
COMPUTING

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"Everyone should know how to programme a computer because it teaches you how to think. "– Steve Jobs (Apple Inc)

At Charlton we believe, a quality computing education is important to encourage children to think, be innovative, be creative and to understand change in the world. The fundamental skill of computing is computer science, where pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge through programming. Using this understanding, pupils are equipped to use information technology effectively. It is important, for us as a school, to ensure children become digitally literate and to become patient with the process of coding and de-coding bugs in their algorithm.
We want the children to succeed to use, express themselves, develop and share their ideas effectively through information technology. Children are aware of the benefits and disadvantages of using technology and aware of what to do to keep themselves and others safe online. Keeping children safe online is very important to us as a school, we have adopted the phrase 'Turn it off (the screen) and tell (a grown up)' to remind the children of a strategy to use if they are faced with an online issue or emergency online that they may face. We are fully supportive of the UKSIC 'Safer Internet Day' collaborations, which enables educators to discuss and encourage children to think about the positives and negatives of being and online and share up-to-date methods to keep themselves safe, whilst they are using the internet. Our Purple Mash curriculum also encourages children to listen and to respond to the advice given to them during discussions about online safety. We also would like children to know the consequences for some actions, whilst using the internet, referring to their rights to being safe online (UNICEF), but to also allow the children to demonstrate a level of forgiveness and deeper understanding to some online safety issues they may face and resolve We also have designated 'Digital Leaders' champions who help to support safer internet use as well as collect relevant feedback from peers. The children have access to an AUP (Acceptable Use Policy) at the beginning of the year to ensure they know the expectations of using the internet and devices at school.

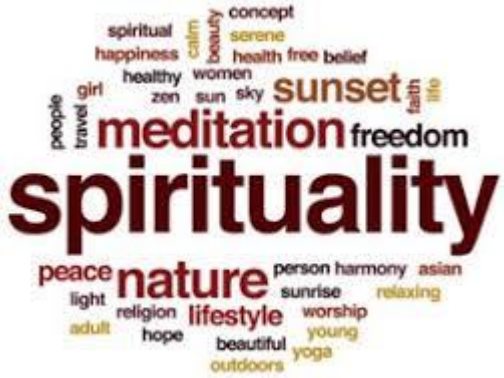
The major focus for teaching and learning throughout computing sessions is teaching specific skills with a carefully planned curriculum that follows the National Curriculum. It has the following strands running throughout each year group. We believe that the Bruner method (spiral) helps children to build, adapt and renew the foundations of computing each year.

In computing sessions, we ensure children learn specific skills such as:

- Computer science (programming)
- Computing and ICT (Information communication and technology)
- Digital literacy (e safety)

Computing has deep links to maths, English, science, music, MFL and art. It provides insight to how technology is used around us and to be used instead of conventional methods such as using 'Times Tables Rockstars' to enhance the learning of timetables in maths session.
We hope with all these provisions in place we will equip the children with the vital skills they will need to use computer programs and equipment.
The variety of independent, paired, group and whole class, digital and unplugged non-digital activities used in school ensure that lessons are engaging for all pupils. Each lesson will recap previous knowledge and key vocabulary will be used in each lesson to expand each child's zone of proximal development. We use knowledge organisers to support all children in building knowledge and enables children to recall key facts and vocabulary they will need to be successful.
In EYFS, although it is not mentioned as an ELG, we offer basic computing skills such as creating art on a computer and programming a Beebot as well as learning about how to keep themselves safe online.
At Charlton all learners are supported and we set high expectations for children to reach their full potential by a suitable challenge and adaptations if they are necessary.
Children have access to the class TV, laptops, tablets, physical computing kits and Beebots and are used in line of what is expected for the National Curriculum.

Mirrors



Children are able to reflect on their own beliefs faiths, experiences, feelings and values.
Enjoy learning about their own journey
Understand their own identity
Reflect on their own experiences
To think and reflect in awe about the developments in technology and the possibilities for the future.
Respect the law for using the internet and what is right and what is wrong.
Investigate own morals and issues towards technology.
Learn about new technology and consider the positives and negatives of this.
Linked to their own morals and learning that their behaviour has effects online and offline.
Express themselves creatively using technology.

Windows

Opportunities to look at and appreciate cultural influences outside of their environment.
Opportunities to work with each other on a device.
Opportunities to work alone.
Explore and make links to how technology changes lives.
Raise awareness of the legal aspects of using technology
Treating themselves and others
Raising awareness of the legal aspects of using technology including copyright legislation, data protection and age-restrictions.
· Instilling the importance of treating others online with respect and ensuring pupils understand the negative effects that unkind online behaviour can have on others.

· Offering opportunities for pupils to discuss ethical issues surrounding technology, such as data tracking, online advertising and influencers and the proliferation of fake news and disinformation.

Doors

Participate in cultural opportunities by being sympathetic within the community.
Understand, accept, respect and celebrate diversity.
· Encouraging them to reflect on how developments in technology have led to changes in every-day life.
· Allowing them to engage with cultural opportunities that may otherwise be unavailable to them from the confines of the classroom

Cognitive Load

Adapted from: 'Cognitive Load Theory: Research that teachers really need to understand'

We believe Cognitive Load Theory aim is to develop instructional techniques that fit within the characteristics of working memory in order to maximise learning.

Based on two principles:

1. There is a limit to how much **new** information the brain can hold. (**Working memory**—processing new information results in 'cognitive load' which can affect outcomes.)

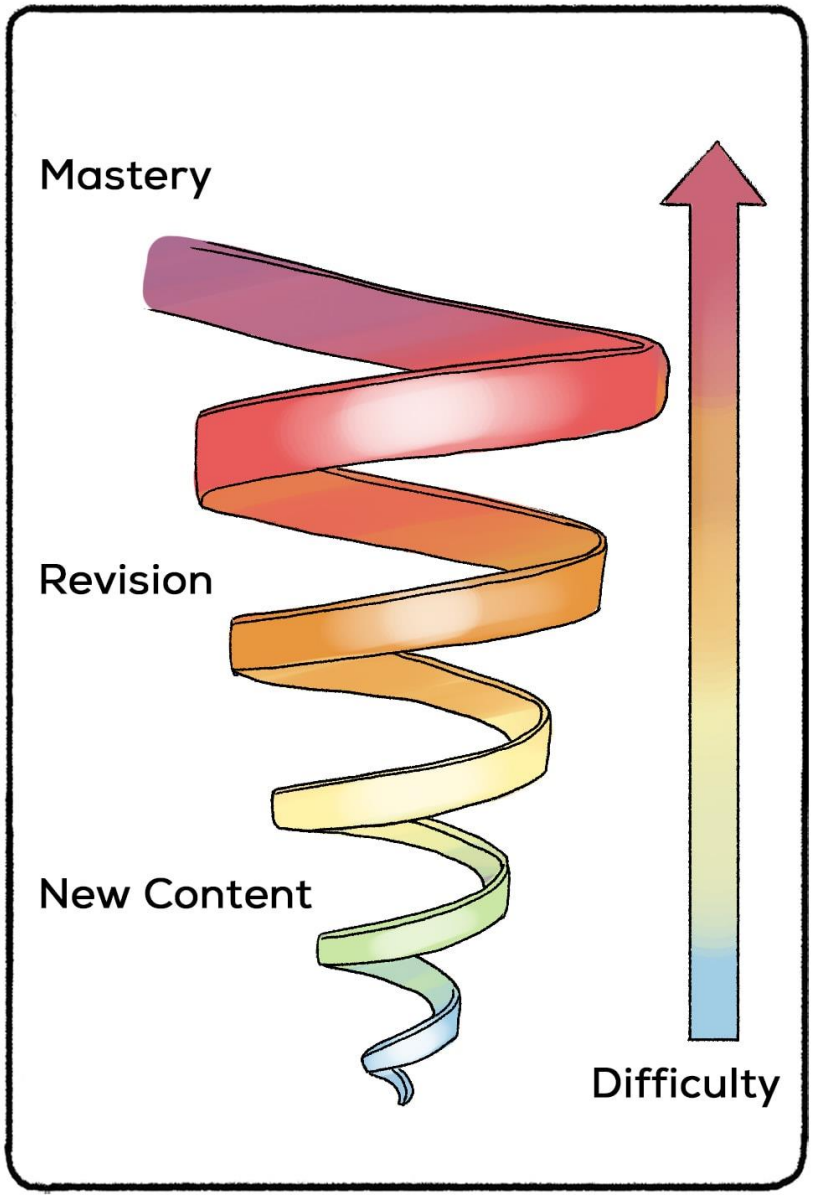
2. There is no know limit to how much **stored** information that can be processed at one time. (**Long term memory**—stores information as schemas.)

Explicit instruction involves teachers clearly showing children what to do, rather than have them construct or discover it for themselves. To lessen cognitive load on working memory. This can be used for new information and learning. Independent learning also needs to be incorporated but with cognitive load managed through guidance, prior information, scaffolds and assistance if needed.

Long term memory relies on the formation of schemas where information can be processed automatically with minimal conscious effort. Automaticity happens after extensive practice. Thus reducing working memory load. If working memory is overloaded, there is greater risk that the content will not be understood, be confused and not stored into the long term memory. Ultimately, learning will be slowed down. Automation of schemas reduces the burden on working memory because when information can be accessed automatically, the working memory is freed up to process new information.

There are 3 types of Cognitive load—Intrinsic, Extraneous and Germane

Intrinsic —difficulty of subject matter being learnt, it depends on the complexity of the material and the prior learning—i.e. different people will have different levels of cognitive load depending on their experiences and knowledge
Extraneous — how the subject matter is taught—we need to minimise extraneous cognitive load to free up working memory.
Germane—the load imposed on the working memory by the process of learning i.e. by transferring information into long-term memory through schema construction.



At Charlton C of E primary school, we use the Bruner method to teach our children computing. This which stems from Vygotskys notion of learning which requires adult intervention, allowing children to move out of their zone of proximal development. Children continuously revisit and extend their learning of computing throughout their time at school.

We believe this helps dimmish gaps in their learning as well as embed their learning for long term memory.

Ofsted– Research and Review Series: *Computing—Computing is rich in complex knowledge. This can make it interesting for pupils to learn. However, it also requires teachers to consider carefully how to teach the subject content so that all pupils learn this important knowledge. Our previous review of research highlighted the need to manage the cognitive load placed on pupils' short-term memory* (footnote 112)

Computing education is important for pupils to make sense of and to contribute positively to our technologically diverse world. This review has highlighted approaches to constructing, sequencing and teaching a coherent computing curriculum rich in computer science, information technology and digital literacy to achieve this aim and the aims set out in the national curriculum. Central to this is the importance of identifying and ordering the underlying knowledge that pupils require to make sense of complex ideas or engage in composite tasks or activities within the subject. Computing is rich in these ideas and tasks, so this is essential. To ensure that pupils can make progress through the curriculum, it is important that teachers check this knowledge so that pupils are ready for what comes next.

Computing lessons can place great demands on pupils' working memory. Teaching must work to manage this demand and ensure that pupils can think about the intended subject content. Due to the hierarchical nature of many aspects of computing subject knowledge, it is important that pupils' prior knowledge is taken into account when planning teaching and in the selection of teaching activities.

EYFS	· Computing may not be part of the EYFS Statutory Framework, but there is much that goes on in the EYFS that provides a foundation for computational thinking – the golden thread that runs through Computing in the National Curriculum. · Practitioners should support children in experiencing a range of technologies – using cameras, photocopiers, CD players, tape recorders and programmable toys, in addition to computers. · There are close connections between the Characteristics of Effective Learning and the approach to computational thinking. Playing and exploring links closely with tinkering and collaborating, as well as abstraction. Active learning is tied to debugging and persevering. Creating and thinking critically connects with creating, as well as back to the concepts of logical reasoning and algorithms.
KS1	Pupils should be taught to: · 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.

KS2	Pupils should be taught to: · design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts · use sequence, selection, and repetition in programs; work with variables and various forms of input and output · use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs · 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 · use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content · 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 · use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Whole school enrichment opportunities

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Digital Leader	Digital Leader Beat box club app	Digital Leader Online Safety Day Feb 2024	Digital Leader	Digital Leader	Digital Leader

Parental involvement

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Dojo Timetables Rockstars Monthly online safety newsletter	Dojo Timetables Rockstars Monthly online safety newsletter	Dojo Timetables Rockstars Safer Internet Day meet for parents Monthly online safety newsletter	Dojo Timetables Rockstars Monthly online safety newsletter	Dojo Timetables Rockstars Monthly online safety newsletter	Dojo Timetables Rockstars Monthly online safety newsletter

Charlton Computing Curriculum Map (Purple Mash) 2023-24

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
EYFS	Identify everyday technology: links to technology at home Make marks on a digital device to communicate their ideas -- control a programmable toy - talk about how everyday technology is controlled SMART RULES: to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	To know that ICT may be used to communicate information electronically. To know that digital devices can present information in a variety of ways - to use Beebots. To navigate their way around an iPad and operate several apps confidently To understand the basic functions of an iPad (home button, lock button and volume buttons SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	Safer Internet day Feb 8th Feb. Interact with multimedia software: children to use an art software on Purple Mash. SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	Identify how technology is used to share information (Google Maps) . Purple Mash activities. SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	To know the difference between computer based activities (painting changes can easily be made, text can be deleted etc) use Active Inspire to represent an animal of their choice Purple Mash SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	To know that information may be stored on a digital device and on Purple Mash - to access their trays. SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true
Year 1	Unit 1.1 Online safety and Exploring Purple Mash 4 weeks Program: various Unit 1.2 Grouping and sorting 2 weeks Programs: 2 DIY	Unit 3.3 Pictograms Weeks 3 Program: 2 count Unit 1.4 Lego builders 3 Weeks Programs: 2DIY	Unit 1.5 Maze explorers 3 Weeks Program: 2Go	Unit 1.6 Animated Story books 5 Weeks Program: 2Create a story	Unit 1.7 Coding Weeks 6 Program: 2code	Unit 1.8 Spreadsheet 3 Weeks Program: 2calculate Unit 1.9 Technology outside of school 2 Weeks Programs: Various

