

Computer Science (Theory)

	KS1	Y3.	Y4	Y5	Y6
Substantive Knowledge		<u>Understanding the internet.</u> To know what a (web) blog is To know that there are various blogs on the internet To learn how to post a blog appropriately To define selected vocabulary To know how to blog safely and responsibly. To know that blogs can contain images To know what images are appropriate for blogs To know how to take and save images To know how to upload images to a blog To know that blogs can contain text, images or a combination of both To know how to copy and paste a link into my text.	<u>Internet Research</u> To use search technologies effectively and appreciate how results are selected and ranked and be discerning in evaluating digital content. To know that the internet can be used to search for information To know that word orders can effect the results of a search To know how to adjust word order to gain best search results To know that Web pages can be saved and shared using bookmarks and favourite button To know that the internet can used to communicate. To identify how we communicate safely and respectfully To know different ways to communicate and the safety aspects of each (e.g. age restrictions) To know what is unacceptable and respectful behaviour is online. To know that online activity leaves a digital footprint. I can define what a server is.	<u>Internet research and Web design</u> To know the difference between bullying and cyberbullying To know and identify secure and insecure websites To know what information is safe, and what is unsafe to share online To evaluate media aimed at boys and girls To know how to behave in a range of online scenarios I know what the SMART acronym means.	<u>Internet research and online safety</u> To know the common features and the layout of a webpage. To create a new webpage using a layout. To know how to edit, insert and format text and images onto a web page. To know how to share webpages To begin to understand bias and authority in webpages. To understand bias and authority in websites. To know that hyperlinks can be used to join pages
Vocabulary		<u>Unit B:</u> Internet, World Wide Web, WWW, search, search engine, key word, results, Google, Bing, Yahoo, Kidrex, browser, web site, web page, back, reload, links, research, safe, responsible, blog, content, post, response, Diary, journal, entries, reverse chronological order, comment, submit, personal information, SMART, photo, camera, tablet, upload, download, log in, appropriate, safe, permission	Internet, World Wide Web (WWW), search, search engine, results, Google, Bing, Yahoo, browser, key words, multiple. Trustworthy. Spam. Browse, webpage, bookmark, communicate, message, social media, Facebook, Twitter, Snapchat, Flickr, Instagram, email. attachment. respectful, encouraging, digital footprint Network, system, interconnect, wireless, log on/off, switch, server, router, website, computer, laptop, firewall, wireless access point (WAP), internet service provider (ISP), fibre optic cable, location, linear, hyperlinks,	Cyberbullying, reporting, anonymous, victim. Secure, https, site, domain, website, browser, address bar, fraud/fraudulent, policy, private/personal private, personal, instant messaging. Gender, media, stereotype, online media, message. SMART, cyberbullying, attachments, email, website, secure, personal, private, acronym.	advanced search, results, tab, window, layout, screen shot, date, text, format, heading, image, layout, Creative Commons, attribution, permission, attribution. terms of use, hyperlink, bias, authority, sponsored link, advertising, publish, share.
Disciplinary Knowledge		<u>Understanding the internet.</u> To know how to use the internet safely and with a purpose. To know how to use Key Words to search on the internet and how to make sense of the results. To know how to follow links and return to search results To know that the internet can be used to communicate and to give examples of how they may use it to communicate with people they know well and people they don't know as well (e.g. email) To know the importance of being considerate and kind when communicating (off and online)	<u>Computer Networks</u> To know what a computer network is. To know how computer networks share information. To describe the similarities and differences between networks at home and school To know that the internet provides multiple services (including for communication and collaboration). To know how a web page is accessed using a network. To know how internet packets travel across the world via routers. To know how the Internet connects across the world. To know how the same route can take a different number of routers as the Internet directs packets along different routes. To know the approximate location of some famous websites. To understand that the web is not linear and that writing for the web means you have to take that into account. I can explain how firewalls are used to keep my computers safe from harmful viruses.	<u>Computing Systems and Networks - Sharing Information & Working online collaboratively online</u> To know how to use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact Understand computer networks including the internet; how they can provide multiple services such as the world wide web; and the opportunities they offer for communication and collaboration,	<u>Computing Systems and Networks - Sharing Information & Working online collaboratively online</u> Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Information technology.

