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
			<b>Knowledge</b> To know digital devices and change the way we work To know what a computer network is and how it works in the school setting. To know what a switch, server and wireless access point are. To know computers are made from hardware, software and components. To know that websites and their contents are created by people and that some information that I find online may not be honest, accurate or legal.	To know that sharing information online lets people in different places work together.  To search the internet and that I will get different results from different search engines.  Web crawlers are digital bots that find what I am looking for.  To know how to keep myself safe online and that I should not be sharing personal information.  To know that if I am communicating online, that my conversations may not be private.
Creating media	<b>Skills</b> To begin to make marks with purpose and select tools on a paint program. To take photographs close up and from a distance. To explore creating music using technology.  <b>Knowledge</b> To identify keys on a keyboard. To identify why certain tools are better than others. To know what a font is.	<b>Skills</b> To draw lines and make marks on a screen and explain which tools I used. To make marks with the shape and line tools effectively. To use the shape and line tools to recreate the work of an artist. To explain why I have chosen specific tools. Capture a digital photograph and talk about how to take a photograph. To take photographs in landscape or portrait and explain why one or other might look better. To identify what is wrong with a photograph and reframe it.	<b>Skills</b> To explain that animation is a sequence of drawings or photographs To create a stop frame animation and predict what it will look like. To break down a story into setting, characters and events to create a storyboard. To evaluate the quality of my animation and review a series of frames to check my work. To review and improve an animation explaining how I will improve it. To evaluate the impact of adding other media to my animation.	<b>Skills</b> To explain that a video can hold visual and audio media. To plan a video using a storyboard. To make a recording taking into account light and angles. To reshoot, edit and improve my video and include special effects, title screen and end credits. To use drawing tools to produce different outcomes and for different purposes. To create a vector drawing by combining shapes and I can move, resize, rotate and duplicate them. To use tools to achieve a desired



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
		<p>To decide how photographs can be improved by using light.</p> <p>To use editing to change my photograph, experimenting with colour and filters. To identify if an image is real or if it has been changed.</p> <p>To listen to music, for longer periods of time, identifying differences in pieces and say how it makes me feel.</p> <p>To create a rhythm pattern and follow a rhythm pattern on a percussion instrument.</p> <p>To use a computer to experiment with pitch and duration.</p> <p>To use a computer to create a musical pattern using three notes, refining my pattern.</p> <p>To create and save a musical pattern to describe an animal.</p> <p>To evaluate my work stating how I could improve it.</p> <p>To reopen previous work.</p> <p>To import their own images and drumbeats, seamlessly using different aspects of 2Beat, 2Sequence, 2Paint or Music Lab.</p> <p><b>Knowledge</b></p> <p>To find and identify keys on a key pad.</p> <p>To use a computer to write I can add and remove text on a computer using the backspace key.</p> <p>To change the look of the text by using bold, italic and underlining.</p>	<p>To recognise how text and images convey information clearly and that there are some advantages and disadvantages to using them.</p> <p>To change the text layout, including font style, size and colour.</p> <p>To choose appropriate page settings: generating a template to meet my needs with placeholders.</p> <p>To add content to a desktop publishing publication, including adding text and pasting pictures.</p> <p>To change the layout to suit different purposes.</p> <p>To consider the benefits of desktop publishing and identify its use in the real world.</p> <p>To identify digital devices that can record sound and play it back and that a range of sounds can be recorded.</p> <p>To plan and record a podcast, saving it as a file.</p> <p>To discuss how to improve my podcast and edit sections of an audio recording.</p> <p>To reopen my recording and add sound, using editing tools to rearrange sections of audio.</p> <p>To explain the effect that editing can have on an image.</p> <p>To change the composition of an image by selecting parts of it.</p>	<p>effect, for example using the zoom tool to add detail to my drawing.</p> <p>To create layers bring objects to the front or the back.</p> <p>To evaluate my vector drawing and say how I might improve it.</p> <p>To explore a webpage and identify the different types of media that are used in its construction and its common features.</p> <p>To plan a design for a webpage that suits my purpose.</p> <p>Find suitable images and consider the ownership of these images.</p> <p>To add content to my page, make edits and preview it on a different device.</p> <p>To make multiple pages and link them using hyperlinks. Evaluate my the users experience of a website.</p> <p>To use a computer to create and manipulate three-dimensional (3D) digital objects I can compare working digitally with 2D and 3D graphics.</p> <p>To construct a digital 3D model of a physical object.</p> <p>To identify that physical objects can be broken down into a collection of 3D shapes</p> <p>To design a digital model by combining 3D objects I can develop and improve a digital 3D model.</p>