Charlton Computing Curriculum Map (Purple Mash) 2023-24

Year 2	Unit 2.1 Coding 5 Weeks Program: 2Code	Unit 2.2 Online safety 3 Weeks Program: various Unit 2.3 Spreadsheets 4 Weeks in total (1 week can carry on as starter for Term 3) Program:2 Calculate	1 Week for Unit 2.3 Spreadsheets Objectives Unit 2.4 Questioning 5 Weeks Program: 2Question, 2Investigate	Unit 2.5 Effective searching 3 Weeks Program: Browser	Unit 2.6 Creating pictures 5 Weeks Program: 2 Paint a picture Unit 2.7 Making music Weeks meant to be 3 but music for Charanga too 2 Weeks in total	Unit 2.8 Presenting ideas 4 Weeks Programs -various
Year 3	Unit 3.1 Coding 6 Weeks Program: 2code	Unit 3.2 Online safety 3 Weeks Programs: various Unit 3.3 Spreadsheets 3 Weeks Programs: 2calculate	Unit 3.4 Touch typing 4 weeks Program: 2type	Unit 3.5 Email 6 Weeks Programs: 2email, 2 connect, 2DIY	Unit 3.6 Branching databases 4 Weeks Program: 2question	Unit 3.7 Simulations 3 Weeks Programs: 2simulate, 2publish Unit 3.8 Graphing 3 Weeks Programs: 2Graph
Year 4	Unit 4.1 Coding 6 weeks Main programs: 2code	Unit 4.2 Online safety 4 weeks Program: various	Unit 4.3 Spreadsheets 6 Weeks Programs: 2calculate	Unit 4.4 Writing for different audiences Programs: 2email, 2 connect, 2DIY Introduce weeks 1 on Unit 4.5	Unit 4.5 Logo ¾ weeks Program: Logo Unit 4.6 Animation 3 weeks Program: 2animate	Unit 4.7 Effective search 3 weeks Programs: Browser Unit 4.8 Hardware investigators 2 weeks

Charlton Computing Curriculum Map (Purple Mash) 2023-24

				Logo ¼ weeks		
Year 5	Unit 5.1 Coding 6 weeks Main program: 2code	Unit 5.2 Online safety 3 weeks Program: various	Unit 5.3 Spreadsheets 6 weeks Program: 2calculate	Unit 5.4 Data bases 4 weeks Programs: 2question, 2 investigate	Unit 5.5 Game creator 5 weeks Program: 2DIY 3D Unit 5.6 3 D modelling ¼ weeks Programs: 2design and make	Finish unit 5.6 3D modelling ¾ weeks Programs 2 design and make Unit 5.7 Concept maps 4 weeks Programs 2 connect
Year 6	Unit 6.1 Coding 6 weeks Main program: 2code	Unit 6.2 online safety 2 weeks ½ covered this term Programs various Unit 6.3 Spreadsheets 5 weeks 4/5 Program: 2calculate	Unit 6.2 online safety 2 weeks ½ covered this term Programs various Unit 6.4 Blogging 5 weeks Program: 2blog	Unit 6.5 Text adventures 5 weeks Programs 3 code, 2 connect	Unit 6.6 Networks 3 weeks	Unit 6.7 Quizzing 6 weeks Programs:2quiz, 2DIY, Text Toolkit, 2 investigate

Knowledge Organiser

Computing

Year 3 Term 1

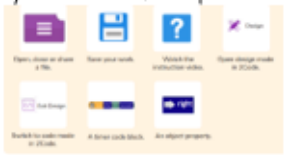
What I should already know:

- To understand what an algorithm is.
- To create a computer program using an algorithm.
- To create a program using a given design.
- To understand the collision detection event.
- To understand that algorithms follow a sequence.
- To design an algorithm that follows a timed sequence.
- To understand that different objects have different properties.
- To understand what different events do in code.
- To understand the function of buttons in a program.
- To understand and debug simple programs.

What I should know by the end of this topic:

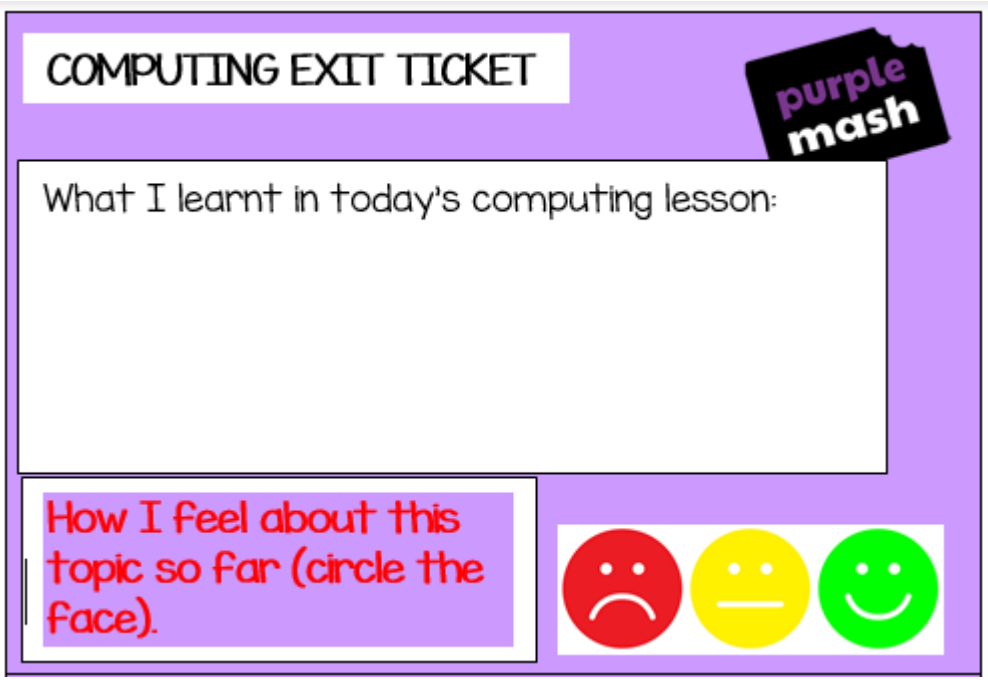
- To understand what a flowchart is and how flowcharts are used in computer programming.
- To understand that there are different types of timers and select the right type for purpose.
- To understand how to use the repeat command.
- To understand the importance of nesting.
- To design and create an interactive scene.

Key skills I will develop are:



This is an example of a Knowledge organiser we use as part of our computing curriculum. This is a Year 3 example. Year groups 1-6 will have these at the beginning of their learning each term.

Assessment for computing



- We use exit tickets at the end of each lesson as we feel that this allows children to reflect upon their learning, reinforce their learning from the session and allows teachers to respond and bridge gaps of those learners that need additional support.

- Effective formative assessment in lessons ensures that any misconceptions or challenges are addressed in the moment. Purple Mash allows teachers to set challenges too for those children who are working at greater depth.

Computing Knowledge and vocabulary

Year R

Identify everyday technology: links to technology at home Make marks on a digital device to communicate their ideas -- control a programmable toy - talk about how everyday technology is controlled. SMART RULES: to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	To know that ICT may be used to communicate information electronically. To know that digital devices can present information in a variety of ways - to use Beebots. To navigate their way around an iPad and operate several apps confidently To understand the basic functions of an iPad (home button, lock button and volume buttons SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	Safer Internet Day Feb 8th Feb. Interact with multimedia software: children to use an art software on Purple Mash. SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	Identify how technology is used to share information (Google Maps) . Purple Mash activities. SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	To know the difference between computer based activities (painting changes can easily be made, text can be deleted etc): use Active Inspire to represent an animal of their choice Purple Mash SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	To know that information may be stored on a digital device and on Purple Mash – to access their trays. SMART RULES to tell an adult if they see something on a digital device that upsets them to know not to give out any information about themselves to know that not everything they see on the internet is true	Vocabulary Computer Ipad Tablet Online Internet Mouse Keyboard Safe Beebot Program Robot Rules Left Right Device Button Icon App Turn it off and tell

Year 1

Substantial	Disciplinary	Vocabulary
Unit 1.1 – Online Safety • Knows how to log in safely. • Knows how to navigate to a document area where saved work by child can be found. • Knows how to use search to locate applications or resources on a platform such as Purple Mash. • Knows how to enhance work by adding multimodal items such as text and images. • Knows how to open, save and print work. • Knows the importance of logging out of an account.	• To login safely children must know their username and password.. • To start to introduce to the children the idea of 'ownership' of their creative work. • Children know where to save and how to save using the save icon and keyboard to enter the document name. • To know how to find saved work in the Online Work area and find teacher comments by pressing 'open'. • To know how to search Purple Mash to find resources by using the magnify glass icon. • To become familiar with the types of resources available in the Topics section by browsing.. • To become more familiar with the icons used in the resources in the Topic section. • To start to add pictures and text to work and select by climbing on the picture.. • To explore the Tools section of Purple Mash and to learn about the common icons used in Purple Mash for Save, Print, Open, New. • To explore the Games section on Purple Mash. • To understand the importance of logging out when they have finished as this is an online safety issue as it can be hacked..	• .**Alert:** A system that lets you know if you have something to look at • **Avatar:** A digital picture to represent someone. • **Button:** An area where you click to make something happen. • **Device:** A piece of electrical equipment made for a purpose. • **File Name:** The name given to an online piece of work. • **Filter:** A way of removing information you are not interested in. • **Home Screen:** The home screen of a website is like the front page and contents page of a book. • **Icon:** An image on a web page that you can click on to navigate to somewhere. • **Login:** Using a username and password to access a system. • **Log out:** Leaving a computer system. • **Menu:** A button which gives the user different options. • **My Work Area:** The place on Purple Mash where your work is stored. Only you and your teachers can access this. • **Notification:** A message telling you about something. • **Password:** A series of letters, numbers and special characters that is entered after the username to access an online site. In Purple Mash, this can also be a series of pictures. • **Private:** Keeping information restricted from other people. • **Purple Mash Tools:** A selection of programs which help you carry out different tasks. • **Saving:** Store your work as you create something so it can be accessed later. • **Search:** A way of finding specific resources you want to look at. • **Shared Folder:** An area to save your work that everyone in the class can use. • **Textbox:** A box in which to add words. • **Think About Box:** Information in a writing template which give you ideas on what to write. • **Topic Area:** A place on Purple Mash where you find activities all about something you are learning about. • **Tool bar:** A strip of icons that can be clicked to perform different functions. • **Typing:** The action of writing something on a computer. • **Writing Template:** A guide which a writer follows when doing some writing.

Unit 1.2 – Grouping & Sorting **Programme 2DiIY** • Knows how to sort items using a range of criteria. • Knows how to use software for grouping items such as tools within Purple Mash.	• To sort items using a range of criteria, knowing there can be varieties of ways to sort such as colour, size and shape. • To sort items on the computer using the 'Grouping' activities in Purple Mash	• **Activities:** Tasks you do and complete. • **Criteria:** A way in which something is judged. • **Describe**: To give a detailed account of something. • **Equal**: When two amounts are the same. • **Groups**: Objects arranged and put together because they have features in common. • **Less than**: When an amount is smaller than another amount. • **More than**: When an amount is bigger than another amount. • **Sort**: Put things together by features they have in common.
Unit 1.3 - Pictograms **Program 2Count** • Knows that data can be represented in a picture format e.g. pictogram. • Knows how to contribute to a class pictogram. • Knows how to contribute to a class pictogram. • Knows how to use a software such as 2Count to record results of an experiment into a pictogram format.	• To understand that data can be represented in picture format to show an increase/decrease in number. • To contribute to a class pictogram and calculate together by counting how many pictures are represented in each part of the chart. • To use a pictogram to record the results of an experiment and read their calculations- understanding the principles of looking at the axis for the number.	• **Collect Data:** Gathering facts and information. • **Compare:** Looking at what is the same and what is different. • **Data:** A collection of information, used to help answer questions. • **Pictogram:** A diagram that uses pictures to represent data. • **Record Results:** Writing down what you have found out. • **Title:** The name given to a piece of work. • **Totals:** The whole number or amount of something. • **Visual:** Using your eyes to see something.

Unit 1.4 – Lego Builders **Program 2DIY** • Knows how to compare the effects of adhering strictly to instructions when completing tasks without complete instructions. • Knows how to follow and create simple instructions on the computer. • Knows that the order of instructions affects the end result for a given instructional task.	• To emphasise the importance of following instructions such as right, left, forwards and backwards. And which direction that goes in (do this physically with their bodies). • To understand when instructions do not go the right way. (linked to Beebots from Year R). • Know that each command represents a movement (orally). • To follow and create simple instructions on the computer. • To consider how the order of instructions affects the result such as making a sandwich – children to understand a basic routine in order such as bedtime routine/making a sandwich.	• **Algorithm:** a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Code:** Instructions that a programmer enters into a computer that cause the computer to perform a certain way. • **Computer:** An electronic device for storing and processing data. • **Debugging:** To find and remove errors from computer hardware or software. • **Instructions**: detailed information about how something should be done or operated. • **Machine:** A moving mechanical device made to do a task, making work easier for people. • **Program:** An algorithm that has been coded into something that can be run by a machine, e.g., a computer or a robot. • **Recipe:** A set of instructions which describes how to prepare a dish of food. • **Sequence:** Putting things in an order which follows on from one thing to the next.
Unit 1.5 – Maze Explorers Program: 2Go • Knows the functionality of the direction keys in 2GO. • Knows how to create and debug a set of simple instructions (algorithm). • Knows how to use the additional direction keys within 2Go as part of an algorithm. • Knows how to change and extend the algorithm list in 2Go.	• To understand the functionality of the basic direction keys in Challenges using arrow keys or letters to represent forwards, backwards, left and right F,B,L,R • To be able to use the direction keys to complete the challenges successfully. And understand how and what direction it means (using their bodies) • To understand the functionality of the basic direction keys in Challenges 3 and • To understand what 'debug' means • To make a series of instructions (algorithm). • Following the instructions physically and find/highlight the problem.	• **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Challenge:** A task to be completed. • **Command:** An action such as left command. • **Delete:** Removes something such as an instruction. • **Direction:** The path that something travels. For example, a robot moving forwards, backwards or diagonal. • **Instruction**: Detailed information about how something should be done or operated. • **Left and Right:** A position which relates to something. For example, make the fish move left of the screen. • **Route:** A path an object or thing takes to get somewhere. • **Undo:** If we make a mistake, we can press the undo button. • **Unit:** A unit such as make the turtle move 2 units (squares).

