

### **Computer science and programming**

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
To know that pseudocode is where an	To know that a code is a language that	To know that abstraction means	To know that a variable is a piece of
algorithm is planned and written in plain	a computer understands (and there are	identifying what is important and	data with a value that can change,
English, rather than a specific computer	many different coding languages we	leaving out unnecessary detail in an	which is stored in memory while a
code or language.	can use).	algorithm or program.	program is running, so that it can be
			retrieved later.
To know that repetition means	To know that coding is writing an	To know that a procedure is a short	To be able to use the useabuleur of
repeating certain instructions (creating	algorithm or program in a specific	sequence of commands, nested within a	To be able to use the vocabulary of
loops) in a program.	computer language (a code).	program, that can be run repeatedly,	computer science when explaining a
To know that decomposition means	To know that logical reasoning is	making the program more efficient.	program's purpose/features.
breaking down a problem, activity or	thinking about what should be	To know that selection is when a	To know how to use logical reasoning
system into smaller steps or parts	happening, to help us predict what	program carries out instructions	to explain how algorithms and programs
System into simular stops of particular	comes next, to identify causes and their	depending on whether a choice is made	work, to make predictions and make
To know how to create precise,	effects and to detect and fix problems.	or a condition is met (If then)	deliberate changes to create desired
correctly sequenced algorithms and	·	,	effects.
programs.	To know how to use pseudocode to	To know how to use logical reasoning	
	plan how a program will work and what	to explain how algorithms and programs	To know how to explain instances of
To know how to use repetition (creating	it should do, before using software to	work, predict what they do and the	problem-solving and the choices made.
loops) in a sequence of instructions.	write the program.	effect of changes.	
T- 1 b t- :dt:6d	To longer how to you loning and according	To locate have to the disal managina	To be able to apply skills such as
To know how to identify and use	To know how to use logical reasoning	To know how to use logical reasoning,	decomposition, repetition, procedures
repetition (loops) in an algorithm and program and explain why it is useful.	to explain how algorithms work and predict what they do.	decomposition and abstraction to plan and write algorithms and programs.	and abstraction, explaining how they made a program more efficient.
program and explain why it is useful.	predict what they do.	and write algorithms and programs.	made a program more emdent.
To know how identify errors in an	To know how to use logical reasoning	To know how to debug an	To know how to use variables and
algorithm or program and debug the	to debug an algorithm or program and	algorithm/program and explain how the	selection in an algorithm or program.
errors by thinking about what should be	explain how the problem was solved.	problem was solved.	i gi i p i gi
happening (logical reasoning).	,		
	To know how to program and sequence	To know how to use abstraction to	
To know how to use decomposition to	an animation in Scratch.	identify what is important and what can	
break a problem into smaller steps		be left out when designing a program.	



## SCIENCE END POINTS

before programming and explain why this is useful when programming.	To know how to use abstraction to identify and simplify the details needed for a simulation.	
	To know how to use repetition, procedures or abstraction to make programs more efficient.	



