**National Curriculum Subject: Computing**

**Progression Map**

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| **Purpose of Study**A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. |
|  | **Aims** |
|  | **Computer Science**Understand what algorithms are and how they are implemented on digital devices using precise & unambiguous instructions.Design, write & debug programs that accomplish specific goals, including controlling or simulating physical systems, solve problems by decomposing them into smaller parts.Use logical reasoning to predict and explain how some simple algorithms work and detect and correct errors in algorithms & programsUse sequence, selection and repetition in programs; work with variables and various forms of input and output.Understand computer networks including the internet; how they can provide multiple services such as the World Wide Web.Appreciate how search results are selected and ranked. | **Information Technology**Use technology purposefully to create, organise, store, manipulate and retrieve digital content.Use search technology effectivelySelect, use and combine a variety of software on a range of digital services to design & create a range of programs, systems & content that accomplish given goals, including collecting analysing, evaluating and presenting data and information | **Digital Literacy**Recognise common uses of information technology beyond school.Use technology safely and respectfully, keeping personal information private.Recognise acceptable/unacceptable behaviourIdentify where to go for help & support when they have concernsIdentify a range of ways to report concerns about content and contact |
| **YR****30-50** |  |  | I can show an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.I can show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.I know that information can be retrieved from computers.I know how to operate simple equipment, e.g. turn on CD player and uses remote control. |
| **YR****40-60** |  | I can complete a simple program on a computer.I can use ICT hardware to interact with age-appropriate computer software. |  |
| **YR****ELG** |  | I can select and use technology for particular purposes. | I can recognise that a range of technology is used in places such as homes and schools.  |
| **1** | I can talk about existing storyboards of everyday activitiesI can recognise that many everyday devices respond to signals and instructionI can make programmable toys carry out instructionsI can tell if a program runs correctly or has an errorI can explain the steps in a simple algorithmI can follow an algorithm without a computerI can run a programI can use a program to solve a problemI know what problems are best solved by a computer program or a humanI know what an algorithm isI know what a computer program isI know that I have to press buttons to make a programmable toy workI know that if the toy doesn’t do what I want it to; it is my faultI know what to do if the toy doesn’t go where I want it to | I can explain why it can be useful to use a computerI can use a computer to create a file I can list jobs done by a computer in schoolI can create something useful on a computerI can print my workI know what a file isI know what a computer isI know some of the jobs that computer can do**Data Handling**I know that information can be presented in different forms | I can list some of the dangers of using the InternetI can explain why it is important to be safe onlineI can use a computer safelyI can follow e-safety guidelinesI know who is a responsible adultI know to tell a responsible adult if I am worried about something  |
| **2** | I can order a collection of pictures into the correct sequenceI can draw my own storyboard of everyday activitiesI can plan and give direct commands to make things happen e.g. playing robotsI can plan a linear sequence of instructionsI can explain the steps in a simple algorithmI can explain how a computer follows an algorithmI can predict how a computer program will behaveI can find a bug in a program and debug itI can spot an error in an algorithmI can explain why debugging is usefulI can compare algorithms in terms of speed and how easy they are to followI can write an algorithm on paperI can write a simple programI can break a problem down into smaller stepsI know what it means to run a programI know what a ‘bug’ isI know what it means to debug a programI know that algorithms are a linear sequence of instructionsI know that we use algorithms in our everyday life e.g. getting dressedI know how to break a problem down into smaller steps e.g. breakfast = making teas, making toast etc. | **General ICT Skills**I can open work on a computerI can edit my work on a computerI can save my work on a computer using an appropriate file nameI can organise my files on a computerI can list jobs done by a computer outside schoolI can say when it is better to use a computer and when its better not toI know it is important to give appropriate file names so that I can retrieve the work I know that editing on the computer is acceptable**Word Processing**I can navigate a word document using arrow keys and a mouseI can use the backspace button and the delete button to remove textI can use the shift button to create capital lettersI can change the font, size and colour of textI can use bold, italic and underlineI know how to use MS Word efficiently to create well formatted documents **Spreadsheet Skills****I** can create a new spreadsheet documentI can organise data in a spreadsheetI can create a bar graph from a spreadsheetI know what data isI know that a spreadsheet will show information figuratively or pictorially **Web Research Skills**I can search for something onlineI can understand the order of results returned in a searchI know that the Internet contains information on many subjects and that a search engine helps to order it**Internet Skills**I can accurately enter a website addressI can use hyperlinks to move around a websiteI can use the ‘back’ and ‘forwards’ buttons efficientlyI know what communication isI know what software isI know what searching the Internet means | I can describe what information should be kept privateI can use the Internet without giving away private informationI can send a message using a computer without upsetting anyoneI can recognise something online as bad or wrongI can recognise something online as good or helpfulI can say how my family could be safer onlineI can tell people what they can do if they see anything bad onlineI can identify computer peripherals and describe their purposeI can describe how I use IT at school and homeI know some parts of a computerI know how a computer is used at home and at schoolI know what private information isI know the difference between private and publicI know who to tell if I come across something ‘bad’ online |