# Computer science Knowledge and Skills



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
		<p>To make careful choices when changing text, for example, changing the font, selecting a word by double clicking or clicking and dragging.</p> <p>To explain why I used the tools that I chose.</p> <p>To compare writing on a computer with writing on paper.</p> <p>To create an image using a programme.</p> <p>To select different tools to create different effects.</p> <p>To use Microsoft Word.</p> <p>To take a photograph, thinking about light and composition.</p> <p>To edit a photograph</p> <p>To edit more complex digital data such as music compositions.</p> <p>To use a range of media in their digital content including photos, text and sound and present ideas.</p> <p>To know notes in music are arranged in a sequence.</p> <p>To know changing the order changes the sound.</p>	<p>To use editing tools on a photograph and can explain the effect these have.</p> <p>To evaluate how changing can improve an image. I can save and retrieve an image.</p> <p><b>Knowledge</b></p> <p>To create a stop frame animation.</p> <p>To know how to add media to my animation.</p> <p>To know how to use 'onion skinning.'</p> <p>To know how to create a template, add text and images.</p> <p>To know how to change text layout, including font size and colour.</p> <p>To know how to alter the layout to suit my purpose.</p> <p>To know what a podcast is.</p> <p>To record a podcast, editing to make improvements and add sound.</p> <p>To know how to edited an image.</p> <p>To know how to adjust, sharpen, brighten, alter and image.</p> <p>To know how to change hue, saturation, change colour or use settings such as sepia.</p>	<p>To manipulate the program to create more complex 3D objects.</p> <p><b>Knowledge</b></p> <p>To know to use Windows Movie Maker and I can edit my video to improve it.</p> <p>To add audio, set my video to music, add a title and credits and change the transition method and length between sections or stills.</p> <p>To know how to create an image using vector drawing.</p> <p>To use a range of tools with in the program.</p> <p>To plan and create a web page, adding content and hyperlinks. To know that some images have copyright.</p> <p>To create a 3D object using a computer program.</p>



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
Programming	<p><b>Skills</b></p> <p>To know that direction make a bee-bot move.</p> <p>To create a set of instructions with a start and end point.</p> <p>To identify where their instructions went wrong.</p> <p><b>Knowledge</b></p> <p>To know instructions contain directions.</p> <p>To know direction words such as forwards, backwards, left and right.</p> <p>To know instructions need a start and end.</p>	<p><b>Skills</b></p> <p>To use a start block in a program.</p> <p>To use more than one block by joining them together.</p> <p>To compare left and right turns.</p> <p>To experiment with turn and move commands to move a physical computer.</p> <p>To use event, action and object code blocks.</p> <p>To select appropriate background artwork for a project.</p> <p>To explain the possible actions of objects including moving, responding to being clicked on and collision with other objects.</p> <p>To use their prior coding experience to recognise whole blocks of familiar code.</p> <p>To compare different programming tools and find and use commands to move a sprite.</p> <p>To explain what happens when I change a value.</p> <p>To add blocks to my sprite and delete a sprite.</p> <p>To create an algorithm for each sprite to control movement.</p> <p>To test the programs I have created and alter my designs.</p> <p>To choose a series of words that can be enacted as a sequence.</p> <p>To create different algorithms for a range of sequences using the same commands and show the difference in outcomes between two sequences that have the same command.</p>	<p><b>Skills</b></p> <p>To explore a new programming environment, including attributes, projects, blocks, commands, codes, staging and backdrops.</p> <p>To identify that each sprite is controlled by the commands I choose</p> <p>To create a sequence of connected commands and decide where and how my program will start.</p> <p>To combine sound commands and order notes into a sequence to create a musical instrument.</p> <p>To change the appearance of my project.</p> <p>To create a project from a task description.</p> <p>To explain how a sprite moves in an existing project</p> <p>To create a program to move a sprite in four directions</p> <p>To adapt a program to a new context</p> <p>To develop my program by adding features</p> <p>To identify and fix bugs in a program</p> <p>To design and create a maze-based challenge.</p> <p>To create a code snippet for a given purpose, for example controlling a turtle.</p> <p>To write an algorithm for a given outcome, including repetition.</p> <p>To design a program that has a count-controlled loop.</p>	<p><b>Skills</b></p> <p>To control a simple circuit connected to a computer; including a microcontroller (crumble), an infinity loop and an LED light. Connect more than one output device to a microcontroller, deciding which output device.</p> <p>To control with a count-controlled loop.</p> <p>To experiment with a 'do until' loop.</p> <p>To use selection (an 'if ...then' statement) to direct the flow of a program.</p> <p>To make a physical drawing/model of a physical computing project.</p> <p>To create an algorithm to control my robot/simulation using repetition, sequencing, coordinates and text inputs. Using crumble or 2code a game linked to our topics.</p> <p>To explain how selection is used in a program and identify conditions and how to modify them.</p> <p>To create a program with different outcomes using selection and identify the condition and outcome is an if... then... else statement.</p> <p>To explain how selection directs the flow of a program.</p>