	• To use the additional direction keys as part of their algorithm to replace the 'bug'. • To understand how to change and extend the algorithm list after debugging. • To create a longer algorithm for the activity. • To set a debug challenge for each other to find their bug. • To find the new challenge on '2Do' • Teacher to set these new challenges as 2Dos for all the class to try.	
Unit 1.6 – Animated Story Books Program: 2Create a story • Knows what e-books are. • Knows of software such as 2Create a Story that allows users to create interactive stories. • Knows how to add animation to an interactive story. • Knows how to add sound, including voice recordings and music to a story they have created using software. • Beginning to know how to work on more complex digital stories, including adding backgrounds, copying and pasted pages. • Knows how to share digital stories with others such as using Digital Display Boards.	• To be introduced to e-books and what they look like by showing examples. • Find 2Create a Story. • Knowing to add an image to a codument on 2Create by clicking from the selection. • To locate and find a saved story. • To continue a previously saved story by clicking 'open.' • Know the purpose of a microphone on a computer to make and record sound. • To add animation to a story by using coding techniques and instructions. • To . • To add sound to a story including voice recording and music the children have created. • To know how to guide a mouse to click on a selection on the computer.	• **Animation**: An object that moves on screen. • **Background**: An image inserted into a file that sits behind text, objects, or buttons. • **Category**: A place where similar files are found. For example, Animals Category where animal images can be found. • **Clip-art gallery**: A place in software such as 2Create a Story where a library of images can be found and inserted into a file. • **Copy:** A feature that lets users copy things like text, images, sounds. • **Drop-down menu:** A menu where a list of choices is displayed. • **E-book**: A book that can be read on the computer or on a tablet. • **Edit**: Edit means to change something. For example, change some text to improve it. • **Eraser:** In some software like 2Create a Story, erasers are used to remove unwanted drawn images. • **Features:** In 2Create a Story there are features such as animation and sound. • **Font:** The style of text used in a piece of writing on a computer or tablet. • **Sound:** Sounds can be uploaded into software from a file or created. • **Overwrite:** When opening a previous file, users can make changes and save, which overwrites the file. • **Paint tools:** Lets a user create drawings in software such as 2Create a Story. • **Paste:** A feature that pastes copied items. • **Play Mode:** A mode that plays a file such as 2Create a Story. • **Redo:** If a user has clicked undo by mistake, they can click on redo. **Save**: Files such as 2Create a Story, can be saved in a folder so work isn't lost. • **Sound effect:** A sound other than speech or music made for use in a play, film or computer file. • **Text:** Words, letters, numbers or symbols entered into a computer, such as writing text in 2Create a Story. • **Undo:** When a user makes a paint mark for example, this can be undone with the undo button.

	• To work on a more complex story including adding backgrounds and copying and pasting pages by selecting these from the menu options on the screen and trialling – picking their favourite piece. • To use additional features to enhance their stories that they can select from the menu. • To share their e-books on a class display board.	• Voice recording: In software such as 2Create a story, users can record their voice and insert it into the file.
Unit 1.7 – Coding Program: 2Code • Knows what instructions are and can predict what might happen when they are followed. • Knows how to plan and make a simple computer program e.g. fish moves right, crab moves up. • Knows what objects, actions and backgrounds are within a coding environment. • Knows what an event is and knows how to use an event to control an object. • Beginning to know how code executes when a program is run.	• To understand what coding means in computing being a se as a series of instructions that computers follow. • To create unambiguous instructions like those required by a computer such as abbreviations and knowing F means forward. • To build one- and two-step instructions using the printable code cards and knowing that instructions have to go in sequence. • To introduce 2Code. • To use the 2Code program to create a simple program. Knowing that coding makes each of the sea snimals move. • To use Design Mode to add and change backgrounds and characters. They will use the properties table to change the look of the objects. • To use the Properties table to change the look of the objects by selecting with a mouse. • To design a scene for a program by choosing a selection from the menu.. • To use code blocks to make the characters move automatically when the green Play button is clicked. • To add an additional character who moves when clicked. By using an algorithm.	• **Action**: the way that objects change when programmed to do so. For example, move. • **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Background**: In 2Code the background is an image in the design that does not change. • **Click**: This describes the action of clicking a mouse pointer on the screen or tapping with a finger on a touch screen. • **Code**: Instructions that a programmer enters into a computer that cause the computer to perform a certain way. • **Code blocks**: A way to write code using blocks which each have an object or an action • **Coding**: writing instructions that the computer can process (understand) to make programs (software). • **Code view:** The view in 2Code that shows the coding blocks used to make the program. • **Command**: A single instruction in 2Code. • **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed. • **Design View**: The view in 2Code that shows what the program looks like to the user. • **Event**: An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key or clicking the screen. In 2Code, the event commands are used to create blocks of code that are run when events happen. • **Execute**: This is the proper word for when you run the code. We say, 'the program (or code) executes.' • **Instruction**: detailed information about how something should be done or operated. • **Object**: Items in a program that can be given instructions to move or change in some way (action). • **Output:** Information that comes out of the computer e.g. sound that comes out of the speakers. • **Plan:** When coding, a plan means including the objects and actions into a written document that shows what the program should look like (the design) and what the objects should do (the actions). • **Programmer**: A person who writes computer programs. Sometimes called a **coder**.

	• To explore the When Key and When Swiped commands (on tablets if available). • To use the Stop button to make characters stop when the background is clicked by clicking the stop button. • To explore a method to code interactivity between objects. • To use Collision Detection to make objects perform actions. • To use the sound property knowing that sound can be recorded and saved.	• **Properties**: These determine the look and size of an object. Each object has properties such as the image, scale and position of the object. • **Run**: This is what you do when you click the Play button in 2Code: The program runs. • **Scale**: This is a property of an object that changes its size. • **Scene**: In 2Code, this is the combination of the background and objects in a program. • **Software**: The programs that run on a computer that are used by people to do things. For example, write, draw or play games. • **Sound**: An output from the computer that makes a noise. • **When Clicked:** An event command that is triggered when an object is clicked on.
Unit 1.8 – Spreadsheets **Program: 2Calculate** • Knows what a spreadsheet program environment looks like including cells, rows and columns. • Knows basically what a spreadsheet program can help do. • Knows how to enter data into spreadsheet cells. • Knows how to add images to cells. • Knows how to use some tools within spreadsheets e.g. with 2Calulate can use lock cell, move cell, speak and count.	• Introduction to spreadsheets by what they are used for. Knowing spread sheets are data handlers and is a helpful tool to organise numbers. • Adding images to a spreadsheet and select with the mouse from the image toolbox • Using the 'speak' and 'count' tools in 2Calculate to count items. Knowing to check what they have recorded. • Understanding that a 'cell' is the oblong shape on a spreadsheet. • Knowing the term 'data' means information in a cell. • Finding and searching for images, making a selection using the mouse and clicking apply for the images.	• **Button:** An object you click that performs an action. E.g., print. • **Calculations:** Maths calculations can be entered into a cell. For example, the total of two cells can be added together using a calculation that appears in a new cell. • **Cell:** An individual section of a spreadsheet grid. It contains data or calculations. • **Clipart:** A library of images that a user can choose from and insert in a file. • **Column:** Boxes running vertically in a spreadsheet. • **Count tool:** In 2Calculate, this counts the number of cells with a value that matches the value of the cell to the left of the tool. • **Data:** A collection of information, used to help answer questions. • **Delete:** Removes contents such as the contents in a cell. • **Image:** A drawing or photograph that users can import into a file. • **Lock cell:** This feature lets a user lock a cell so its contents can't be deleted. • **Move cell:** The move tool in 2Calculate lets a user move the contents of a cell to a new cell. • **Row:** Boxes running horizontally in a spreadsheet. • **Select:** A user can select one or more cells and perform an action such as lock all selected cells. • **Speak tool:** This tool will speak the contents of a cell containing a number each time the value changes. **Spreadsheet:** A computer program that represents information in a grid of rows and columns.

		Value: Images can have values given to them. For example, an apple could be given a value of 1 and a pear a value of 2.
Unit 1.9 – Tech Outside School **Various programs** • Knows that technology is a use of knowledge to invent new devices or tools. • Knows that throughout history, technology has made people's lives easier. • Knows that technology is used within school and outside of school. • Knows where examples of technology can be found both in and out of school.	• To walk around the local community and find examples of where technology is used. • Knowing that technology is a device or system that is electronic. • To look for signs of electricity. • Devices linked to power. • To record examples of technology outside school.	• **Computer:** An electronic device for storing and processing data. • **Technology:** Science and engineering knowledge put into practical use to solve problems or invent useful tools.

Year 2 **Substantial**	**Disciplinary**	**Vocabulary**
Unit 2.1 – Coding **Program 2Code** • Knows what an algorithm is and can explain that it is a set of instructions and that algorithms follow a sequence. • Knows how to create a computer program using an algorithm. • Knows how to create a computer program from a given design. • Knows that collision detection is an event type in coding. • Knows how to design an algorithm that follows a timed sequence. • Knows that different objects within the coding environment have different properties. • Knows that there are different events in coding and knows what some of these events are. • Knows the function of buttons in the coding environment. • Knows how to interpret and debug simple programs.	• To understand what an algorithm is as a series of instructions. • To create a computer program using simple algorithms- being able to follow instructions ad put these in order. • To compare the Turtle and Character objects. • To use the button object by clicking on the mouse.. • To understand how use the Repeat command. • To understand how to use the Timer command. • To know what debugging means. • To understand the need to test and debug a program repeatedly. • To debug simple programs. • To create programs using different kinds of objects whose behaviours are limited to specific actions. • To predict what the objects will do in other programs, based on their knowledge of what the object is capable of. • To discuss how logic helped them understand that they could only predict specific actions, as that is what the objects were limited to. • To use all the coding knowledge, they have learned throughout their programming lessons to create a more complex program that tells a story.	• **Action**: The way that objects change when programmed to do so. For example, move. • **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Background**: In 2Code the background is an image in the design that does not change. • **Bug**: A problem in a computer program that stops it working the way it was designed. • **Button**: A type of object that responds to being clicked on. • **Click events:** An event that is triggered when the user clicks on an object. • **Collision detection:** In 2Code, this measures whether 2 objects have touched each other. • **Collision detection action:** The action that is programmed to happen once the objects collide. • **Collision detection event**: The event of two objects colliding. • **Command**: A single instruction in 2Code. • **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed to. • **Event**: An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key or clicking the screen. In 2Code, the event commands are used to create blocks of code that are run when events happen. • **Execute:** This is the proper word for when you run the code. We say, 'the program (or code) executes.' • **Image**: A picture • **Implement**: When a design is turned into a program using coding. • **Instructions**: detailed information about how something should be done or operated. • **Interaction**: When objects perform actions in response to each other e.g. a frog turning into a monkey when it collides with a tree. • **Interval**: In a timer, this is the length of time between the timer code running and the next time it runs e.g. every 1 second. **Object**: Items in a program that can be given instructions to move or change in some way (action). **Object Name**: Every object in a 2Code program must have a unique name that is used to program actions and events for the object. **Output**: Information that comes out of the computer e.g. sound. **Predict**: Use your understanding of a situation to say what will happen in the future or will be a consequence of something.

		• **Properties**: These determine the look and size of an object. Each object has properties such as the image, scale and position of the object. • **Run:** Clicking the Play button to make the computer respond to the code. • **Scale**: This is a property of an object that changes its size. • **Scene**: In 2Code, this is the combination of the background and objects in a program. • **Sequence**: This is when a computer program runs commands in order. • **Test**: To run the code and observe what happens to identify where there might be bugs in the program. • **Text**: Written words or numbers. In 2Code some objects such as buttons have a text property which is the writing on the button. • **Timer:** In coding, use a timer command to run a block of commands after a timed delay or at regular intervals. • **Turtle Object**: A type of object in 2Code that moves by coding angles of rotation and distance to move. • **When Clicked:** An event command that is triggered when an object is clicked on. • **When Key Event:** An event triggered when a user presses a particular key on the keyboard. • **When Swiped Event:** An event triggered when the user swipes a particular area of the screen e.g. the background (touch-screen devices only).
Unit 2.2 – Online Safety **Program Various** • Knows how searches can be refined when searching digitally and therefore attempts refining when searching. • Knows that digitally created work can be shared with others e.g. Purple Mash Display Boards. • Has knowledge and understanding about sharing more globally on the Internet. • Knows that email is a type of communication tool.	• To know how to refine searches using the Search tool. Knowing what a safe search is. Knowing safe searches. • To know how to share work electronically using the display boards. • To use digital technology to share work on Purple Mash to communicate and connect with others locally- knowing that email is a way of communicating and to use SMART with a heart process of sending and receiving..	• **Attachment:** A computer file sent with an email. • **Digital footprint:** The information about a person that exists on the Internet as a result of their online activity. • **Display Board:** In Purple Mash, this is a tool that enables you to share work with a wide audience. • **Email:** Messages distributed by electronic means from one computer user to one or more people. • **Filter:** A feature of search engines, where a user can filter results according to criteria. For example, news, date published. • **Identifying:** It's important that any information shared online doesn't have details that can identify someone such as their name and address. • **Internet:** A way to send information from one computer to another anywhere in the world using technology such as phones, satellites and radio links.