| **3** | I can recognise similarities between storyboards of everyday activitiesI can give some examples of what algorithms can be used forI can explain why computer are sometimes used to control thingsI can follow a sequence of instructionsI can use a program to control a gadgetI can develop and improve programsI can tell when an algorithm has worked or notI can run a programI can debug a program to fix a problemI can explain the strengths and weaknesses of using a simulation compared to the real thingI can write my own algorithmI know what an algorithm isI know what debugging isI know what computer control meansI know what algorithms can be used forI know how to control a programmable toyI know that simulations help us to do, for example, potentially dangerous things, safely e.g. flying simulatorI know that simulations are not real | **General ICT Skills**I can explain what the Internet can be used forI can use software to create work for a given purposeI can create my own piece of workI can resize windowsI can take screen shotsI can cut and paste effectivelyI know computer shortcuts to format work**Word Processing**I can use a spellcheckerI can use undo and redoI can align text left, right, centre and justifyI can insert Clipart or Wordart and manipulate itI can save work as a pdf fileI know how to ‘layout’ processed work to the best effectI know how to edit my work effectively**Web Research Skills**I can search for information on the InternetI can open multiple web pages without leaving the searchI can copy text from an internet page to an office documentI can copy images from an internet pageI know the Internet contains text and imagesI know not all Internet content is correctI know that I cannot use all Internet content (copyright) | I can explain what respectful meansI can explain what responsible meansI can explain what safe meansI can explain how to report unacceptable uses of technologyI can create something that tells people how to stay safeI know some important people and events in the history of computingI know how to ‘behave’ onlineI know who to tell about problems online |
|  **4** | I can explain why computer are sometimes used to simulate thingsI can present a simple algorithm diagrammaticallyI can explain how an algorithm worksI can spot when a program goes wrongI can fix an error in an algorithmI can explain why programs need to be tested and debuggedI can repeat something a certain number of timesI know that programs sometimes go wrong I know why it is imperative to test a programI know how to create regular shapes using the ‘repeat’ command | **General ICT Skills**I can explain the difference between data and informationI can choose which program to use to make a piece of workI can explain how the Internet lets people communicateI can use the Internet to communicate with other peopleI know how useful the Internet is to communicate with other peopleI know the most suitable program to use for different tasks e.g. MS Publisher for a booklet**Presentation Skills**I can create a new presentation documentI can save and retrieve a presentationI can insert text into a presentation slideI can insert photos/clipart into a slideI can arrange components of a pageI can add new slides to a presentationI can present my work to others using a computer/deviceI can add animations to a slideI know some of the skills needed to present my work to others e.g. pace, not reading the information, look at audience etcI know some of the skills required to ‘layout’ my presentation effectively and for a given audience e.g. background, font, balance of text and imagesI know that I should give my presentation a unique name when saving**Web Research Skills**I can use Google synonym searchI can use Google dictionary definitionI can find physical places with Google maps and Google StreetviewI know when web research is the appropriate tool to useI know that not all information on the Internet is reliableI know how to use Google Maps and Streetview to get directions **Internet Skills**I can add a page to my favouritesI know that using ‘favourites’ helps me to retrieve websites quickly**eSafety Skills**I can be responsible for keeping passwords safeI can understand the risks of sending messages to other people onlineI know that passwords should never be written downI know never to tell someone a password | I can explain how and why the use of computers varies between home and schoolI can explain the difference between acceptable and unacceptable behaviour when using technologyI can explain why people need to be safe onlineI can explain why people should be responsible onlineI can understand why people should be respectful onlineI can create something that tells people how to use technology responsiblyI can create something that tells people how to use technology respectfullyI know the dangers of communicating with people over the InternetI know how to report unacceptable Internet useI know how to use ICT to inform people of how to use the Internet safely.**Email Skills**I can send an emailI can reply to an emailI can forward an emailI can add an attachment to an emailI can email a linkI know how an email is sent over the InternetI know email etiquetteI know the importance of using an effective title on my email |