### **Computer systems and networks**

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
To know that hardware is any physical	To know that the internet is a global	To know that a system has parts	To know the common features of a web
part of a computer, device or	network of networks (linked devices)	(physical, digital, human, processes)	page and the types of media content
technology.	which we use to host and access the	that work together to make something	they can use.
To be any that authorized a pay digital	WWW.	happen.	To leave how to plan design exacts
To know that software is any digital program that is needed to let us control	To explain how the internet allows us to	To know how computer systems are	To know how to plan, design, create and evaluate a website, including
hardware.	view and access the World Wide Web	used to automate everyday tasks and	pages, hyperlinks and media content.
naraware.	(WWW).	situations, and to evaluate their	pages, hyperinks and media content.
To know that a computer comprises	(******).	advantages and disadvantages.	To know that a hyperlink is a link
components or devices for input,	To know how to explain the difference	auvantages and alsaavantages.	between webpages or files in different
processing and output.	between the internet and the World	To know how devices on networks and	locations, usually activated by clicking.
	Wide Web (WWW).	the internet communicate with each	, , ,
To know that computers accept inputs		other, using protocols, routers and data	To know that 'copyright-free' means
and produce outputs.	To know that a website is used to	packets to direct data quickly and	that the content can be reused without
	share information online and is usually	efficiently along many paths of the	permission from/payment to the
To know that an input is data, actions	formed of several webpages showing	network.	creator.
or commands that are put into a	text and digital media.	T. I	T. I II 136
system.	To lime with the common in a community on	To know that an IP address is a unique	To know that 'fair use' means that small
To know that a processor is the part of	To know that a server is a computer on a network that is a hub for other	location identifier for a device on a network.	parts of content can be reused for certain purposes only (such as news
a computer that decides what to do	devices to connect to; websites, data,	Hetwork.	reporting, teaching or research) without
when an input is received, in order to	programs and services are stored on a	To know that a router is a device that	permission from/payment to the
produce an appropriate output.	server.	helps to forward and direct data across	creator.
produce an appropriate suspen	Server.	networks.	C. Catorr
To know that an output is data, actions,	To know that every website has a web		To know how to find copyright-free
feedback or physical results that a	address which is a unique location on	To know that a packet is where data is	content, explain 'fair use' and how,
computer system produces.	the WWW.	split into smaller parts, that are sent	when and why we need to credit the
		separately across a network and	original creators.
To know that a network is a number of	To know that the address bar on a	reassembled at the other end, which	
devices, connected physically (by wires)	browser allows you to go directly to a	improves efficiency.	To know that HyperText Markup
or wirelessly (Wi-Fi).			Language (HTML) is the programming



#### **SCIENCE END POINTS**

To know how data can be shared between devices on a network and explain why this is useful.

To know how data and information (e.g. emails) are shared across the internet and explain why the network needs protection.

website, without searching, by typing in the web address.

To know that upload/download means to transfer data or files to/from a device and a shared space online (such as a server for a website).

To know that content is any data, digital media, programs or services that users create and share online.

To know that online content is created by people and that there are rules to protect content creators.

To know and explain why we need to think carefully before sharing content online.

To know that not everything shared online is true, honest, accurate or legal.

To know that a protocol is an agreed way of doing things for communication between devices.

To know that a domain name server is a device that acts as an 'address book' so devices on a network can locate each other.

To know that to refine means to give more specific search terms, in order to narrow down the results.

To know how to refine a search and compare different search engines' results.

To know that bots are programs that carry out automated tasks online.

To know that web crawlers are bots that create an index of websites based on key words in the website contents.

To know that an index is a list of websites that contain a specific search term, generated by web crawlers to enable searches.

To know that results are a list of websites produced by a search, and that ranking lists them in order of popularity or relevance (and creators may pay to improve ranking).

language for creating webpages so that they can be displayed in a web browser.

To know how to use basic HTML tags to create simple web pages.

To know how to create and upload content to the WWW via a website.



a	To know how search results are ranked and ordered using rules, and that this ranking can be influenced.	
0	To know how to compare working online and offline and explain how the internet enables effective collaboration.	