• Knows how to open and send simple online communications in the form of email e.g. 2Email (virtual email client). • Knows that there is an appropriate way to communicate with others in an online situation. • Knows that information put online leaves a digital footprint. • Knows some steps that can be taken to keep personal data and hardware secure.	• To have some knowledge and understanding about sharing more globally on the Internet. • Knowing that the internet is a vast application with lots of information. • To introduce Email as a communication tool using 2Respond simulations. Knowing that you need a sender – a receiver, a subject bar, a polite sign off. • To understand how we talk to others when they aren't there in front of us. Using kind words. • To open and send simple online communications in the form of email. • To understand that information put online leaves a digital footprint or trail. • To begin to think critically about the information they leave online. Knowing about a digital footprint. • To identify the steps that can be taken to keep personal data and hardware secure.	**Personal information:** This is information that is personal to someone. For example, their favourite food, their name and age. **Private information:** This is personal information that should be kept secure. For example, their date of birth, their full address, credit card numbers. • **Protection:** Some places like schools, have systems in place that help to protect users from harmful content. However, it's important that anyone using online services should always behave carefully to help protect themselves and others. • **Reply:** When someone receives an email, they can send a reply using the reply button. • **Search:** Look for information (in a database or the World Wide Web) using a search engine. • **Secure:** Users online should take steps to help keep their personal and private information secure. • **Sharing:** Post or repost (something) on a website.

Unit 2.3 – Spreadsheets **Program 2Calculate** • Secures knowledge from prior year when spreadsheets were introduced (See unit 1.8). • Knows how to use prior learning to perform composite task of creating a counting machine using software such as 2Calculate (image, lock move cell, speak and count tools). • Knows how to copy, cut and paste in spreadsheet software such as 2Calculate. • Knows what totalling tools are and how to use them. • Knows how to use a spreadsheet to perform calculations for purpose. For example, adding and totalling money. • Knows how to use some tools within a spreadsheet to support calculations. For example, using the equals tool in 2Calculate to check calculations. • Knows how to create a manual block graph within a spreadsheet from data.	• Reviewing prior use of spreadsheets • Copying and Pasting and knowing short cuts for thesetotalling tools Right click the cell to copy and right click again to paste. Using control 'c' for copy and control 'v' for paste • Using a spreadsheet to add amounts • Creating a table and block graph	• **Addition:** The add symbol can be used in a cell when numbers are in the cells either side of it to create a sum. • **Block graph:** This is a type of graph that displays data with blocks. These can be made using cells, colours and labels in 2Calculate. • **Cell:** An individual section of a spreadsheet grid. It contains data or calculations. • **Coins:** In 2Calculate images that represent coins and have a value can be used in spreadsheets. • **Column:** Boxes running vertically in a spreadsheet. • **Copy:** This feature copies the contents of highlighted cells without deleting the contents of them into a clipboard. • **Count tool:** In 2Calculate, this counts the number of cells with a value of the cell to the left of the tool. • **Cut:** This feature removes something from selected cells and places it in a clipboard ready to be pasted. • **Data:** A collection of information, used to help answer questions. • **Drag:** Contents of a cell can be dragged to another cell using the drag tool in 2Calculate. • **Equals:** This symbol can be used in 2Calculate to find the answer to a calculation. • **Equals tool:** Tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool. **Image value:** Images placed in cells can have values given to them. E.g., apple 1, pear 2 etc. **Label:** A way to identify data in a spreadsheet. For example, a label heading for ice cream flavours children like. **Paste:** The feature pastes anything in the clipboard into selected cells. **Price:** The cost of an item or items. • **Row:** Boxes running horizontally in a spreadsheet • **Speak tool:** This tool will speak the contents of a cell containing a number each time the value changes. • **Table:** Tables can be created in 2Calculate, these have headings and are a neat way to display data. • **Toolbox**: A place in 2Calculate where a user can add tools such as counting tools, change colours and include images.

		• **Total:** In 2Calculate the total tool will calculate the total of all cells above, below or next to it dependent on which total tool used.
Unit 2.4 – Questioning **Program: 2 Question** • Knows that pictograms provide limited information. • Knows that there are other data handling tools that can give more information than pictograms. • Knows how to use yes/no questions to separate information. • Knows how to construct a binary tree to identify items. • Knows how to use a binary tree database (such as 2Question), to answer questions. • Knows how to use a database to answer more complex search questions. • Knows how to use a search feature at a basic level when trying to locate data within a database such as 2Investigate.	• To show that the information provided on pictogram is of limited use beyond answering simple questions. • To use YES or No questions to separate information into two categories and streamlining the response. • To construct a binary tree to separate different items.- identifying the differences and similarities between properties. • Use 2Question (a binary tree) to answer questions. • To use a database to answer more complex search questions. • To use the search tool to find information.	• **Avatar:** A digital picture to represent someone. • **Binary Tree:** A simple way of sorting information into two categories. • **Data:** A collection of information, used to help answer questions. • **Database:** A computerised system that makes it easy to search, select and store information. • **Field:** A single piece of data in a database which makes up a record. • **Information:** Knowledge or facts that come from a source. • **Pictogram:** A diagram that uses pictures to represent data. • **Question:** A sentence written or spoken to find information. • **Record:** An item in a database with a variety of information about a specific entry. • **Search:** Looking for specific information. On a database, you can use the 'Find' tool. **Sort:** Put things together by features they have in common.
Unit 2.5 – Effective Searching **Program: Browser** • Knows the meaning of key Internet and searching terms. • Knows the basic parts of a web search engine page. • Knows how to navigate a web search results page. • Knows how to search the Internet to some degree for answers to a quiz. • Knows the premise of what effective Internet searching is.	• To understand the terminology associated with searching for a specific theme. • Understand that you can press enter to search. • Knowing what to type to get the correct search. • Understand that the search will pick up key points from the algorithm created. • To gain a better understanding about searching on the Internet. • To create a leaflet to help someone search for information on the Internet	• **Browser:** A tool to help us access the World Wide Web. • **Device:** A piece of electrical equipment made for a purpose. • **Digital Footprint:** the information about a particular person that exists on the internet as a result of their online activity. • **Domain:** Part of the Internet owned by an individual, company or organisation. • **Internet:** A way to send information from one computer to another anywhere in the world using technology such as phones, satellites and radio links. • **Network:** Connected devices that can send and receive information, voice and video. **Search Engine:** A program to help you find web pages on the Internet. • **URL:** Another word for web address • **Web Address:** Identifying address for a file, or webpage on the Internet. • **Web Page:** A single page which can include images, videos and charts. • **Web Site:** A collection of webpages that belong to one domain.

		• **World Wide Web:** The web pages and documents you see when you are browsing online. It is just one part of the Internet.
Unit 2.6 – Creating Pictures **Program: 2paint a picture.** • Knows the purpose and benefits of painting software tools such as 2Paint a Picture. • Knows how to recreate Impressionism, surrealism and Pointillism using features within 2Paint a Picture. • Knows how to reproduce the style of William Morris by using repeating patterns, manipulating patterns and adding multiple effects in painting software such as 2Paint a picture.	• To be introduced to 2Paint A Picture. • Knowing what the term impressionism, surrealism and pointillism in art- being shown examples. • To look at the impressionist style of art (Monet, Degas, Renoir) and knowing how to describe. • To recreate pointillist art and look at the work of pointillist artists such as Seurat • To look at the work of Piet Mondrian and recreate it using the Lines template. • To look at the work of William Morris and recreate it using the Patterns template. • To explore surrealism and eCollage • Knowing some of the features to create an art piece using paint tools, cut and insert tools.	• **Art:** A visual form of creative activity and imagination. • **Clipart:** Premade graphical images. • **Diagonal:** A slanted straight line. • **Dilute:** When you add water to a liquid to make it thinner. In the case of adding water to paint, it makes the colour weaker/lighter. • **eCollage:** A 2Paint A Picture template style where the picture is made by creating stamps that can then be placed on the picture. • **Fill:** Causing an area to become full, in this case, of colour. • **Horizontal:** A line or shape which goes in the direction of side to side. • **Impressionism:** The impressionist movement began in the 1860s and became most popular in the 1870s and 1880s. It differed from the common art of the time because it wasn't religious art, showing scenes from religious stories or specific events, but was just intended to capture a scene at a moment. The art gave an 'impression' of the scene. • **Line:** A long and narrow mark. • **Palette:** Within computer graphics, this is the range of colours or shapes available to the user. • **Parallel:** Lines that run side by side that never meet. • **Pointillism:** Pointillism was a development of impressionism. It was invented mainly by George Seurat and Paul Signac. Pointillist paintings are created by using small dots in different colours to build up the whole picture. Colours are placed near each other rather than mixed. • **Repeating pattern:** A decorative design that is shown again and again. • **Rotated:** When the position of an image is moved around in the direction of a circle. • **Stamps:** The image box in the template which contains the design used and repeated in the artwork. **Style:** A particular way in which something looks or is formed. **Surrealism:** Artwork which explored the subconscious areas of the mind. The artwork often made little sense as it was usually trying to depict a dream or random thoughts. **Symmetry:** Something is symmetrical when it has two matching halves; the same on both sides.

		• **Vertical:** A line or shape that goes in the direction top to bottom.
Unit 2.7 – Making Music • Knows how to make forms of music (digitally) using age-appropriate software such as 2Sequence. • Knows how to edit and combine sounds using 2Sequence. • Knows how to refine composed music. • Knows how to upload/import and record sounds beyond the software environment.	• To be introduced to making music digitally using 2Sequence. • Know that sounds can be recorded. • To explore, edit and combine sounds using 2Sequence. • To add sounds to a tune they've already created to change it. • Understand what instruments sound like- linking to Charanga learning. • To think about how music can be used to express feelings and create tunes which depict feelings. • Able to describe their feeling through music. • To upload a sound from a bank of sounds into the Sounds section. • To record their own sound and upload it into the Sounds section. • To create their own tune using the sounds which they have added to the Sounds section. • Knowing what pitch is – high and low sounds.	• **Bars:** A way of measuring the length of music. • **Beat:** A rhythmic unit in music. • **Compose:** To create a piece of music. • **Note**: A single tone in music. • **Tune:** Musical notes joined together to make a melody. • **Repeat:** Play the music again. • **Sound Effect:** A sound other than speech or music. • **Soundtrack:** A recording of the musical accompaniment of a film or tv programme. • **Speed:** The number of beats per minute played in the music. • **Tempo:** The speed at which the music plays. • **Volume:** How loud or quiet the music is.
Unit 2.8 – Presenting Ideas • Know that digital content can be presented in many different forms e.g. stories. • Know how to use presentational or interactive software such as a quiz, making improvements to it based on people feedback. • Know that data can be structured in tables to make it useful for an audience. • Know how to add images such as clipart and photos to presentational software. • Know how to collect, organise and present data and information in digital format.	• To explore how a story can be presented in different ways. • Knowing key features of a story – must have beginning, middle and end. • To make a quiz about a story or class topic. • To make a fact file on a non-fiction topic. • To make a presentation to the class. • Knowing that presentations have tohave a clear voice. • Knowing that images can be selected and used.	• **E-book:** An electronic version of a printed book that can be read on a computer or a specifically designed handheld device. • **Fact file:** A document containing all the important information about one subject. • **Fiction:** A book or story that is written about imaginary characters and events and not based on real people or places. • **Mind Map:** A tool for organising and representing knowledge. They form a web of ideas which are all interconnected. • **Multiple-choice:** A question type with several possible answers given where the user has to choose the correct answer or answers. • **Node:** A way to represent a concept or idea using text and/or images. • **Non-fiction:** Writing that is about real people or events rather than stories that have been made up.

	• Knowing how to be a good audience for listening.	• **Presentation:** A way of displaying information about a subject to an audience. • **Quiz:** A test of knowledge, especially as a competition between individuals or teams as a form of entertainment.

Year 3

Substantial	Disciplinary	Vocabulary
Unit 3.1 – Coding **Program: 2Code** • Knows what a flowchart is and how flowcharts are used in computer programming. • Knows how to use a flowchart to create a computer program. • Knows that there are different types of timers used in coding environments such as 2Code. • Knows which timer should be used for a given purpose. • Know what a repeat command is and how to use the repeat command. • Know how to create a range of programs using coding knowledge. • Know how to run, test and debug their own programs. • Know what nesting is and that this should be considered when debugging. • Know how to change attributes/properties of any objects in a program they have made.	• To review coding vocabulary that relates to Object, Action, Output, Control and Event following the sequence of commands. • To use 2Chart to represent a sequential program design. • To use the design to write the code for the program Understand what the term 'flow chart' means. Knowing why things have to be timed. Knowing minutes, seconds, hours and how long that is. • To design and write a program that simulates a physical system. • To look at the grid that underlies the design and relate this to X and Y properties. • To introduce selection in their programming by using the if command. Knowing if gives options to the game • To combine a timer in a program with selection. • To understand what a variable is in programming.	• **Action**: The way that objects change when programmed to do so. For example, move or change a property. • **Alert**: This is a type of output. It shows a pop up of text on the screen. • **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Background**: In 2Code the background is an image in the design that does not change. • **Bug**: A problem in a computer program that stops it working the way it was designed. • **Button**: A type of object that responds to being clicked on. • **Click events:** An event that is triggered when the user clicks on an object. • **Code:** Writing the code for a computer program. • **Collision detection event**: The event of two objects colliding. • **Command**: A single instruction in 2Code. • **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed to. • **Degrees**: A measurement of a turn. A full turn has 360 degrees; written as 360°.