## Computer science Knowledge and Skills



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
		<p>To predict the outcome of my algorithm and compare this with what did happen. Explain that programming projects can have code and artwork.</p> <p>To design a specific algorithm to meet my goal and explain what it should achieve. Create and debug a program that I have written.</p> <p>To predict outcomes in more complex code.</p> <p>To identify that a program needs to be started and I can identify the start of a sequence.</p> <p>To change the outcome of a sequence of commands; can match two sequences with the same outcome and predict an outcome.</p> <p>To create a design and decide which blocks I need, which background I will use and choose characters.</p> <p>To create an algorithm, debug and improve by adding features.</p> <p><b>Knowledge</b></p> <p>To know that an algorithm is a set of instructions used to solve a problem or achieve an objective.</p> <p>To know that an algorithm written for a computer is called a program.</p> <p>To know finding errors in an algorithm is called debugging.</p> <p>To know different code blocks have different purposes.</p> <p>To know computers require simple, precise instructions to perform.</p>	<p>To debug my program.</p> <p>More able: Pupils' designs for their programs, show that they are absorbing new knowledge of coding structures such as 'if' statements, repetition and variables to think of their programs in logical, achievable steps.</p> <p>To develop the use of count-controlled loops in a different programming environment, for example scratch.</p> <p>To explain that in programming there are infinite loops and count controlled loops.</p> <p>To develop a program which includes two or more loops which run at the same time.</p> <p>To modify an infinite loop.</p> <p>More able: Pupils' designs for their programs, show that they are absorbing new knowledge of coding structures such as 'if' statements, repetition and variables to think of their programs in logical, achievable steps.</p> <p><b>Knowledge</b></p> <p>To know how to write a program, run and debug it.</p>	<p>To design and create a program which uses selection: creating the algorithms, running the program and debugging.</p> <p>To define a 'variable' as something that is changeable, variables can hold numbers or letters.</p> <p>To explain why a variable is used in a program; it is a place holder in memory for a single value.</p> <p>To choose how to improve a game by using variables.</p> <p>To design a project that builds on a given example: choosing artwork and creating the algorithm.</p> <p>To use a design to create a project, testing the code that has been written.</p> <p>To evaluate my project.</p> <p>To create a program to run on a controllable device.</p> <p>To explain that selection can control the flow of a program</p> <p>To update a variable with a user input.</p> <p>To use a conditional statement to compare a variable to a value.</p> <p>To design a project that uses inputs and outputs on a controllable device.</p> <p>To develop a program to use inputs and outputs on a controllable device</p> <p><b>Knowledge</b></p>