## SCIENCE END POINTS

## Information technology (1)

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
To know how to find, order, open, create, rename and save files and folders.	To know how to manipulate windows side by side, and to switch between windows and tabs using the taskbar.	Know how to organise files and folders to enable efficient retrieval.	To know that a bookmark is a saved web address.
To know that every website has a web address which is a unique location on the WWW.  To know that the address bar on a	To know that the taskbar shows which apps or windows are currently open.  To know that a spellchecker is a program that detects spelling errors and	Know how to choose the apps or document types to best suit a task.  To know that a shortcut is a combination of key presses, used to do something more quickly than by using	To know how to use bookmarks so you can return to a website easily.  Know how to type quickly, confidently and accurately using both hands, in a range of apps and documents.
browser allows you to go directly to a website, without searching, by typing in the web address.	offers suggestions.  To know how to cut / copy / paste or drag/drop files and folders between	menus.  Know how to use keyboard shortcuts to edit text.	Know how to combine text, images, layout and formatting, using shortcuts, buttons and menus confidently and
To know when to use the address bar or a search engine in a browser to navigate the WWW efficiently.	To know how to type paragraphs quickly and accurately, using a	Know how to combine text, images, layout and formatting make different types of documents.	efficiently, to make a range of documents for a purpose.  To know how to copy and paste a
To know that word processing is using typing software (such as Microsoft Word) for writing.	To know how to choose style, layout and formatting effects, combining text	Know how to access and use shortcuts, buttons and menus confidently and efficiently.	website link into another document.
To know how to type sentences quickly and accurately.  To know that a screenshot is a saved	and images, to suit a purpose.		
image of all or part of what is currently on screen, captured using an app.			
To know how to capture screenshots.			



To know how to combine text and images in a document and adjust the layout.		
To know how to select effective text formats to suit the document's purpose.		
To know how to copy/paste images into a document or presentation.		



## Information technology (2)

Year 3 End Points	Year 4 End Points	Year 5 End Points	Year 6 End Points
To know how to present information	To know how to combine text, images	To know how to select and combine	To know how to select and combine
using a PowerPoint presentation	and animations in a presentation to	digital media in a presentation, to	digital media in a presentation or
including text and images.	communicate information clearly.	communicate information to a specific	webpage, to communicate information
		audience.	to a specific audience.
To know that comments are where	To know how to create blog posts		
someone adds a reply to a person's	including different media and	To know how to create and evaluate	To know how to create a website with
earlier post on a blog, social media or	comments, explaining how to report	varied blog content and comments,	hyperlinks, text, images and embedded
messaging group.	inappropriate content.	explaining how to report inappropriate	media.
To know how to greate blog posts	To know how to collect, cost and	content.	To know that embedded content means
To know how to create blog posts including different media, add	To know how to collect, sort and present data or information in a range	Know how to use a range of ways to	media that is visible within a webpage,
appropriate comments and know how	of charts/graphs, using an app.	collect, sort and present data or	not accessed through a link.
to report inappropriate content.	or charts/graphs, using an app.	information, choosing appropriate	not accessed through a link.
to report mappropriate contents	To know how to use tools and effects to	charts/graphs, using an app.	To know how to create and evaluate
To know how to collect, sort and	change a digital image, describing the	charto, graphlo, doinig an appr	websites and blog content and
present data or information in	positive and negative effects of	To know how to create a playable game	comments, explaining how to report
charts/graphs, using an app.	retouching.	using Scratch.	inappropriate content.
	_	_	
To know that animation is to create	To know how to take effective digital	To know that CAD (computer-aided	To know how to use a range of ways to
visual movement from still images,	photos, considering lighting and	design) is using software/apps to design	collect, sort and present data or
practical models or computer models	positioning, and manipulate them using	and build 3D models and structures.	information, selecting the best chart /
(created either practically or using	an app.		graphs for the purpose, using an app.
computer software).		To know how to create simple 3D	
T 1	To know how to use an app to create	models using CAD or an app, e.g.	To know that a database is a collection
To know how to create stop-frame	digital art using effects.	Google SketchUp.	of organised data that is stored on a
animation using an app.	To know that retouching means to	To know how to take effective digital	computer, which allows people to search and sort large quantities of data
To know how to take effective digital	make small changes that are intended	photos, considering lighting and	to find information.
photos, considering lighting and	to improve an image but also be hard to	positioning, and manipulate them to	to find information.
positioning.	detect afterwards.	create effects.	
positioning	detect diterrands	- C. Cate C. (Cott)	
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## SCIENCE END POINTS