| **5** | I can explain the difference between input and outputI can write my own programsI can ‘think through’ an algorithm and predict an outputI can decompose a problem into its sub problems and use notation to represent it e.g. lighthouse mimic in FlowolI can analyse and represent symbolically a sequence of eventsI can create algorithms using selection and repetitionI can recognise similarities between simple problems and the commonality in algorithms used to solve themI know the difference between a physical system and a simulation I know what a network isI know the importance of planning an algorithm and how to predict its outcomeI know what symbols to use when creating a pictorial algorithmI know what selection and repetition meansI know that some algorithms maybe used in many programs e.g. algorithm for heat sensor | **General ICT Skills**I can explain how the Internet lets people collaborateI can use a computer to collect dataI can use a computer to analyse data to show something usefulI know computers are more efficient at collating data in comparison to paper based systemI know that collaborating over the Internet is an efficient way of communicating over distances**Presentation Skills**I can change the background colour of a slideI can apply transitions between slides in a slideshowI know how to improve my presentation by using transition**Web Research Skills**I can use Google to fill in the blanks in a searchI can use Google to exclude words from a searchI can use more advanced search options in GoogleI can ignore information on the Internet that isn’t relevantI can work out which search result is the most relevantI can create advice for others on how to search effectively on line.I know the importance of narrowing a search on GoogleI know that some of the information posted online may not be relevantI know that the suffix on a web address will indicate its origin e.g. .gov, .schI know that looking at the suffix on a website will give some indication of reliability.I know how to advise people on searching the Internet effectively | I can describe some important people and events in the history of computingI can classify devices in terms of input and outputI can use technology safelyI can use technology in a responsible wayI can use technology in a respectful wayI can report unacceptable uses of technologyI know that computers are used in lots of everyday devicesI know that special devices and services are required to connect to the internetI know how to use the Internet and email in a responsible mannerI know how and who to report any unacceptable use of technology to. |
| **6** | I can write a program that controls a gadgetI can use a variable to keep track of something (e.g. counting)I can make a decision based on a selection instructionI can compare two different algorithms that do the same thing in different waysI can reflect critically on my programs in order to make improvements in subsequent programming tasksI can make a simulation of a physical systemI know what a variable isI know how to use algorithms to create complex programsI know how to use algorithms from one program in another program e.g. traffic light in FlowolI know how a simulation can help when working out ‘bugs’ in a program | **General ICT Skills**I can explain why some search results appear higher than others on a search engineI can use the Internet to collaborate with other peopleI can describe what can go wrong when using the Internet to communicate or collaborateI can explain the advantages and disadvantages of using the Internet to communicateI know how to use the Internet as a collaboration toolI know how search engines workI know how to ‘search’ effectively online**Spreadsheet Skills**I can create a line graph from a spreadsheetI can use the ‘formula’ button to create totalsI can use the ‘formula button to add, multiply and find averages.I can format information in a spreadsheetI know how useful a spreadsheet is when working out large columns of figuresI know some of the business uses of a spreadsheetI know the value and reason for creating formula in a spreadsheetI know how to format a spreadsheet so it can be read and used effectively**Presentation Skills**I can add sound to a presentationI can add a video to a presentationI can change the running order and slide timingsI can talk alongside a presentationI can print a presentation as a handoutI know how to make my presentation relevant to an audienceI know how to make notes to help me talk alongside my presentationI know how to import sound and video into my presentation from other sources**Web Research Skills**I can name my sources I can use Google documentsI can recognise bias and question website authorityI know about plagiarism I know how to reference my sources in a bibliographyI know how to use online storage to help in collaboration with others**eSafety Skills**I can understand about the nature of cyber-bullying and cyber-friendshipI know how any of my data is being used and/or storedI know what collaboration is | I can identify internal and external components within a computer system and describe their purposeI can identify benefits and limitations of using IT both inside and outside schoolI can make links between people and events in the history of computingI can spot acceptable and unacceptable behaviour when using technologyI can evaluate how safe someone’s behaviour is when using technologyI can evaluate how responsible someone’s behaviour is when using technologyI know the similarities and differences between computerised everyday devicesI know how computers connect to the internetI know the components of a desktop computerI know the main pioneers and innovators of computing historyI know how to report unacceptable behaviour online to outside agencies e.g. childline and CEOPI know how to keep my personal data safeI know how to use social media safelyI know where the privacy settings are on social media |