	KS1	Y3	Y4	Y5	Y6
Substantive Knowledge		<u>Word processing skills</u> To know how to use the shift, space and enter keys. To know that work can be edited using the delete, backspace and arrow keys and undo/redo. To know how to select text and to format it (bold, italic, underline) To know that a mouse/trackpad can be used for launching applications, manipulating windows and opening and saving files and folders.	<u>PowerPoint skills</u> To know how to create a PowerPoint presentation with multiple slides. To use transitions and animations on PowerPoint slides. To draw, insert, adjust, order, group reposition and arrange pictures and text boxes using the cursor. To know what a branching story is To plan a branching story To know that hyperlinks can be used to join slides needed to create a branching story To create a variety of titles using different effects on a page To know how sound can be used to enhance presentations To know how to add hyperlinks and animations to multiple slides	<u>Word Processing Skills</u> To know how to launch information processing software, open and save files into folders and organise folders To know various features for formatting text using word processing software including changing font, aligning, bullet points, split, create, organise, file, close, exit, search, print, menu buttons, align text, left, right, central, justified, indent, ruler, wrap, text, square I can select and use different font and background colours using tools in word I can select suitable font and background colours depending on the context	<u>Excel</u> To know how to enter, edit and format data in spreadsheets. To know basic formulae and use these to manipulate and interpret data To know how to use spreadsheets to solve a range of problems To know how to use spreadsheets to create a budget I can sort, organise and edit data by different criteria.
Vocabulary	bold, italic, underline, select, case, cut, copy, paste, monitor, folder, open, mouse, minimise, trackpad, launch, keyboard, move, headphones, switch, save, window, exit, size,	Trackpad: click, button, pressure, mouse: double click, drag, Monitor, display, keyboard, system unit, headphones, switch, 'ctrl' + 'alt' + 'del' + 'enter', launch, application, window, minimise, restore, size, move, screen, close, exit. save, folder, open, file. Keyboard, type, key, shift, space bar, enter, return, symbol, save, folder, backspace, delete, arrow key, undo, redo, select, format, bold, italics, underline, font, size, colour.	powerpoint, presentation, New slide, slide layout, text box, format, font, colour, background, line. Image, picture, photo, format, insert, copy, folder, network, aspect ratio. Slide, Slide Sorter View, drag, present. Search, print, options, date, print options, black and white, colour, selected pages, double sided. Powerpoint (or other presentation software/ application), Slide, Slide template, Theme, Slide transition, Slide layout. Reorder, Action setting, Button, Animation/ Animated objects, Shape, Hyperlink / link, Insert, Embed, Audio, Video, Branching Story, File format, Word Art (or other software/ applications), Organising, Line, Line colour, Fill colour, Order of objects, Forward / backward, Front/ Back, Hidden, Group/ ungroup, Length, Direction, Size, Background, Tight, Square, Wrap Text, Aspect Ratio, Outline	Screenshot, snipping tool, shortcut, insert, <cntrl> keyboard shortcuts, align, bullet points, numbering, text box, format, create, organise, file, close, exit, search, print, menu buttons, align text, left, right, central, justified, indent, ruler, wrap, text, square Internet, Esafety, acceptable, responsible, report, PowerPoint, Presentation, Slide, template, audience, purpose, design, impact, serif, non-serif, font, formal, informal, bullet points Vector, bitmap, image, complex, simple, formal, informal Hyperlink, animation, assessment, impact, audience, purpose,	Spreadsheet, cell, row, column, formula/ formulas, calculate, format, average, percent, edit, insert, ascending, descending. Headings, table of contents,
Disciplinary Knowledge		<u>Computer skills</u> To learn how to switch on/off a laptop/lpad safely. To know how to use a mouse/trackpad on a laptop or to use gestures on an lpad. To know how to manipulate objects (by clicking on them and dragging them). To know how to save, load and locate files	<u>PowerPoint skills</u> To know the audience, purpose and impact of a PowerPoint presentation. To know how best to format a slide for the greatest impact To know the appropriateness of colour on a slide linked to the context/formality To know why certain images are more appropriate and suitable than others To know the difference between vector and bitmap images To know how sound can be used to enhance presentations To know how to add hyperlinks and animations to multiple slides To know how to use technology purposefully to create, organise, store, manipulate and retrieve digital content.	<u>Word processing skills</u> To know the audience, purpose and impact of a presentation. To know how best to format a presentation for the greatest impact To know the difference between fonts and the impact of these To know the appropriateness of colour linked to the context/formality To know why certain images are more appropriate and suitable than others	<u>Excel</u> I can use a spreadsheet to solve problems. To know how to select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. I can interpret data and make comparisons.