To know make changes to an improve a digital photo using an editing app.	To know how to recognise images as 'fake' or 'real'.  To know how to program an animation using Scratch.  To know that a data logger is a digital device that can collect data over time and store it.  To know how to collect, retrieve and interpret data over time using a data logger.	To know how to use an app to create digital art using digital photos, editing and effects.	To know that a flat-file database a collection of data organised in a single table using fields and records.  To know that a record is a set of data about a particular object, formed from one or more fields of data.  To know that a field is one specific piece of data in a database record.  To know that a value is the 'answer' to each field within a particular record (e.g. a number, yes/no, a name).  To know that all objects have attributes; in a database, attributes are recorded as a field with a value (e.g. a
			'colour', which might be 'red').  To know how to use a database to collect and retrieve data, create graphs/charts and use these find out information.  To know how to collate or take effective digital photos, editing, manipulating or combining them with effects and other
			combining them with effects and other media, to create digital art, as a collage, video montage or presentation.



### **Digital literacy and e-safety**

rear 3 End Points	Year 4 End Points	rear 5 End Points	rear 6 End Points
To know how to describe examples of	To know that a range of social media	To know a range of ways to report	To know how someone should respond
how bullying behaviour could appear	and online technologies can encourage	concerns and access support both in	to and report online bullying in different
online.	or enable online bullying, and what this	school and at home, or services such as	contexts.
	might look like.	Childline, to help someone who is being	
To know what important rules there are		bullied online.	To know how to safely capture online
about online behaviour and how not to	To know that social media are websites		content as evidence of online bullying
commit online bullying.	and apps that enable their users to	To know that online bullying can differ	that has taken place.
	communicate, create and share content	to offline bullying and can involve a	
To know how and when to get help	through posts and messaging.	range of roles and behaviours.	To know how to identify risks and signs
from a trusted adult, when given			of online bullying at home or at school,
examples of problems about being	To know that your online reputation is	To know that abusive users are people	and describe a range of people or
online.	how people may see what you say or	online who may wish us harm, that this	services they can access to report
	do on line and form opinions about you,	is not our fault and that they can be	problems or seek support.
To know that there are different ways	even if they do not know you.	reported and blocked.	
we know people and describe the			To know how rude, bullying or
differences between knowing someone	To know how to choose carefully before	To know how to identify abusive users	inappropriate comments or activities
offline and online.	posting or sharing content about others	online, how to block and report them,	online create risks for myself and
To know how to explain the difference	that can affect both your and their	and to whom they can be reported.	others.
To know how to explain the difference	feelings or reputations.	To know that to report is to tell those in	To know the possible impact of
between trusting and liking someone online.	To know how to identify signs and	charge of an online community about	thoughtless or hasty comments in
oriline.	symptoms of someone else being	another user who is causing a problem.	online communities, and explain how to
To know how to describe how it feels to	bullied online.	another user who is causing a problem.	act responsibly.
experience hurtful things online.	bulled offille.	To know that to block is to stop another	act responsibly.
experience nurtius triings orinne.	To know how to react to problems, both	user from being able to contact you,	To know the possible consequences of
To know and describe some of the	on and offline, giving examples of	make comments to you or harass you	sharing private or personal information,
common risks of online activities and	people or places to whom they can be	online.	images or videos, and explain how to
suggest ways to stay safe.	reported.		act responsibly.
	•	To know that an online community is a	/
To know how to avoid sharing personal		group of people with shared interests	To know that we all build an online
information online mistakenly or without		who meet or communicate online.	reputation through our behaviour and
	·		<u>-</u>



#### **SCIENCE END POINTS**

permission, and what to do if this happens.

To know the importance of trust online and that we must always be careful who we 'like', trust or share information with online.

To know that anyone can change or hide their identities online.

To know that a username is personal code used to keep our online information private, which can be different to our real name.

To know that an account stores our personal information, so we can log in to a device, website or app using a username and password.