	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
		<p>To identify and correct some simple errors (debugging).</p> <p>Beginning to understand that computer networks provide access to the internet etc.</p> <p>To write an algorithm to my design.</p> <p>To debug and improve my designs.</p>	<p>To know how to create a sequence of music within my program.</p> <p>To know how to make my sprite move and I can select keys to do this (up, down, left, right)</p> <p>To know how to add blocks and use function such as pen down.</p> <p>To know how to create a program with an object that repeats actions.</p> <p>To know how to add loops to a program.</p>	<p>To create algorithms for physical computing using loops and sequences.</p> <p>To know the importance of planning and designing a project in order to follow a plan and make adjustments where necessary.</p> <p>To know how to scratch to create a quiz.</p> <p>To add a loop.</p> <p>To design my game, write the algorithms, create the artwork, test and debug.</p> <p>To know how to control multiple variables on a physical computing device.</p>
Data and information	<p><b>Skills</b></p> <p>To collect data using pictograms and tally charts.</p> <p>To share what they have found out from their data.</p> <p><b>Knowledge</b></p> <p>To know why we collect data.</p> <p>To know which one shows more or less.</p> <p>To know how to keep safe online and not share personal information.</p>	<p><b>Skills</b></p> <p>To describe objects using labels and match objects to a group.</p> <p>To count groups of objects and describe their properties.</p> <p>To count and group objects with the same properties</p> <p>To compare groups of objects and answer questions about them.</p> <p>To count and compare objects (data) using tally charts, comparing totals.</p> <p>To enter data on a computer and view that data in a different format,</p> <p>To use a pictogram to answer simple questions about the data.</p> <p>To use a tally chart to create a pictogram.</p> <p>To answer 'more than'/'less than' and 'most/least' questions about an attribute.</p>	<p><b>Skills</b></p> <p>To create a branching database by grouping groups of objects separated by one attribute.</p> <p>To make up yes/no questions about these groups.</p> <p>To identify the object attributes needed to collect relevant data</p> <p>To explain why it is helpful for a database to be well structured</p> <p>To compare the information shown in a pictogram with a branching database.</p> <p>To explain that data gathered can be used to answer a given question and I can suggest questions to be asked of the data.</p>	<p><b>Skill</b></p> <p>To create a database, using fields which hold and record the data.</p> <p>To search a database using 'and' and 'or.'</p> <p>To apply filters and select an appropriate chart or graph to visually compare data.</p> <p>To apply my knowledge of a database to ask questions that will need more than one field to answer.</p> <p>To create a formula in a spreadsheet for simple conversions e.g. cm to m and use formulas to calculate the perimeter of a rectangle.</p>

## Computer science Knowledge and Skills



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
		<p>To create a pictogram to arrange objects by attributes.</p> <p>To create a pictogram to compare people by a common attribute.</p> <p>To explain that we can present information using a computer and that sometimes it is this data should not be shared.</p> <p><b>Knowledge</b></p> <p>To know how to group objects by their properties.</p> <p>To create a pictogram from collected data in a tally chart.</p> <p>To know how to search for specific information or data.</p> <p>To know that I shouldn't share personal information online.</p>	<p>To use a data logger to collect data and that the data logger collects 'data points' from sensors over a given time.</p> <p>To use collected data to answer questions and draw conclusions.</p> <p><b>Knowledge</b></p> <p>To know how to carefully structure a branching database, identifying attributes for grouping and yes/no questions.</p> <p>To know how to use a data logger to collect data.</p> <p>To know that sensors are the input devices and that the data is recorded.</p>	<p>To work collaboratively to solve a problem using spreadsheets.</p> <p>To use simple formulae to solve calculations including =sum and other statistical functions.</p> <p>To present data visually using graphs in2calculate and/or Excel.</p> <p>To decide which keys are more suitable to perform a task. E.g. Numerical keys when typing long numbers.</p> <p>To create a database with a greater number of fields and create complex search questions about their database for their classmates to answer (Questions using and/or statements).</p> <p><b>Knowledge</b></p> <p>To create a database.</p> <p>To know that a databases is a program that is used to store information (attributes) and that you can ask questions (search) a database for answers.</p> <p>To create graphs and charts to represent your answers.</p> <p>To know how to format cells to perform a function and that spreadsheets can be used to present data visually.</p> <p>To credit sources when inserting media from websites and to check their validity.</p>