Computer Science. Programming

	KS1	Y3	Y4	Y5	Y6
Substantive Knowledge	To know what a simple algorithm is. To know that things can be manipulated using basic directions (left, right, forward, back, up, down) To create an algorithm to make an object move in space	Pupils will learn that code can be made to execute in a particular order To create a program that uses sequences for two different objects moving on the screen To create a program that uses sequences for two different objects moving on the screen To write code that uses a timer to create a sequence of traffic lights turning on and off To program a game in which an object reacts to particular conditions	To understand how a variable can be used to keep track of the score in a game. To use variables to keep track of the score in a game that uses conditional events. To use a variable to keep track of the score in a game that uses conditional events. To learn how to use multiple different variables and to set the value of a variable. To use a variable to keep track of the score in a game where the score increases, decreases or resets when different conditions are met. To use a loop to do something repeatedly in a program.	To set values in code to control the speed of an object. To use object properties (speed, heading and angle) to create a driving simulation To create a sailing game where a boat's position on the screen is controlled by making changes to its co-ordinates. To write code including if statements to make an object rotate, and combine this with conditional events to make a game. To set friction to affect the speed and movement of a car in a driving simulation. To be able to generate and display random numbers, and use these within the program for a car racing game.	To write code that prompts the user to input the value of a variable, and use this to create an interactive block chart. To use my knowledge of variables to make a balloon pop game that gets harder as users score more points. To write the code for a shopping till using variables to store and calculate values. To create a stopwatch with stop, start, and reset buttons, and both digital and analogue displays.
Vocabulary	Program, computer, predict, algorithm Device, instruction, input/ output, logic, debug, code, object, action	sequence, run, before, after, between, execute, algorithm, action Keys, Wall, Condition, If/then, Background, Conditional function, Swipe, collide	Decompose, variables, Statement, Value score, event, condition, change, set Repetition, loop, Reset, , Reset Infinite loop, action, efficient, if statements , nesting, every statements, always statement , timer, loop	Speed, generate, Acceleration, Deceleration, Assign, Iteration/ iteratively, sequence, Negative numbers, X axis / y axis, co-ordinate, condition, true, Assign, Random, Intervals, if, if...else statements, true, assign, value, generate, angle, mouse move, variable, degrees, event, condition, match friction, angle, heading, direction, speed, condition, simulation, overlap	input, variable, property, background, grid, pixel, block, convert, value, alignment, unit, scale condition, event, random, loop, if statement , discount, calculate, total, percentage Boolean, analogue, digital, random, numbers, property, parameter, objects, variable, location, events, values, friction, direction, angle, heading, x-co-ordinate, y-co-ordinate
Disciplinary Knowledge		Knows that users can develop their own programs, and can demonstrate this by creating a simple program in an environment that does not rely on text. (AL) Executes, checks and changes programs. (AL) Understands that programs execute by following precise instructions. (AL) Understands what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. (AL) Detects and corrects errors, i.e. debugging in algorithms. (AL)	Knows that users can develop their own programs, and can demonstrate this by creating a simple program in an environment that does not rely on text. (AL) Executes, checks and changes programs. (AL) Understands that programs execute by following precise instructions. (AL) Understands what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. (AL) Detects and corrects errors, i.e. debugging in algorithms. (AL) Designs simple algorithms using loops and selection, i.e. if statements. (AL) Declares and assigns variables. (AB)	Executes, checks and changes programs. (AL) Understands that programs execute by following precise instructions. (AL) Understands what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. (AL) Detects and corrects errors, i.e. debugging in algorithms. (AL) Designs simple algorithms using loops and selection, i.e. if statements. (AL) Designs solutions (algorithms) that use repetition and two-way selection, i.e. if, then, and else (AL) Uses diagrams to express solutions. (AB)	Executes, checks and changes programs. (AL) Understands that programs execute by following precise instructions. (AL) Understands what an algorithm is and is able to express simple linear (non-branching) algorithms symbolically. (AL) Detects and corrects errors, i.e. debugging in algorithms. (AL) Designs simple algorithms using loops and selection, i.e. if statements. (AL) Designs solutions (algorithms) that use repetition and two-way selection, i.e. if, then, and else. (AL) Uses diagrams to express solutions. (AB) Declares and assigns variables. (AB)