To know that a profile is a visible online identity that users set up when they create an account on a device, website or app.

To know how to make choices when sharing personal information to access services/ apps, and when we are posting on those services/apps.

To know that illegal means against the law and may involve the police.

To know how to keep personal details private, explaining a range of methods and strategies.

To know how to explain strategies for safe and fun experiences in a range of online activities.

To know how to explain what respectful and disrespectful online behaviour looks like.

To know that our online reputation comes from information about us that may have been posted, copied or shared by others.

To know that your reputation is people's opinion of you based on what you do and say, which may be positive or negative, even if they have not met you.

To know how information about ourselves can be found out online, even if we do not intend it to be shared, and can be shared by others (e.g. likes, comments, tags).

To know how to identify who owns online content and whether we can reuse or share it or need to seek permission.

To know that collaboration is working with others to produce or create something.

To know how to make positive contributions to an online community.

To know that our online identity can be copied, changed or hidden and that we need to make responsible choices to help protect our personal information, using settings to control this.

To know how free apps and websites collect and use our personal information and that they may share it unless we opt out.

To know that to 'opt out' means to choose not to agree to something, and that we may need to actively select this option when using apps or services.

To know that that app permissions allow access to our personal information and that the data we share is valuable to app developers.

To know when we should or should not share content or media online, describing how and when we may need permission from the content creator. know how to maintain a positive identity online.

To know that inappropriate images or videos can be embarrassing and have a deeply harmful impact for people in them and should not be shared.

To know that something which is 'inappropriate' to one person may not seem so to others, and should be discussed with a trusted adult if you are unsure.

To know that inappropriate images can involve something private, worrying, illegal, embarrassing, harmful, rude or unsuitable for your age, and are often shared maliciously or without permission.

To know that boundaries are personal limits that we do not cross, to show that we understand and respect our own needs and those of others.

To know how to respond when we encounter inappropriate content online accidentally.

To know how to show respect for each other's boundaries online, particularly regarding sharing information or content.



#### **SCIENCE END POINTS**

To know that copying or sharing someone's information, work or media online without permission is breaking copyright and is illegal.

To know that spending too much time online or using devices can have negative effects on our health and wellbeing.

To know that some online activities and games have age restrictions and why it is important to follow them.

To know that there is a difference between facts and beliefs or opinions and begin to identify examples of these online. To know how to recognise when we are online or using devices for too long, describing the impact on our health and wellbeing.

To know to explain a range of strategies to limit time spent online/using tech.

To know that our online and real-life identities can differ and describe examples.

To know that others online can pretend to be someone else and suggest reasons why.

To know that a digital age of consent or age-restriction is a lower age-limit on who can create personal accounts to access apps and services online.

To know that the digital age of consent is a legal protection for children's personal data and they must not access online services or apps without parental consent.

To know that digital age of consent is needed to a create a personal account on an online app or service, because they store our personal information.

To know that internet use can be monitored and that these services are

To know that 'acceptable' or 'fair use' means that small parts of content can be reused for certain purposes only (such as news reporting, teaching or research) without permission from/payment to the creator.

To know that in-app purchases are where you can pay for additional content or features in an app or game, and that we must always ask an adult before buying.

To know that there are benefits and risks of accessing online information about health and well-being and we should balance this with talking to trusted adults or professionals.

To know that a source is where information originally came from; some sources are more reliable than others, and some may not even be a true source.

To know that we need to check the accuracy of information that is shared online and consider the source and intent.

To know how use of technology can affect our sleep as well as physical and mental health and describe strategies to promote healthy usage.

To know that anonymity means to not be known, and online this can mean not showing or sharing unnecessary personal details or opting out of data tracking.

To know and explain strategies anyone can use to protect their online reputation, including how anonymity can protect your personal data.

To know that gender roles refers to the (often fixed) ideas that people have about what males or females should be like or what they are allowed to do.

