

National Curriculum Computing content	Project:	Computing Systems		Data and Information		Creating Media		Computer Science and Programming	
		Nursery	Reception	Nursery	Reception	Nursery	Reception	Nursery	Reception
understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions								✓	✓
create and debug simple programs								✓	✓
use logical reasoning to predict the behaviour of simple programs								✓	✓
use technology purposefully to create, organise, store, manipulate and retrieve digital content				✓	✓	✓	✓		
recognise common uses of information technology beyond school		✓	✓						
use technology safely and respectfully; keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.		✓	✓			✓	✓		

Areas of Learning									
DM	Communication and language	✓	✓	✓	✓	✓	✓	✓	✓
DM	Expressive Arts and Design					✓	✓		
DM	Maths			✓	✓				
DM	Knowledge and Understanding of the world	✓	✓					✓	✓
DM	PSED	✓	✓						
ELG	Motor Skills					✓	✓	✓	✓

DM	Development Matters
ELG	Early Learning Goal

National Curriculum Computing content	Computing Systems		Data and Information		Creating Media			Computer Science and Programming			
	Year 1	Year 2	Year 1	Year 2	Year 1		Year 2	Year 1		Year 2	
	Technology Around Us	Around us at Home	Grouping Data	Pictograms	Digital Painting	Digital Writing	Digital Photography	Moving a Robot	Programming Animations	Robot Algorithms	Scratch Drawing
Project: understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions								✓	✓	✓	✓
create and debug simple programs								✓	✓	✓	✓
use logical reasoning to predict the behaviour of simple programs								✓	✓	✓	✓
use technology purposefully to create, organise, store, manipulate and retrieve digital content			✓	✓	✓	✓	✓				
recognise common uses of information technology beyond school	✓	✓									
use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	✓	✓			✓	✓	✓				

[illegible]

Progression in Skills and Knowledge - Computing Systems and Networks

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<i>Technology Around Us</i>	<i>Around us at Home</i>	<i>Connecting Computers</i>	<i>The Internet</i>	<i>Systems and Searching</i>	
Skills							
To explore examples of technology (role play area/home etc.)	To explore examples of technology through role play	To choose a piece of technology to do a job	To describe some uses of computers	To explain that a computer system accepts an input and processes it to produce an output		To recognise that a system is set of interconnected parts that work together.	
To show knowledge that technology is used as part of every day life through role play	To show knowledge of the role of technology in the wider world through role play	To recognise that some technology can be used in different ways	To identify information technology in school and beyond	To identify network devices around me.		To identify the role of a particular system in their lives	
		To identify the main parts of a computer		To identify input and output devices		To identify the input and output of a search engine	
		To use a mouse in different ways					
		To use a keyboard to type					
		To use the keyboard to edit text					
			To recognise the features of information technology	To explain how a computer network can be used to share information	To explain how information can be shared via the WWW	To explain why search engines create indices and that they are different for each search engine	
					To explain how the content of the WWW is created, owned and shared by people.	To explain how search engines select and rank results	
				To explain the role of a switch, server and WAP in a network			
				To explain how networks can be connected to other networks.	To describe how networks connect to other networks	To explain that computers can be connected together to form IT systems	
		To show how to use technology safely	To show how to use information technology safely		To recognise the need for security on the internet		
Knowledge							
To know different types of technology in the home	To know different types of technology in the home and wider world	To explain that technology is something that can help us	To explain how information technology benefits us	To describe what an input is	To identify the benefits of the WWW	To know that the internet and the WWW are different	
		To identify examples of technology	To recognise different types of computers used in school	To explain that a process acts on the inputs.			
		To recognise examples of technology help us	To talk about uses of information technology	To identify the benefits of computer networks.			
		To recognise that a computer is an example of technology	To identify that a computer is a part of information technology	To identify that a network is made up a number of components.	To identify key components of the internet		
		To recognise that choices are made when using technology	To recognise that choices are made when using information technology	To recognise that a digital device is made up of several parts.	To recognise that the WWW is part of the internet and comprises websites and web pages	To relate the search engines are examples of a large IT system	
				To identify how devices in a network are connected with one another	To explain that the global network interconnection of networks is the internet		
To understand that they are some things on computers that are not suitable for children	To know that there are rules when accessing technology in school and at home	To explain why rules are needed when using technology	To say how rules for using information technology can help us		To begin to evaluate the reliability of content and the consequences of unreliable content	To evaluate the results of search terms	
						To explain how search engines make money by selling targeted ads	