	• To use a variable to create a timer • To create a program with an object that repeats actions indefinitely. • To use a timer to make characters repeat actions. • To explore the use of the repeat command and how this differs from the timer. • To know what debugging means. • To understand the need to test and debug a program repeatedly. • To debug simple programs. • To understand the importance of saving periodically as part of the code development process.	• **Event**: An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (**when Key**) or clicking or swiping the screen (**when Clicked, when Swiped**). In 2Code, the event commands are used to create blocks of code that are run when events happen. • **Flowchart**: A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram. • **Implement**: When a design is turned into a program using coding. • **Input**: Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device. • **Interval**: In a timer, this is the length of time between the timer code running and the next time it runs e.g. every 1 second. • **Nest**: When coding commands are put inside other commands. These commands only run when the outer command runs. • **Object**: Items in a program that can be given instructions to move or change in some way (action). In 2Code Gibbon, these include character, turtle, button, vehicle, animal, food, shape, number, input and label. • **Predict**: Use your understanding of a situation to say what will happen in the future or will be a consequence of something. • **Properties**: These determine the look and size of an object. Each object has properties such as the image, scale and position of the object. • **Repeat:** This **command** can be used to make a **block of commands run** a set number of times or forever. **Right-Angle:** This is a term that describes an angle of 90°, as in a corner of a square, or formed by dividing a circle into quarters. • **Run:** Clicking the Play button to make the computer respond to the code. • **Scene**: In 2Code, this is the combination of the background and objects in a program.

		• **Sequence**: This is when a computer program runs commands in order. • **Test**: To run the code and observe what happens to identify where there might be bugs in the program. • **Timer:** In coding, use a timer command to run a block of commands after a timed delay or at regular intervals. • **Turtle Object**: A type of object in 2Code that moves by coding angles of rotation and distance to move.
Unit 3.2 – Online Safety **Various programs** • Knows what makes a safe password and how to keep it safe. • Knows the main outcomes of not keeping passwords safe. • Knows all the common ways the Internet enables people to effectively communicate. • Know that a blog can be used to help communicate with a wider audience. • Know how to contribute to a blog with clear and appropriate messages. • Know that some information held on websites may not be accurate or true. • Beginning to know how to search the Internet and how to think critically about the results returned. • Know why there are age restrictions on digital media and devices. • Know where to turn to for help if they see inappropriate content or have inappropriate contact from others.	• To know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away. • Knows what symbols, numbers and letters are. Combines make a password. • To understand how the Internet can be used to help us to communicate effectively. • Know that communication online can be in the form of emails, messengers, social media comments, video call and other examples. • To understand how a blog can be used to help us communicate with a wider audience. • Know that blogging is a way of expressing themselves online.	• **Appropriate:** When using online services such as blogging or sharing information. It's important that users behave appropriately. Users should be truthful, respectful, kind, seek any permissions and report anything they feel uncomfortable with. • **Blog:** A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style. • **Inappropriate:** Behaviour or content online that is upsetting, rude, unkind or makes someone feel unsafe or concerned. • **Internet:** A global computer network providing a variety of information and communication facilities, consisting of interconnected networks and computers. • **Password:** A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as a website. • **Personal information:** This is information that is personal to someone. For example, their favourite food, their name and age. • **Permission:** When someone shares or accesses content online, it's important that permission is given if it belongs to someone else or has information about them.

	• For children to consider if that they read on websites is true? • To look at some 'spoof' websites. • To create a 'spoof' webpage. • To think about why these sites might exist and how to check that the information is accurate. • To learn about the meaning of age restrictions symbols on digital media and devices. • To discuss why PEGI restrictions exist. • To know where to turn for help if they see inappropriate content or have inappropriate contact from others.	• **Reliable Source:** A source of information that provides thorough, well-reasoned details based on valid evidence. • **Reputable source:** Reputable sources are known places or sites that have accurate information. For example, well known news sites or encyclopaedias. • **Spoof:** An imitation of something that appears to look genuine. • **Verify:** When seeking content online, it is important that a user verifies the information. They can do this by checking other sources and looking for signs that may indicate inaccuracy in the information. • **Vlogs:** A personal website or social media account where a person regularly posts short videos. • **Website:** A set of related web pages located under a single name.
Unit 3.3 – Spreadsheets **Program: 2 Calculate** • Know how to create tables of data within a spreadsheet. • Know how to use a spreadsheet program to automatically create charts and graphs from data. • Know how to use various features within a spreadsheet to support solutions to calculations. For example, 'more than', 'less than', and 'equals'. • Know how to describe a cell location in a spreadsheet. • Know how to find specified locations in a spreadsheet.	• To create pie charts and bar graphs. • To understand that pie charts and bar graphs represent numbers and shown • To use the 'more than', 'less than' and 'equals' tools. • To understand that more than means a larger number and less than means a smaller amount. • To introduce the Advanced Mode of 2Calculate and use coordinates for each cell..	• **Advanced Mode:** A mode of 2Calculate in which the cells have references and can include formulae. • **Bar graph:** A chart that uses bars to show quantities or numbers, so they can be easily compared. • **Cell address:** Every cell has an address. This can be found by reading the column letter then row number. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Equals:** This symbol shows that numbers or number sentences either side are equal in value.

	• Knowing that coordinates are assigned to specific cells.	• **Less than:** This symbol shows that a number to the left of it has less value than one to the right. • **More than:** This symbol shows that a number to the left of it has greater value than one to the right. • **More than, less than & Equal tool:** This highlights either more than, less than or equals according to which numbers are either side of it. • **Pie Chart**: A circular chart divided into segments which each represent a portion of the total amount. • **Quiz tool:** This can be used after the equals sign or instead of a number in a calculation. If you input the correct answer it will disappear. • **Spinner tool:** This changes a number by one each time up or down is clicked. • **Table:** An organised display of information laid out in rows and columns.
Unit 3.4 – Touch Typing **Program: 2Type** • Know typing terminology including names of fingers. • Know the home, top and bottom row sections on a keyboard. • Knows the keys typed with left hand. • Knows the keys typed with right hand. • Knows the correct way to sit at a keyboard. • Know what CC means and how to use it.	• To introduce typing terminology such as 'QWERTY'. • Locating 'QWERTY' on the keyboard. • Identify where the space bar is. • Understand the need for good posture. • Understand the correct way to sit at the keyboard. • To learn how to use the home, top and bottom row keys.	• **Keys:** buttons that are pressed on a computer keyboard or typewriter. • **Posture:** The position in which someone holds their body when standing or sitting. • **Spacebar**: The bar at the bottom of the keyboard. • **Typing:** The action or skill of writing something by means of a typewriter or in this case a computer.

	• To practise and improve typing for home, bottom and top rows. • To practise the keys typed with the left hand. • To practise the keys typed with the right hand.	
Unit 3.5 – Email Programs: 2Email and 2Connect • Know the different methods of communication and know the strengths and weaknesses of his form. • Know how to open and responding to email. • Know how to use an address book to write an email. • Know how to use an email environment safely including the importance of the draft feature. • Know how to add attachments to an email.	• To think about the different methods of communication. • To open and respond to an email. • To write an email to someone, using an address book. • Knowing that address books are in alphabetical order to help. • Know that you can search for contacts using the search bar. • Using SMART targets to help stay safe. • Knowing how to sign off an email using Yours Sincerely, Best wishes etc • To learn how to use email safely. • To add an attachment to an email. • Knowing the + symbol means to add. • Knowing the paper clip image is to attach a document, • Link to learning of saving work – can they find their named document.	• **Address Book:** A place where all contact's email addresses can be found and saved. • **Attachment:** A file, which could be a piece of work or a picture, that is sent with the email. • **BCC – Blind Carbon Copy:** A way of privately sending a copy of your email to other people so they can see the information in it, without the recipient knowing. • **CC – Carbon Copy:** A way of sending a copy of your email to other people so they can see the information in it. • **Communication:** The process of giving, receiving and sharing information. Examples of types of communication methods include Email, text message, speaking and listening, sending letters. • **Compose:** Another word for 'write'. • **Email:** (Electronic Mail) An Internet service that allows people who have an email address to send and receive instant electronic letters. • **Inbox:** The folder where new emails go into when they are received. • **Link:** A line between two nodes which shows that the two pieces of information are connected. • **Mind mapping:** A graphical way to present ideas and concepts which helps structure information and identify relationships between different pieces of an idea.

	• To explore a simulated email scenario.	• **Node:** Each bit of information on a mind map. • **Password:** A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as email. • **Personal Information:** Identifying information about yourself such as your name, address and telephone number. • **Save to draft:** Feature which allows you to compose an email and save it to draft folder to review later before sending. • **Trusted Contact:** A person who you know and trust, making an email from them safe to open.
Unit 3.6 – Branching Databases **Program: 2Question** • Know how to sort objects using just YES/NO. • Know how YES/NO questions are structured and answered. • Know how to complete a branching database. • Know how to edit and adapt a branching database. • Know how to create a branching database including debugging it.	• To sort objects using just YES/NO questions. • Knowing that objects can be sorted by size, colour, shape and other properties. • To complete a branching database using 2Question. • To know databases store numbers and figures. • To create a branching database of the children's choice. • To think of questions/ properties that could help organise and categorise objects.	• **Binary Tree:** Another name for a branching database. • **Branching Database:** Used to classify groups of objects. It is used to help identify the objects by answering questions with either 'yes' or 'no'. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Database:** A collection of data organised in such a way that it can be searched, and information found easily. Database usually refers to data stored on computers. • **Debugging:** The process of identifying and removing errors from computer hardware or software.
Unit 3.7 – Simulations **Program: 2 Publish** • Know that a computer simulation can represent real and imaginary situations. • Know advantages and problems of using simulations.	• To look at what simulations are. • To understand how important predictions are in terms of debugging.	• **Advantages:** The good and beneficial things about a situation. • **Analysis:** A detailed examination of something. • **Decision:** The act or result of making a choice after careful thought. • **Disadvantages:** The difficult and negative things about a situation.

• Know how to use a simple simulation to try out different options and test predictions. • Begin to know how to evaluate simulations by comparing them with real simulations and considering their usefulness	• Knowing what sequences work in the real life • To explore a simulation. • To analyse and evaluate a simulation.	• **Evaluation:** To judge the value, condition or effectiveness of something. • **Modelling:** The act of representing something, often on a smaller scale. • **Point-of-view:** The viewpoint or thoughts someone has or feels about a certain matter. • **Realistic:** Representing things accurately and true to real life. • **Simulation:** A program that models a real-life situation. They let you try things out that would be too difficult or dangerous to do in real life. • **Solution:** A means of solving a problem. • **Unrealistic:** Representing things inaccurately and unlike real life.
Unit 3.8 – Graphing **Program: 2Graph** •Know how to set up a graph with a given number of fields using graphing software (2Graph). • Know how to enter data for a graph. • Know how to select the most appropriate chart type for their data and explain reasoning. • Know how to sort data in graphing software to enable easier analysis.	• To enter data into a graph and answer questions. • Understand that fields are active and where the data is stored on the excel sheet. • To solve an investigation and present the results in graphic form. • Knowing that data (numbers/figures) must be entered to create a data chart.	• **Axis:** A fixed horizontal or vertical reference line for the measurement of coordinates or to plot data in a graph. • **Chart:** A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts. • **Column:** Vertical (down the page) divisions of a piece of work. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Graph:** A diagram that represents data. There are specific layouts for graphs including bar graphs and line graphs. • **Investigation:** A formal inquiry or systematic study. • **Row:** Horizontal (across the page) divisions of a piece of work. • **Sorting:** Organising data by a rule such as alphabetical or numerical.

		• **Survey:** Asking people for their opinions and collecting the information. • **Tally Chart:** A way of recording how often something happens by counting in fives. • **Title:** A few words put at the beginning of a produced piece of work, that relates to the subject matter of the work as a description or hint to the theme.
Unit 3.9 – Presenting • Know what presentation is and how it can be used. • Know how to add pages/slides, text and shapes to pages, and also format them. • Know how to add media such as images, audio and videos. • Know how to use effects and features such as animations and slide transitions. • Know how timings can help when presenting and know how to include them in presentations. • Know how to effectively present to an audience using presentation software.	• To understand the use of voice when presenting. • Use the insert button to include pictures. • Knowing why timing is important and knowing what pace means when presenting to others. • Use intonation of voice when presenting.	• **Animation:** The process of adding movement to still objects. • **Audio:** Another word for sound. • **Border Properties:** The style of the border around text or an object including the colour, thickness and dashes (version dependent options). • **Duration:** How long something lasts for. • **Editing:** To improve something so that it is ready for publication. • **Fill colour:** The internal colour of an object such as a textbox (version dependent options). • **Font formatting:** Changing the appearance of text on the screen. • **Layer:** Describes which objects appear in the front (foreground) of a slide and which appear behind other objects. (Version dependent options). • **Media:** Information in the form of words, sounds, numbers, images, or graphics in electronic, print or broadcast form. • **Presentation:** A visual way of displaying information to an audience that is clear and engaging. It can contain text, images, animation and videos. • **Presentation Design:** The overall look of a presentation including background, fonts, footers and colours. • **Preview:** An opportunity to look at something before it goes live.

		• **Review:** To look at something critically and consider how it could be improved. • **Slide:** A single page of a presentation. • **Slideshow**: A collection of pages arranged in sequence that contains text and images to present to an audience. • **Sound effect:** A sound other than speech or music made artificially for use in a play, film, or presentation. **Textbox:** An object that can be inserted into a piece of work in a program that allows the user to input text. • **Theme:** A ready-made template including colours and fonts that can be edited by the user. • **Timing:** A particular point or period of time when something happens. • **Transition:** How a slide moves from one to the next. • **Video:** A recording of a moving image. • **WordArt:** A way of changing the appearance of text often using decorative shapes.