To know that social media can influence our ideas or judgements about gender roles, and how to challenge inappropriate messages.

To know how to recognise and select effective strategies for managing passwords.

To know that scams are online messages or content that target people to trick, harm, or to steal personal information or money illegally.

To know that a fake profile is where someone uses false information on their profile to hide their real identity.



#### **SCIENCE END POINTS**

used to keep children and users safe online.

To know how to describe strategies for keeping personal information private, depending on context.

To know that 'fake' or 'hoax' means not real or true and that some people share information online that is not true.

To know that an online hoax or fake news can be designed to affect someone's emotions and behaviour, and explain why this may be harmful.

To know how to differentiate between facts, beliefs and opinions online, giving examples of each.

To know that advertising is where a person or business is trying to persuade us to buy or use something.

To know that there is a range of methods used to advertise online and adverts can be presented as other formats in order to mislead or attract 'clicks'.

To know how to recognise some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups).

To know how the internet can draw us to information for different agendas (e.g. pop-ups, targeted ads, personalised content, fake notifications).

To know that targeted content is created from data and personal information gathered by companies that are tracking our activities online.

To know that we can manage our privacy settings, opt out of tracking or seek adult help about our data being collected for targeted content.

To know that that advertising online can be disguised as information or as sponsored or boosted content (e.g. pop-up messages, news articles, social media posts).

To know that influencers are people that influence others to emulate their behaviour, likes or choices; they are often very popular figures on social media with many followers.

To know that some influencers are paid to promote products or services by companies and advertisers and this may not be made clear to their followers. To know that people can steal someone else's identity online or set up fake profiles to copy others.

To know that identity theft is stealing someone's online identity, often preventing them from using their own as a result.

To know that phishing is where someone tries to trick people into giving out private personal information using fake messages or warnings.

To know how to identify, flag and report fake or misleading content and attempted scams.

To know that online services have terms and conditions say what the company is allowed to do and what a user is allowed to do.

To know that 'free' apps may sell your personal data, images or videos to make money for themselves, so we should always check their terms and conditions first.

To know how and why it is important that people should keep their software and apps up to date.

To know that Creative Commons is a method for copyright holders to give



#### **SCIENCE END POINTS**

To know that online bots are programs that can quickly and automatically send, like or re-share information, and reply in chat/comments like a person.

To know that misinformation is factually incorrect information that is spreads and repeated online so much that people mistakenly believe it is true.

To know that spam is unwanted and excessive advertising sent to people online without being asked for.

I can explain how bots can be used online to impersonate people to amplify and spread misinformation or spam.

To know how to identify when online content has been commercially sponsored.

To know how stereotypes and can be amplified/reinforced online and how this is used to influence people's opinions.

To know that disinformation is untrue or inaccurate information that is shared deliberately to mislead people.

To know that reliability is how trustworthy or accurate information might be.

To know that we need to evaluate the sources of online information before we forward or share content, to not spread hoaxes, misinformation and disinformation.

To know how to evaluate the reliability of online information and be sceptical about sources.

others the right to reuse their content in different ways.

To know how to find copyright-free content and acknowledge the creators and sources of content we have reused from the internet.

To know that there are rules and guidance about age-related content and age-restrictions on many apps and social media.

To know common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose and why they should be adhered to.

To know strategies to limit the negative effects of overuse of technology and explain the importance of self-regulation of time spent online.

To know how to recognise and discuss the pressures that technology can place on someone and how / when they could manage this.

To know how to recognise features of persuasive design and how they are used to keep users engaged or manipulate them.



	To know some strategies to reduce the effect of persuasive design features.
	To know that verifying means to check whether something is true or accurate.
	To know how to evaluate and verify the validity of 'facts' and information online, distinguish facts from opinions and explain why these strategies are important.
	To know how to describe the difference between online misinformation and disinformation.
	To know that information that is on a large number of sites may still be inaccurate or untrue and assess how this happens.