Progression in Skills and Knowledge - Data and Information

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 6
		<i>Grouping Data</i>	<i>Pictograms</i>	<i>Branching Databases</i>	<i>Data Logging</i>	<i>Spreadsheets: Excel</i>
Skills						
To describe one feature of an object	To describe some features of an object	To identify and describe some attributes of an object	To recognise that people, animals and objects can be described by attributes	To identify attributes you can ask yes/no question about		
		To collect simple data	To use a tally chart to collect data		To use a digital device to collect data automatically	To collect data to be used for own spreadsheet analysis
		To show that collected data can be counted	To use a computer to enter and view data in different formats	To use a computer program to analyse yes/no questions		To view and analyse own data (including use of formula)
		To be able to answer simple questions about a group of data	To use pictograms to answer single-attribute questions	To retrieve information and answer questions different levels of the branching database	To answers questions based on data collected	To evaluate results in comparison to the question asked
			To begin to ask own questions about data presented	To create questions with yes/no answers	To suggest questions that can be answered using a table of data	To identify questions that can be answered using spreadsheet data
		To choose an attribute to group objects by	To compare objects that have been grouped by attribute	To select an attribute to separate objects into two similarly sized groups	To use a computer program to sort data by one attribute	To sort and rank data by more than one attribute
		To group objects to answer questions	To construct (complete) a given comparison question, are there x more balls?	To choose questions that will divide objects into evenly sized subgroups		
				To relate two levels of a branching database using AND		To calculate data using a formula for each operation using existing cells.
Knowledge						
To know that objects can be counted to 5 (Maths)	To know that objects can be counted to 10 (Maths)	To know that objects can be counted	To know that objects can be counted and grouped in a chart	To know how to identify an object using a branching database	To know what type of data can be logged over time	To know that spreadsheets are an efficient piece of software to analyse data
To know that objects can be sorted using simple criteria	To know that objects can be sorted by different criteria e.g. colour and size (Maths)	To recognise that information can be presented in different ways	To know that a computer program can present information in different ways	To explain that a branching database is a different way of presenting data	To explain that a data logger captures 'data points' from sensors over time	To choose suitable ways to present spreadsheet data (including graphically)
					To know that sensors are input devices	
			To suggest appropriate headings for tally charts and pictograms			To explain why data should be organised in a spreadsheet
		To explain that objects can be grouped by similarities (attribute)				To explain that formulas can be used to produce calculated data