Year 4

Substantial	Disciplinary	Vocabulary

Unit 4.1 – Coding **Program: 2Code** • Begin to know what selection is in computer programming. • Know how an IF statement works. • Know how to interpret an IF statement and therefore know how to create a program that includes an IF statement. • Know how to use co-ordinates in computer programming. • Know what the 'repeat until' command is. • Know how an IF/ELSE statement works. • Know what a variable is in programming. • Know how to use variables within their programs. • To know how to create a playable game using a block coding environment. •	• To review coding vocabulary such as Algorithm, command, debug and design.. • To use a sketch or storyboard to represent a program design and algorithm- knowing the importance of planning and sequencing events. • To use the design to create a program and knowing how to access this on Purple Mash.. • To introduce the If/else statement and use it in a program. • To create a variable and understand that this is something that can be changes within a program such as making lights work, moving motors, changing timings, or pictures. • To explore a flowchart design for a program with an if/else statement • To create a program which responds to the If/else command, using the value of the variable. • To create a program with a character that repeats actions.	• **Action**: The way that objects change when programmed to do so. For example, move. • **Alert**: This is a type of output. It shows a pop up of text on the screen. • **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Background**: In 2Code the background is an image in the design that does not change. • **Button**: A type of object that responds to being clicked on. • **Code blocks**: A way to write code using blocks which each have an object or an action. • **Command**: A single instruction in 2Code. • **Co-ordinates:** Numbers which determine the position of a point, shape or object in a particular space. • **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed to. • **Design:** In coding, this is a plan for the program showing the visual look of the user interface (the screen) with the objects. The algorithm can be represented as part of the design, showing actions and events. • **Event**: An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (**when Key**) or clicking or swiping the screen (**when Clicked, when Swiped**). In 2Code, the event commands are used to create blocks of code that are run when events happen. • **Execute**: This is the proper word for when you run the code. We say, 'the program (or code) executes.' • **Flowchart**: A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram. • **'If' statement:** A computer uses an IF statement to decide which bit of code to run. IF a condition is true, then the commands inside the block will be run.

	• To use the Repeat Until command to make characters repeat actions. • To program a character to respond to user keyboard input. • To make timers and counting machines using variables to print a new number to the screen every second. • To explore how 2Code can be used to investigate control by creating a simulation. • To know what decomposition and abstraction are in computer science. • To take a real-life situation, decompose it and think about the level of abstraction. • To design a decomposed feature of a real-life situation.	• **'If/Else' statement:** A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run. • **Input:** Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device. **Nest**: When coding commands are put inside other commands. These commands only run when the outer command runs. **Object**: Items in a program that can be given instructions to move or change in some way (action). In 2Code Gibbon, these include character, turtle, button, vehicle, animal, food, shape, number, input and label. • **Prompt**: A question or request asked in coding to obtain information from the user in order to select which code to run. • **Implement**: When a design is turned into a program using coding. • **Predict**: Use your understanding of a situation to say what will happen in the future or will be a consequence of something. • **Repeat:** This **command** can be used to make a **block of commands run** a set number of times or forever. • **Repeat until:** In 2Code this command will repeat a block of commands until a condition is met. • **Run:** Clicking the Play button to make the computer respond to the code. • **Properties**: These determine the look and size of an object. Each object has properties such as the image, scale and position of the object. • **Selection**: Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition. • **Sequence**: This is when a computer program runs commands in order. • **Timer:** In coding, use a timer command to run a block of commands after a timed delay or at regular intervals.

		• **Variable**: A named area in computer memory. A variable has a **name** and a **value**. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.
Unit 4.2 – Online Safety **Various programs** • Know that information put online leaves a digital footprint or trail and can expand on prior years' scope of this fact. • Know some of the ways children can protect themselves from online identity theft. • Know that information put online by users could be used for identity theft. • Know the main risks and benefits of installing software and applications. • Know that copying work of others and presenting it as their own is plagiarism. • Knows the consequences of plagiarism. • Knows appropriate behaviour when participating or contributing to collaborative online projects for learning. • Know some of the main positive and negative influences technology has on health and the environment. • Knows the importance of balancing screen time with non-screen time.	• To understand how children can protect themselves from online identity theft. • Knowing what Phishing is. • Understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • To Identify the risks and benefits of installing software including apps. • To know that emails may contain bugs and will affect systems. • To understand	• **AdFly:** An online advertising marketplace that allows publishers to monetize their website traffic by placing advertisements on their site. • **Attachment:** A file, which could be a piece of work or a picture, that is sent with an email. • **Citation:** Making reference to the original source of a piece of information quotation or image. • **Collaborate:** To work jointly on an activity or project. • **Collaborative database:** A collaborative database allows more than one person to access and input data on the database. • **Cookies:** A small amount of data generated by a website and saved by a web browser. Its purpose is to remember information about the user. • **Copyright:** When the rights to something belong to a specific person. • **Data analysis:** The process of interpreting and understanding data that has been collected and organised. • **Digital footprint**: The information about a person that exists on the Internet as a result of their online activity. • **Malware:** Software that is specifically designed to disrupt, damage, or gain unauthorized access to a computer system. • **Phishing:** Practice of sending email pretending to be from reputable companies in order to persuade individuals to reveal personal information, such as passwords and credit cards numbers. • **Plagiarism:** Taking someone else's work or ideas and passing them off as one's own. • **Ransomware:** A type of malicious software designed to block access to a computer system until a sum of money is paid. • **Report:** If content or contact online worries someone, they should report it to a trusted adult such as a teacher or parent. • **SMART rules:** A set of rules based around the word SMART designed to help you stay safe when online. SMART represents the words Safe, Meet, Accept, Reliable, Tell. • **Software:** The programs and other operating information used by a computer.

	that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. • To identify appropriate behaviour when participating or contributing to collaborative online projects for learning. • To identify the positive and negative influences of technology on health and the environment. • To understand the importance of balancing game and screen time with other	• **Spam:** Messages sent over the Internet, typically to many users, for the purposes of advertising, phishing or spreading malware. • **Virus:** A piece of code which can copy itself and typically has a damaging effect on the device, such as corrupting the system or destroying data. • **Watermark:** Watermarks are used mainly on images or videos to show who the content belongs to.

	parts of their lives.	
Unit 4.3 – Spreadsheets **Program: 2Calculate** • Know what cell formatting is. • Know how to format cells as currency, percentage, decimal or fraction. • Know how to use formula wizard tools. • Know how to combine spreadsheet tools to create a purposeful spreadsheet e.g. a timed times table test. • Know how to use a spreadsheet to model a real-life situation e.g. budget planner. • Know how to add a formula to a cell in order to create automatic calculations.	• Using the formula wizard in the advanced mode to add formulae and explore formatting cells • Understand how spreadsheets serve purpose in real-life events. • Timer and spin button • Line graphs • Using a spreadsheet for budgeting • Exploring Place Value with a spreadsheet	• **Average:** A number expressing the typical value in a set of data. Also known as the mean. It is calculated by dividing the sum of the values in the set by their number. • **Budget:** The amount of money available to spend on a project. • **Calculations:** The process or result of adding, subtracting, multiplying, or dividing or a combination of these operations. • **Chart:** A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts. • **Column:** Boxes running vertically in a spreadsheet. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Decimal place:** The position of a digit to the right of a decimal point. In 2Calculate, the number of decimal places to be displayed can be chosen. • **Equals to tool:** This shows if an answer to a calculation is correct or not. **Format Cell:** The way that data is displayed in a cell. For example, using units such as £ or $. • **Formula:** A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is **formulae**. • **Formula Wizard:** The formula wizard helps a user create formulas which perform calculations on selected cells. For example, adding, multiplying, average, total. • **Line graph:** A line graph is used to display information which can change over time. For example, temperature at different times of the day. • **Percentage:** 'per' 'cent' means number of parts per hundred. • **Place value:** This is the value of each digit within a number. For example 354, the 3 = 3 hundreds, the 5 = 5 tens and the 3 = 3 ones. • **Random number tool:** This tool, when clicked, will generate a random number.

		• **Resize:** This is used to reduce or increase the size of a sheet in 2Calculate. • **Row:** Boxes running horizontally in a spreadsheet. • **Set image:** Images in 2Calculate can be given a value. For example, an apple 1 a pear 2 etc. **Spinner tool:** This tool changes a number to the right of it by one each time an arrow is pressed. • **Timer:** This tool counts in seconds. If a number is placed to the right of it, it will increase it by 1 each second. • **Totals:** This tool will total anything in the cells below, next to or diagonal to it.
Unit 4.4 – Writing for Different Audiences **Program: 2Diy** • Know how font size and style can affect the impact of a text. • Know how to use a simulated scenario to produce a news report and campaign using technology.	• To explore how font size and style can affect the impact of a text. • To use a simulated scenario to produce a news report. • To use a simulated scenario to write for a community campaign	• **Campaign:** An organised course of action to achieve a goal. • **Format:** The way in which something is arranged or set out. • **Font:** A set of type which shows words and numbers in a particular style and size. • **Genre:** The style or category type of a piece of art, music or writing. • **Opinion:** A view or judgment someone forms about something, not always based on fact. • **Reporter:** A person who reports news or conducts interviews for the press or broadcasting media. • **Viewpoint:** The way someone sees or thinks about something.
Unit 4.5 – Logo **Program** • Know the structure of the coding language of Logo. • Know how to input simple instructions in Logo language environment. • Know how to create letter shapes using Logo. • Know what the repeat function in Logo is and its usefulness. Use it to create shapes such as squares.	• To learn the language of Logo. • To input simple instructions on Logo.	• **Debugging:** The process of identifying and removing errors from computer hardware or software. • **Grid**: The template around which the 2Logo turtle moves. • **Logo:** A text-based coding language used to control an on-screen turtle to create mathematical patterns.

• Know what procedures are and use this knowledge to build procedures in Logo.	• To recap Left, right, forward and backward. • To understand what the pen can go up and down. • To know that a command can be deleted or repeated using the mouse to click onto the coding. • For the children to use Logo to create letters. • To use the Repeat function in Logo to create shapes. • To use the Build feature in Logo.	• **Logo Commands (e.g. FD, BK, RT, LT)** : A list of commands inputted into 2Logo to move the turtle around the screen. • **Multi Line Mode:** Type several lines of commands in the text area. • **Pen Down:** Lowers the screen pen so the 2Logo turtle draws a line on the screen. • **Pen Up:** Raises the screen pen so the 2Logo turtle doesn't draw on screen. • **Prediction**: When you say what is going to happen when you run the instructions. • **Procedure:** Pieces of Logo text with a procedure name that can be run by calling them by name. Saves time if you want to print to screen lots of the same shape. • **Repeat:** A set of instructions that is run a specified number of times. • **Run Speed**: The speed at which the 2Logo turtle moves around the screen. • **SETPC:** Set pen colour to a given colour. • **SETPS:** Set the thickness of the pen's line.
Unit 4.6 – Animation Program: 2Animate • Know how animations are created by hand. • Know how animations are created using computers. • Know what onion skinning is when referring to animation.	• To discuss what makes a good animated film or cartoon and what their	• **Animation:** The process of adding movement to still objects. • **FPS (Frame Per Second):** The number of frames played per second. • **Frame:** A single image in an animation. • **Onion skinning:** A process where the shadow image of the previous frame is present to help you line up the objects of the animation correctly.

• Know that animations can be enhanced using features in software such as background and sounds. • Know what 'stop motion' animation is	favourites are. • To learn how animations are created by hand. • To find out how 2Animate can be created in a similar way using the computer. • To learn about onion skinning in animation. • To add backgrounds and sounds to animations. • To be introduced to stop motion animation. • To share animation on the class display board and by blogging.	• **Pause:** To temporarily stop the animation. • **Stop motion:** A technique whereby the camera is repeatedly stopped and started, for example to give animated figures the impression of movement.
Unit 4.7 – Effective Searching **Program: Browser** • Know how to find information from a search results page. • Know how to search effectively to find out information.	• To locate information on the search results page. • To use search effectively to find out information.	• **Balanced view:** Presenting opposing points of view fairly and without bias. • **Easter eggs:** An unexpected or undocumented feature in a piece of computer software or on a DVD, included as a joke or a bonus. • **Internet:** A global computer network providing a variety of information and communication facilities.

• Know how to identify if an information source is true and reliable.	• Knowing what wording to put into the search bar to make the algorithm to give correct searches. • To assess whether an information source is true and reliable.	• **Key words:** A word or a group of words an Internet user uses to perform a search in a search engine. • **Reliability:** The degree to which the result of something can be depended on to be accurate. **Results page:** Where the answers to a search are displayed. • **Search engine:** A program that searches for and identifies items in a database. Used especially for finding sites on the World Wide Web.
Unit 4.8 – Hardware Investigators • Know there are key parts that make up a computer. • Know what each of the key parts is called and the function of them.	• To understand the different parts that make up a computer. • To recall the different parts that make up a computer. • To understand that some hardware is inserted into the USB points. • To know that computers connect to a LAN or a WAN. • To know that software can	• **Components:** Parts inside the computer casing. • **CPU:** The 'brains' of the computer, where all the calculations take place. • **Graphics Card:** Also known as a video card and used for displaying images. • **Hard Drive:** Where the computer stores all your documents, pictures, games and videos. • **Hardware:** The physical parts of a computer or device. • **Input:** How information enters the computer. • **Motherboard:** Main printed circuit board of the computer. • **Network Card:** Used to connect the computer to a network such as the Internet. • **Output:** Where information leaves the system. • **Peripherals:** Parts that are attached to the computer case. • **RAM:** Allows programs to store information to help the computer run quickly. • **Software**: The programs that run on the computer.

	be found when logged into the computer.	
Unit 4.9 – Making Music • Know the main elements of music. • Know what rhythm and tempo is and able to use this knowledge to experiment with it. • Know that computers can be used to create music compositions. Know how to apply knowledge of music to create own composition using software.	• To know that music can be made on devices. • Some sounds are created by computers but are programmed by humans. • To understand that pulse is the heartbeat of the music. • To know that rhythm keeps the music in time.	• **BPM:** Beats per Minute. Changing the BPM changes the speed of the music. • **Dynamics:** How loud or quiet a sound is. • **Harmonious:** Notes which sound tuneful and pleasant together. • **Melody:** A sequence of notes which make up a tune. • **Pitch:** How high or low a sound is. • **Pulse:** The steady beat of a piece of music. • **Rhythm:** A pattern of long and short sounds and silences. • **Tempo:** How slow or fast a piece of music is. • **Texture:** The different sounds you can hear in a piece of music. • **Synths:** Short for synthesizer. Electronic musical instrument sounds
Unit 4.10 – Artificial Intelligence • Know the basic concept of what artificial intelligence is. • Know the key impact of artificial intelligence on daily life. • Know real-life examples of the current use of artificial intelligence. • Know how to think critically about artificial intelligence including its use in the future. • Know how to utilise artificial intelligence to create media such as images and music.	• Knowing that AI helps on a daily basis. • Understand the jobs that is better for AI. • Evaluate the pros and cons for example brain surgery using robots or AI to	• **Artificial Intelligence:** Computer systems able to perform tasks normally requiring human intelligence, such as seeing things, speech recognition, decision-making, and translation between languages. • **Algorithm:** A precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decisionmaking.

	help with shopping.	