	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
				To know data can be presented numerically or visually, each for different purposes.
Computer safety	<p><b>Skills</b></p> <p>To identify how something on the computer has made us feel.</p> <p>To identify when I need to go to an adult for help.</p> <p><b>Knowledge</b></p> <p>To use technology safely.</p> <p>To know how to keep safe online and not share personal information.</p> <p>To know how to report inappropriate behaviours and content to a trusted adult.</p>	<p><b>Skills</b></p> <p>To know to speak to a trusted adult if I feel scared, frightened or embarrassed about something I see while using technology.</p> <p><b>Knowledge</b></p> <p>To use technology safely and respectfully, keeping personal information private.</p> <p>To identify where to go for help and support when I have concerns about what I have seen on the internet, or another digital device.</p> <p>To understand the importance of keeping information, such as my usernames and passwords private.</p> <p>To know how to report inappropriate behaviours and content to a trusted adult.</p>	<p>To recognise what a good password is and why I should keep passwords safe.</p> <p>To explain what is meant by the term 'online identity'.</p> <p>To identify the age restrictions on games and apps to work out whether they are suitable for me.</p> <p>More able: Pupils will be able to appraise the accuracy of information shared on a website and provide suitable evidence to support their decisions on whether it is trustworthy or not.</p> <p>To identify possible risks of installing free and paid for software.</p> <p>To identify signs of a computer virus.</p> <p>To identify security symbols such as padlocks can help keep me safe online.</p> <p>To identify and am aware of the existence of scam websites.</p> <p>To explain what a digital footprint is and how it relates to identity theft.</p> <p>To give examples of things that they would not want to be in their digital footprint.</p>	<p><b>Skills</b></p> <p>To explain how identity online can be copied, modified or altered.</p> <p>To demonstrate responsible choices about my online identity, depending on context.</p> <p>To refer to SMART choices. I can think critically about what I share online and the digital footprint I create.</p> <p>To explain how I would report online bullying on the apps and platforms that I use and know how to block abusive users.</p> <p>To describe the helpline services who can support me and what I would say and do if I needed their help (e.g., Childline).</p> <p>To explain how and why some people may present 'opinions' as 'facts'. Define the terms 'influence', 'manipulation' and 'persuasion' and explain how I might encounter these online (e.g. advertising and 'ad targeting').</p> <p>To explain key concepts including: fact, opinion belief, true, false, valid, reliable.</p>

# Computer science Knowledge and Skills



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
			<p>More able: More able pupils can search for specific content and rephrase key words to alter outcomes. They can demonstrate that they are making connections between the positive possibilities that technology provides e.g. collaboration and sharing and the possible downsides of this such as malware and phishing.</p> <p><b>Knowledge</b></p> <p>To know the importance of having a secure password and not sharing this with anyone else.</p> <p>To know that not all information on the internet is correct.</p> <p>To understand that there is more than one way to report unacceptable content and contact.</p> <p>To know that being on the internet or playing games can alter my emotions.</p> <p>To know I should report inappropriate content found online to a trusted adult.</p> <p>To understand that not all information I find online has been fact checked.</p> <p>To know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer.</p> <p>To know what a computer virus is.</p> <p>To know it is healthy to limit screen time and have screen free activities,</p>	<p>To identify the risks and the benefits of apps and software that broadcast location and can turn this function on/off as required.</p> <p>To clearly explain appropriate behaviour online and report any behaviours than make me feel uncomfortable.</p> <p>To explain how and why some people may explain opinions as facts and how I may encounter these online through advertising and ad-targeting.</p> <p>To confidently manage their online presence and explain how they may deal with future problems.</p> <p><b>Knowledge</b></p> <p>To understand the difference between online misinformation (inaccurate information distributed by accident) and dis-information (inaccurate information deliberately distributed and intended to mislead).</p> <p>To have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services.</p> <p>To know how to relate appropriate online behaviour to</p>



	EYFS	End of Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
				<p>their right to personal privacy and mental wellbeing of themselves and others.</p> <p>Aware that some games, apps and websites etc. have age restrictions and this is for my safety and the safety of others.</p> <p>To know that too much 'screen time' can be detrimental to my health and know ways in which to access devices safely.</p> <p>To understand the value in preserving privacy when online for my own and other people's safety.</p>