Progression in Skills and Knowledge - Creating Media

Nursery	Reception	Year 1		Year 2		Year 3	Year 4		Year 5	Year 6
		Digital Painting	Digital Writing	Digital Photography	Desktop Publishing Skills	Animation	Audio Production	Photo Editing	Vector Drawing	3D Modelling
To use technology to record ideas	To use technology to record and share ideas	To create a picture using freehand tools	To use letter, number, and Space keys to enter text into a computer	To capture a digital image in both landscape and portrait	To use placeholders to organise and edit text and images	To plan an animation using a storyboard	To record sound using an iPad	To use an application to change the whole of a digital image	To create a vector drawing for a given purpose	To construct a 3D model which reflects a real world object
		To use shape and line tools when precision is needed	To use punctuation and special characters	To use zoom to change the composition of a photograph	To show that page orientation can be changed	To use onion skinning tool to review subject position	To change the volume of tracks in a project	To change an image by rotating / flipping / cropping	To modify objects	To use digital tools to modify 3D objects
		To use a range of paint colours	To change the appearance of text on a computer	To use filters to edit the appearance of a photograph	To organise text and image placeholders in a page layout	To capture images and move subject between captures	To edit / delete a section of audio	To edit an image by using filters/colours	To select on or more objects	To use placeholders to create holes in 3D objects
		To use the fill tool to colour an enclosed area						To use clone, copy, paste to edit a digital image	To duplicate objects and groups using copy and paste	
		To use the undo button to correct a mistake	To use the Backspace key to remove text	To improve a photograph by retaking it	To use the keyboard to edit text and images.	To add media to enhance an animation	To import audio into a project	To add text to a digital image	To add an object to a vector drawing	
		To combine a range of tools to create a piece of artwork			To combine a range of tools to create a final piece of work			To choose the most appropriate tool for a particular purpose		To position 3D object relative to each other
			To select text	To view photographs on a digital device	To edit text and fonts	To review a captured sequence of frames as an animation	To play recorded sound	To select a part of a digital image		To combine objects to create a 3D model
			To position the text cursor in a chosen location	To hold the camera still to take a clear photograph		To use a device to capture images in a fixed position				To size objects accurately
				To consider lighting before taking a photograph						
				To decide which photographs to keep	To review a document	To review a completed project			To combine options to achieve a desired effect	
Knowledge										
		To explain what different freehand tools do	To recognise that the Shift key changes the output of a key	To talk about how to take a photograph	To consider how different layouts can suit different purposes.	To explain that animation is made up of a sequence of images	To identify that sound can be recorded		To know that a vector drawing comprises separate objects	To explain that 3D models can be created on a computer
To recognise technology can	To recognise technology can	To recognise computers can be used to create art	To recognise that a keyboard is used to enter text into a computer	To recognise that some digital devices can capture images using a camera	To recognise how text and images can be used together to convey information	To recognised that smaller movements create a smoother animation	To recognise that an input device is need to record sound		To recognise that each object in a drawing is in its own layer	To recognise that a 3D environment can be viewed from different perspectives
		To recognise a tool can be adjusted to suit my need	To recognise that the appearance of text can be changed and edited	To identify how a photograph could be improved	To recognise how different font styles and effect are used for particular purposes		To recognise that audio can be edited	To recognise that digital images can be manipulated	To recognise that vector images can be scaled without impact on quality	To recognise that digital tools can be used to manipulate 3D objects.
		To decide when it's appropriate to use each tool			To recognise that DTP can be structured with placeholders.	To explain the impact of adding other media to an animation		To recognise that digital images can be changed for different purposes	To explain how alignment and size guides can help create a more consistent drawing	
		To consider impact of choices made when drawing	To consider the impact of choices made when writing	To make choices when composing my photograph	To consider the benefits of using a DTP application		To consider the results of editing choices made	To consider the impact of changes made on the quality of the image	To consider the impact of choices made	
		To compare painting using a computer with painting using brushes		To recognise features of 'good' photographs						
				To explain the effect of light on a photograph			To identify that output devices are need to play audio			
				To recognise that photographs can be saved and viewed later			To recognise that recorded audio can be stored on a computer or online			
				To recognise that photographs can be change after they have been taken			To recognise that sound can be represented visually as a waveform.			
				To recognise that some images are not accurate			To recognise that audio can be layered so multiple sounds can be played at the same time			
					To describe landscape and portrait as 2 different page orientations	To recognise that a project must be exported so it can be shared.			To recognise that objects can be modified in groups	