Year 5

Substantial	Disciplinary	Vocabulary
Unit 5.1 – Coding **Program: 2Code** • Begin to know how to simplify code in order to make own programming more efficient. • Know how to create a simple simulation using 2Code. For example, a traffic light sequence. • Know what decomposition and abstraction are in computer science. • Know the need to start coding at a basic level of abstraction to remove superfluous details from own programs. • Know how to use decomposition to make a plan of a real-life situation. • Know what a function is in coding and know how to use a function in own program to make it more efficient. • Know what different variable types are. • Know what strings are and how to use them. • Know how to set and change variable values in code. • Know some of the common ways that text variables can be used in programming. • Know and use concatenation in own programs.	• To review coding vocabulary. • To use a sketch or storyboard to represent a program design and algorithm. • To use the design to create a program. • To design and write a program that simulates a physical system. • To review the use of number variables in 2Code. • To explore text variables. • To create a playable, competitive game. • To combine the use of variables, If/else statements and Repeats to achieve the desired effect in code. • To read code so that it can be adapted, personalised and improved. • To explore the launch command and use buttons within a program that launch other programs or open websites. • To create a program to inform others.	• **Abstraction**: Abstraction is a way of de-cluttering and removing unnecessary details to get a program functioning. • **Action**: The way that objects change when programmed to do so. For example, move. • **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Command**: A single instruction in 2Code. • **Concatenation**: The action of linking a mixture of strings, variable values and numbers together in a series. • **Co-ordinates:** Numbers which determine the position of a point, shape or object in a particular space. • **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed. • **Decomposition**: A method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program. • **Efficient:** In coding, simplified code runs faster and uses less processing memory, it is said to be more efficient. • **Event**: An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (**when Key**) or clicking or swiping the screen (**when Clicked, when Swiped**) or when objects interact (**collision**). In 2Code, the event commands are used to create blocks of code that are run when events happen. • **Flowchart**: A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram.

		• **Friction**: The resistance that one surface or object encounters when moving over another. • **Function:** A block or sequence of code that you can access when you need it, so you don't have to rewrite the code repeatedly. Instead, you simply **call** the **function** each time you want it. • **Input:** Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device. **Nest**: When coding commands are put inside other commands. These commands only run when the outer command runs. **Object**: Items in a program that can be given instructions to move or change in some way (action). In 2Code Gorilla, the **object types** are button number, input, text, shape turtle, character, object, vehicle, animal. • **Output**: Information that comes out of the computer e.g., **sound**. **prompt**, **alert** or **print to screen**. • **Physical System:** In this context, this is any object or situation that can be analysed and modelled. For example, modelling the function of a traffic light, modelling friction of cars moving down surfaces or modelling the functions of a home's security system. • **Predict**: Use your understanding of a situation to say what will happen in the future or will be a consequence of something. • **Print to Screen:** A type of output. It prints text to the screen. • **Properties**: These determine the look and size of an object. Each object has properties such as the image, scale and position of the object. • **Random**: Lacking a definite plan, purpose, or pattern. • **Repeat:** This command can be used to make a block of commands run a set number of times, until a condition is met or forever. • **Selection** A conditional decision command. When selection is used, a program will choose which bit of code to run depending on a condition. In 2Code selection is accomplished using **'if'** or **'if/else' statements.** • **Sequence**: This is when a computer program runs commands in order.

		• **Simplify:** In coding this is used to describe modifying the code to complete the same process with less lines of code. • **Simulation**: A model that represents a real or imaginary situation. Simulations can be used to explore options and to test predictions. • **String:** Text or a combination of text characters and numbers: A sequence of characters, which could form words, phrases or even whole sentences. • **Tabs**: In 2Code tabs are used to organise code. • **Timer:** In coding, use a timer command to run a block of commands after a timed delay or at regular intervals. • **Variable**: A named area in computer memory. A variable has a **name** and a **value**. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running. In 2Code, variables can be **strings**, **numbers** or **computer-generated** variables to control objects of a type.
Unit 5.2 – Online Safety • Know in more detail from prior learning of the impact that sharing digital content can have. • Know how to think critically about information they share online. • Know responsibilities they have for themselves and others regarding online behaviour. • Know and have developed knowledge from prior years about maintaining secure passwords. • Know about image manipulation using software and the advantages or disadvantages of this when shared online. • Know what is meant by appropriate and inappropriate text, photographs and videos. • Know about the impact of sharing media such as photographs and videos online.	• To gain a greater understanding of the impact that sharing digital content can have. • To review sources of support when using technology. • To review children's responsibility to one another in their online behaviour. • To know how to maintain secure passwords. • To understand the advantages, disadvantages,	• **Appropriate**: Suitable or proper in the circumstances. • **Avatar:** Avatars are images that are meant to represent someone. Because they aren't photos of someone, they are considered a safer alternative than a profile picture online. • **Bibliography:** A list of all the books and articles used in a piece of work. • **Citation:** A quotation from or reference to a book, paper, or author, especially in an academic work. • **Collaborate**: To work jointly on an activity or project. • **Communication:** A way of exchanging information for example, email, blogs, speaking, writing. • **Copyright:** When the rights to something belong to a specific person. • **Creative commons licence:** Creative Commons (CC) is a non-profit organisation who provide free licences for creators to use. If an image has a CC licence, you may usually use the image for non-commercial purposes. You must still give credit to the original creator of the image. If you do not, you could be prosecuted by the creator of the image.

• Know about the importance of citing content online from others and know how to do this. • Know how to select keywords and search techniques to find relevant information to increase reliability.	permissions and purposes of altering an image digitally and the reasons for this. • To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. • To learn about how to reference sources in their work • To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. Ensuring reliability through using different methods of communication	• **Critical thinking:** When online, it's important that users think critically about the content they see and anything they are being asked to do such as enter data. • **Digital Footprint:** The information about a person that exists on the Internet as a result of their online activity. • **Encrypt:** The translation of data into a secret code to achieve data security. • **Identity theft**: When someone pretends to be another person online. It can be done for financial gain or to steal others' private information. • **Image manipulation:** This is where an image has been altered often using software. • **Malware**: Software that is specifically designed to disrupt, damage, or gain unauthorised access to a computer system. • **Ownership**: Who has permission or can give permission to use or edit a resource or part of the resource. • **PEGI ratings:** These show the age that digital content is suitable for and the type of content that it contains. • **Phishing**: The practice of sending email pretending to be from reputable companies in order to persuade individuals to reveal personal information, such as passwords and credit cards numbers. **Password**: A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as email. • **Personal information:** Identifying information about yourself such as your name, address and telephone number. **Plagiarism**: Taking someone else's work or ideas and passing them off as one's own. • **Reference:** A mention of a source of information in a book or article including online. • **Reliability:** The degree to which the result or contents of something can be depended on to be accurate. e.g. when using a search engine. • **Responsibility:** Everyone who uses online services and devices connected to the Internet should behave in a respectful and safe way. They need to be

		aware of their responsibility to keep themselves safe and also not cause any unintended harm to others. Everyone has a responsibility to report things that they feel are inappropriate, upsetting or make them feel uncomfortable. • **Reliable Source:** A source of information that provides thorough, well-reasoned details based on valid evidence. • **Screenshot:** Taking an image of a device screen. This can be done to preserve evidence of what was on the screen. • **SMART rules:** A set of rules based around the word SMART designed to help you stay safe when online. SMART represents the words Safe, Meet, Accept, Reliable, Tell. • **Spoof:** An imitation of something that appears to look genuine. • **Validity:** The quality of something being logically or factually sound.
Unit 5.3 – Spreadsheets **Program: 2Calculate** • Know how to use formulae within a spreadsheet to convert measurements of length and distance. • Know how to use more advanced formulae effectively. For example, to use formulae to calculate area and perimeter of shapes. • • Know how to create formulae that use text variables. • Know how to use tools within a spreadsheet e.g. 2Calculate and the count tool to answer hypotheses. For example, to answer hypotheses about common letters in use.	• Conversions of measurements. • Knowing the difference between cm, m • Novel use of the count tool. • Formulae including the advanced mode. • Using text variables to perform calculations. • Using a spreadsheet to plan an event.	• **Advance Mode:** A mode in 2Calculate in which the cells have references and can include formulae. • **Area:** This is the term used to describe the amount of space taken up by a flat shape or surface. For example the size of a field. Simple shapes like rectangles can have area calculated by multiplying length x width. • **Budget:** An amount of money allocated to something. For example, the amount of money the children have been given for ingredients to make cakes for a school cake sale. • Columns: Boxes running vertically in a spreadsheet. • **Computational Model:** Creating or using a simulation (a model) of a real-life situation, on a computer. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Format Cell:** The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g. 4 ½ or include units such as £ or $.

		• **Formula:** A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is formulae. • **Formula Bar:** An area of the spreadsheet into which formulae can be entered using the '=' sign to open the formula. • **Formula Wizard:** The wizard guides the user in creating a variety of formulae for a cell such as calculations, totals, averages, minimum and maximum for the selected cells. • **'How Many?' Tool:** This tool counts how many of a variable there are in a spreadsheet. • **Perimeter:** Is the term used to describe all the sides lengths added up. For example, to work out perimeter of a rectangle we can add up all its sides lengths. • **Profit:** This is the amount of money that has been made after the costs of creating or doing something. For example, the amount of money there is from a cake sale when the cost of creating them has been subtracted. • **Rows:** Boxes running horizontally in a spreadsheet. Spreadsheet: A computer program that represents data in cells in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the value to be inserted based on the values in other cells. • **Totalling tool:** The totalling tool adds up the value of every cell above it, next to it or diagonal to it according to which total tool is selected. • **Variable:** A variable is used in computing to keep track of things that can change while a program is running.
Unit 5.4 – Databases **Program: 2Investigate** • Know how to search for information within a database. • Know the different ways to search for information in a database. • Know how to add information into a shared database. • Know how to create own database. • Know how to create new records. • Know what fields are and know how to correctly add information. • • Know how to phrase questions so they can be correctly answered using a search of database.	• To learn how to search for information on a database. • To understand a record is what is kept secure and holds data. • Know what makes a good question. • To contribute to a class database. • To create a database around a chosen topic.	• **Arrange:** Sorting information in order against a search request. • **Avatar:** An icon or figure representing a person in a video game, Internet forum, etc. • **Chart:** A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts. • **Collaborative:** Produced by, or involving, two or more parties working together. • **Data**: A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Database:** A set of data that can be held in a computer in a format that can be searched and sorted for information.

		• **Database Report:** A way of producing a written paragraph that incorporates the data from the fields and records of the database. • **Field:** A heading in a database record against which information is entered. • **Group:** Putting similar pieces of information together in a database so it is easy to read, understand and interpret. **Record:** A collection of data about one item entered into a database. • **Search:** A way of finding information. • **Sort**: Organising data by a rule such as alphabetical or numerical. • **Statistics:** The study and manipulation of data, including ways to gather, review, analyse, and draw conclusions from data.
Unit 5.5 – Game Creator **Program: 2DIY** • Know what some of the main elements are that make a successful game. • Know how to plan a playable game. • Know how to incorporate media such as sound and images. • Know how to manipulate media including adding animation. • Know how to successfully evaluate games.	• To set the scene and understand why this is an important feature of a game. • To create the game environment. • To create the game quest. • To finish and share the game. • To know how to include pictures by selecting from a menu. • To evaluate their and peers' games.	• **Evaluation:** To critically examine a program. It involves collecting and analysing information about a program's activities, characteristics, and outcomes • **Feedback:** In this case, share information with the creator about how the game could be improved. • **Image:** In this case, a picture displayed on the computer screen. • **Instructions:** Detailed information about how something should be done or operated. • **Promotion:** The publicising of a product, in this case a game, so as to increase sales or public awareness. • **Quest:** To find or do something. • **Scene:** The place where an incident in real life or fiction occurs or occurred. • **Screenshot:** An image of the data displayed on the screen of a computer or mobile device. • **Texture:** High frequency detail or colour information on a computer-generated graphic. • **Theme:** In this case, the subject of the game.

Unit 5.6 – Modelling **Program: 2Design** • Know what modelling software is and the skills of computer aided design. • Know the effect of moving points when designing. • Know how to design a 3D model to fit certain criteria. • Know how to refine and print a model.	• To be introduced to 2Design and Make. Objectives • To explore the effect of moving points when designing. • To understand designing for a purpose. • To understand printing and making. • To know the properties of 2D and 3D shapes. • To explore the effect of moving points when designing. • To understand designing for a purpose. • To understand printing and making.	• **2D**: Something that has only two dimensions; height and width. • **3D**: Something that has three dimensions; height, width and depth. • **3D Printing:** The action or process of making a physical object from a three dimensional digital model, typically by laying down many thin layers of a material in succession. • **CAD – Computer Aided Design**: A CAD computer program or app allows you to design a 3D object or environment in 2D and visualise it in 3D on the screen from many angles. • **Design Brief:** A document for a design project, defining the core details, including the goal and strategy. • **Net:** What a 3D shape would look like if it was unfolded and opened out flat. • **Pattern Fill:** A tool where you can add a customised repeating pattern to the surface of the net. • **Points:** The points on a 3D net which create the corners of the 3D shape. **Template:** Something that serves as a model for others to copy and edit.
Unit 5.7 – Concept Maps **Program: 2Design** • Know the need for visual representations when generating and discussing complex ideas. • Know the uses of a 'concept map'.	• To understand the need for visual representation when generating and discussing complex ideas. • To understand and use the correct vocabulary when	• **Concept:** An idea in the form of a question. • **Concept Map:** A tool for organising and representing knowledge about a concept. They form a web of ideas which are all interconnected. • **Connection**: Represents a relationship or link between two nodes or ideas. • **Collaborate:** Participating in an activity with more than one person working together.