Progression in Skills and Knowledge - Computer Science and Programming

Nursery	Reception	Year 1		Year 2		Year 3		Year 4		Year 5	Year 6
		Moving a Robot	Programming Animations	Robot Algorithms	Scratch Drawing	Sequencing Sounds	Events and Actions	Repetition in Shapes	Repetition in Games	Selection in Programming	Variables in Games
Skills											
To follow simple instructions given by other to complete a task	To follow a set of instructions	To run a variety of commands on a beebot	To create a simple program Space animation using Scratch Jr	To create a simple program using Beebot/Blubot	To create program to draw a lined pattern (Scratch 3.0)	To create a sequence of commands to produce a given outcome (Scratch online)		To use repetition in programs (Logo and Scratch)		To use selection in programming (Microbit - DT & Scratch)	To identify and use a variable in a program
To give an instruction to achieve an outcome	To give a set of at least 3 instructions to achieve an outcome	To enact a given word	To enact a given word	To choose a series of words that can be enacted as a sequence	To experiment with drawing lines in Scratch			To list an everyday task as a set of instructions		To choose a condition to use in a program	To identify a variable in an existing program
		To predict the outcome of a command on a device	To predict the outcome of a list of commands on a device		To predict the outcome of a program on a device			To use an indefinite loop to produce a given outcome		To create a condition-controlled loop	To experiment with the value of an existing variable
		To list which commands can be used on a given device	To list that commands can be used on a given device		To experiment with drawing and patterns			To use a count-controlled loop to produce a given outcome		To use a condition in an 'if...then...' statement to start an action	To choose a name that identifies the role of a variable to make it more usable (to humans)
		To choose a command for a given purpose	To choose a command for a given purpose	To trace a sequence to make a prediction	To use a computer to modify a pattern			To plan a program that includes appropriate loops		To use selection to switch program flow	To decide where in a program to set a variable
		To choose a series of words that can be enacted as a program	To choose a series of words that can be enacted as a program	To choose a series of instructions that can be run as a program	To use a computer to create a variety of different lines and patterns			To recognise tools that enable more than one process		To use 'if...then...else' to start an input	To update a variable with a user input
		To choose a series of commands that can be run as a program	To choose a series of commands that can be run as a program			To order commands in a program		To create two or more sequences that run at the same time		To use selection to switch program flow	To use an event in a program to update a variable
		To build a sequence of commands in steps	To build a sequence of commands in steps		To build a sequence of commands into a program	To build a sequence of commands				To use 'if...then...else...' to switch program flow in one of two ways	To use a variable in a conditional statement to control the flow of a program
		To combine commands in a program	To combine commands in a program			To combine commands in a program					To use the same variable in more than one location in a program
				To debug a program that I have written	To evaluate a pattern created on a computer						
Knowledge											
			To understand that an algorithm is a precise set of ordered instructions which can be turned into code	To explain what happens when we change the order of instructions (algorithm)		To explain that programs start because of an input		To relate what repeat means		To explain that a condition can only be true or false	To define 'variable' as something that is changeable
		To understand that a program is a set of commands that a computer can run	To understand that a program is a set of commands a computer can run	To describe that a series of instructions is a sequence	To identify that computers can be used to draw and create lines and patterns	To explain what a sequence is		To identify everyday tasks that include repetition as part of a sequence e.g. brushing teeth, dance moves		To compare a count-controlled loop with a condition-controlled loop	To identify examples of information that is variable e.g. football score
		To recall that a series of instructions can be issued before they are enacted	To recall that a series of instructions can be issued before they are enacted		To compare drawing lines and patterns with and without a computers	To identify that a program includes sequences of commands		To explain that we can use a loop command in a program to repeat instructions		To relate that a count-controlled loop contains a condition	To explain that a variable can be used in a program e.g. score
		To recall words that can be enacted	To recall words that can be enacted	To recall that a series of instructions can be issued before they are enacted		To identify that the sequence of a program is a process.		To identify a loop within a program			To define a program variable as a placeholder in memory for a single value
		To explain what a given command does	To explain what a given command does	To recognise that you can predict the outcome of a program		To explain the order of commands can affect a program's output.		To explain that in programming there are indefinite loops and count-controlled loops			To explain that a variable has a name and a value
		To match a command to an outcome	To match a command to an outcome			To identify that different sequences can achieve the same / different outcomes		To explain that an indefinite loop will run until the program is stopped			To recognise that the value of a variable can be used by a program
								To explain that you can program a loop to stop after a specific number of times			To recognise that the value of a variable can be updated
								To identify patterns in a sequence (step x3 is the same as step, step, step)			To identify that variables can hold numbers (integers) or letters (strings)
								To justify when to use a loop and when not to			To define the way that a variable is changed
								To explain the importance of instruction order in a loop			To recognise that a variable can be set as a constant (fixed value)
								To recognise that not all tools enable more than one process to be run at once			To explain the importance of setting up a variable at the start of a program
											To explain that there is only one value for a variable at any one time
											To explain that if you change the value of a variable you can't access the previous value
											To explain that if you read a variable, the value remains
											To explain that the name of a variable is meaningless to the computer and needs to be unique.