• Know what is meant by 'concept map', 'stage', 'nodes' and 'connections.' • Know how to create a concept map using software such as 2Connect. • Know that concept maps can be used to retell stories and information. Know how to present a concept map to an audience.	creating a concept map. • To create a concept map. • To understand how a concept map can be used to retell stories and information. • To create a collaborative concept map and present this to an audience.	• **Heading:** A main title for a piece of written work. • **Sub-Heading:** A title for a section of a piece of written work. • **Node**: A box on screen which represents a concept or idea. Can contain text and\or an image. • **Presentation Mode:** A mode on 2Connect where nodes and connections are revealed gradually to be accompanied by a verbal presentation. • **Story Mode:** A way to use a 2Connect concept map to create a piece of text.
Unit 5.8 – Word Processing • Know what a word processing tool is for. • Know how to create a word processing document. • Know how to alter the look of text and navigate around a document. • Know how to alter page layout including heading and columns. • Know how to add and edit images. • Know how to add features to enhance look and usability within a document. For example: textboxes, hyperlinks, contents pages. • Know how to use tables to present information.	• To know which context is needed to create a word document. • To know the features of font sizes and why they are important. • To use the mouse to crop images. • To look at the tool bar at the top of the page and choose the symbols that mean borders, heading and columns.	• **Attributing:** Saying where a piece of writing or photograph came from and giving the 'owner' credit. • **Bulleted lists:** A list with bullet points, used when the items do not have an order. • **Breaks:** A marker tool used to organise the flow of your pages by restarting text on the next page or starting a new section with a new format. • **Caps Lock:** A button on the computer keyboard which changes the letters to upper case (capital letters). • **Captions:** Text under an image to provide more information about what is shown. • **Column (table): A collection of cells aligned vertically (downwards) in a table.** • **Columns (newspaper):** They divide the page vertically into two or more boxes of text which are read downwards before moving across to the next. • **Copy and Paste:** A way of transferring words or images from one location to another. • **Copyright:** When an image, logo or idea has a legal right to not be copied or used without the owner's permission.

		• **Creative Commons:** Images where the copyright holder, often the creator, has given permission for the image to be used as long as the creator is attributed. • **Cropping:** Removing the unwanted outer areas from an image. • **Cursor:** The flashing vertical line that shows your place in a document. **Distributing Columns:** A quick way to make all the columns on a table the same width. • **Document:** A type of file which shows written information and/or images and sometimes charts and tables. • **Drop Capitals:** A large capital letter used decoratively at the beginning of a section of text. • **Editor Options:** The editing options that someone can take with a document when it has been shared with them. (Google Docs only) • **Font:** A set of type which shows words and numbers in a particular style and size. **Front Screen:** The screen which first opens on launch. It gives access to the different actions a user can take. • **Grammar check:** A software tool used for spotting and correcting grammar mistakes. • **Hyperlink:** A clickable link from a document to another location, often a webpage. • **Image Editing:** The act of altering or changing an image to improve the effect. • **Image Transparency:** Changing the transparency provides the ability to make an image 'see through'. • **Merge Cells:** A tool you can use when making a table to join cells which are next to each other in columns or rows. • **Numbered lists:** A list with numbers, used when the items are in a specific order.

		• **Page Orientation:** The direction that the rectangular page is viewed. Portrait means longer side going upwards, Landscape means the longer side going sideways. • **Readability**: How easy and pleasant it is to read and understand a document. • **Row:** A collection of cells aligned horizontally (side to side) in a table. • **Selecting/highlighting:** Clicking on the text you wish to edit. • **Sharing:** The ability to share a document with someone else via a link over email. • **Spell check:** A software tool used for spotting and correcting spelling mistakes. • **Styles:** In-built combinations of formatting characteristics e.g. font style and size, which you can apply to any text in your document. • **Template:** A ready-made outline of a document you might want to adapt, such as a letter or certificate. • **Text Box:** A box which can be added to your document that lets you type text anywhere in your file. • **Text Formatting:** When you change the format of text on a page, including the font and the size and whether it is bold, underlined or in italics. • **Text Wrapping:** A feature which helps you place and position an image neatly on a page or within a paragraph of text. • **Word Art:** A way to treat text as a graphic so that you can add special effects to text. **Word Processing Tool:** A program which allows you to write, edit and print different documents. • **Zoom:** You can zoom in to get a close-up view of a document or zoom out to see more of the page.
Unit 5.9 – External Devices	• To find and locate some devices that are external at home and at school.	• **Note:** Many of these words have been introduced as part of the coding units. • **Alert:** This is a type of output. It shows a pop up of text on the screen with an OK button to close the screen.

• Know what a host means in the context of 2Code Purple Chip and relate this to everyday technology e.g. console and wireless controller. • Know what is meant by external device in relation to a host device. • Know what is meant by an application (App). • Know that a program can be created that will interact with an external device based on inputs and outputs available on the device and what has been coded on the host device. E.g. sound detection on the device sends input to the program triggering code to output alert noise to the device (Simple intruder alarm). • Know how interaction between an external device and host can be related to real world scenarios, recognising its usefulness. • Know the extent of functionality with Purple Chip including the code blocks available. • Know how to utilise the functionality of Purple Chip when designing own program.	• To understand what the terminology 'app' means. • To understand why external devices are included and the benefits of having these on hardware.	• **Algorithm:** a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Chip show text:** An output of 2Code Purple Chip that displays text horizontally scrolling across the Purple Chip screen. • **Code View:** The view in 2Code that shows the coding blocks used to make the program. • **Debug:** Fixing code that has errors so that the code will run the way it was designed. • **Design:** In coding, this is a plan for the program showing the visual look of the user interface (the screen) with the objects. The algorithm can be represented as part of the design, showing actions and events. • **Design View:** The view in 2Code that shows what the program looks like to the user. • **Emulator/ Simulator:** In computing this is a piece of software that causes the host device to behave like a different computer system (the guest). • **Event:** An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (when Key) or clicking or swiping the screen (when Clicked, when Swiped) or when objects interact (collision). In 2Code, the event commands are used to create blocks of code that are run when events happen. • **External device:** A portable computerised device such as a micro-bit, Makey Makey, Crumble board, temperature, pressure or light sensor. Devices such as smart phones can also be used as external devices using their sensors and functions to replicate the functionality of simpler devices. These devices communicate with other devices. • **Function:** A block or sequence of code that you can access when you need it, so you don't have to rewrite the code repeatedly. Instead, you simply call the function each time you want it. • **Host:** The main device that the external devices connect to. • **If/else:** A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run. • **Input:** Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device. • **Output:** Information that comes out of the computer e.g., sound. prompt, alert or print to screen. • **Print to Screen:** A type of output. It prints text to the screen.

		• **QR code:** A machine-readable code consisting of an array of black and white squares, used for storing a URL or other information that can be read by a device's camera. • **Sensor:** A device that produces an output signal for the purpose of sensing a physical phenomenon. The input can be light, heat, motion, moisture, pressure or a growing number of other environmental phenomena. • **URL:** The address of a webpage. • **Variable:** A named area in computer memory. A variable has a name and a value. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running. In 2Code, variables can be strings, numbers or computer-generated variables to control objects of a type. • **Design:** In coding, this is a plan for the program showing the visual look of the user interface (the screen) with the objects. The algorithm can be represented as part of the design, showing actions and events.

Year 6

Substantial	Disciplinary	Vocabulary
Unit 6.1 – Coding **Program: 2Code** • Know how to implement a game which includes timers and a score. • Know what the launch command is. • Build on knowledge of functions. • Know how to use multiple functions in own program. • Know how to arrange code in multiple tabs. • Know how to develop creativity when coding to generate novel effects. • Know the different options of generating user input in 2Code. • Know how to attribute variables to user input. • Know the need to code for all possibilities when using user inputs. • Know how 2Code can be used to make a textbased adventure game. • Know with improving understanding of how they can alter existing programs to reflect their own ideas. • Building on existing knowledge of debugging, children know how to debug more effectively.	• Designing and Writing a More Complex Program • Introducing Functions • Using user input • Flowcharts and Control Simulations • Using 2Code to make a text-based adventure • To arrange a code in a sequence. • For more than one code to open another tab to extend this learning further. • To look at the features and options of generating user inputs. • What makes a good adventure game. • To follow a sequence and predict where the bug might be.	• **Action**: The way that objects change when programmed to do so. For example, move. • **Algorithm**: a precise, step-by-step set of instructions used to solve a problem or achieve an objective. • **Command**: A single instruction in 2Code. • **Concatenation**: The action of linking things together in a series. • **Co-ordinates:** Numbers which determine the position of a point, shape or object in a particular space. • **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed to. • **Decomposition**: A method of breaking down a task into manageable components. This makes coding easier as the components can then be coded separately and then brought back together in the program. • **Event**: An occurrence that causes a block of code to be run. The event could be the result of user action such as the user pressing a key (**when Key**) or clicking or swiping the screen (**when Clicked, when Swiped**) or when objects interact (**collision**). In 2Code, the event commands are used to create blocks of code that are run when events happen. • **Execute\ Run:** Clicking the Play button to make the computer respond to the code. Execute is the technical word for when you run the code. We say, 'the program (or code) executes.' • **Flowchart**: A diagram that uses specifically shaped, labelled boxes and arrows to represent an algorithm as a diagram.

		• **Function:** A block or sequence of code that you can access when you need it, so you don't have to rewrite the code repeatedly. Instead, you simply **call** the **function** each time you want it. • **Input:** Information going into the computer. This could be the user moving or clicking the mouse, or the user entering characters on the keyboard. On tablets there are other forms such as finger swipes, touch gestures and tilting the device. In 2Code the commands **prompt for input** and **get input** are used to prompt the user to enter typed input and then use this input. • **Launch Command:** This command will open another Purple Mash file or an external website that you specify when it is called. • **Object**: Items in a program that can be given instructions to move or change in some way (action). In 2Code Gorilla, the **object types** are button number, input, text, shape turtle, character, object, vehicle, animal. **Output**: Information that comes out of the computer e.g. sound. prompt, alert or print to screen. • **Predict**: Use your understanding of a situation to say what will happen in the future or will be a consequence of something. • **Procedure:** An independent code module that fulfils a task and is referenced within a larger body of code. In 2Code a procedure might be coded as a function. • **Properties**: These determine the look and size of an object. Each object has properties such as the image, scale and position of the object. • **Repeat:** This **command** can be used to make a **block of commands run** a set number of times or forever. • **Repeat until:** In 2Code this command will repeat a block of commands until a condition is met. • **Selection**: Selection is a decision command. When selection is used, a program will choose which bit of code to run depending on a condition. In 2Code selection is accomplished using **'if'** or **'if/else' statements.** • **Sequence**: This is when a computer program runs commands in order.

		• **Simulation**: A model that represents a real or imaginary situation. Simulations can be used to explore options and to test predictions. • **String:** Text or a combination of text characters and numbers: A sequence of characters, which could form words, phrases or even whole sentences. • **Tabs**: In 2Code tabs are used to organise code. • Text Adventure: A computer game that uses text instead of graphics. • **Text Object:** An object that can contain text and be formatted using the properties of colour and border. It is not a clickable object but can be programmed to hide. • **Timer:** In coding, use a timer command to run a block of commands after a timed delay or at regular intervals. • **Turtle Object:** A type of object in 2Code that moves by coding angles of rotation and distance to move. • **Variable**: A named area in computer memory. A variable has a **name** and a **value**. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running. • **x and y properties:** Properties of an object that denote its position on the screen. In 2Code the top left of the screen is (0,0) with maximum values of x and y determined by the grid size property of the background.
Unit 6.2 – Online Safety • Know the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. • Know what secure sites are. • Know that secure sites will have industry standard seals of approval. • Build on knowledge of Digital Footprints. For example, know how and why people use their information.	• Identify benefits and risks of mobile devices broadcasting the location of the user/device, e.g. apps accessing location. • Identify secure sites by looking for privacy seals of approval, e.g. https, padlock icon. • Identify the benefits and risks of giving personal information and device access to different software. • To review the meaning of a digital footprint and understand how and why people use their information and online	• **Data Analysis:** The process of interpreting and understanding data that has been collected and organised. • **Digital Footprint:** The information about a person that exists on the Internet as a result of their online activity. • **Inappropriate:** Something that is not suitable or proper in the situation. • **Location sharing:** A way of sharing with others your device's location, these can be switched off for added security. • **Password:** A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as a website.

• Build on knowledge of appropriate online behaviours and how this can protect themselves and others from possible online dangers. For example, the dangers of promoting inappropriate content online. • Have greater knowledge of how to make more informed choices of how free time is used. • Know the effects on individual health when having too much screen time.	presence to create a virtual image of themselves as a user. • To have a clear idea of appropriate online behaviour and how this can protect themselves and others from possible online dangers, bullying and inappropriate behaviour. • To begin to understand how information online can persist and give away details of those who share or modify it. • To understand the importance of balancing game and screen time with other parts of their lives, e.g. explore the reasons why they may be tempted to spend more time playing games or • find it difficult to stop playing and the effect this has on their health. • To identify the positive and negative influences of technology on health and the environment.	• **PEGI rating:** A rating that shows what age a game is suitable for. • **Phishing:** The practice of sending email pretending to be from reputable companies in order to persuade individuals to reveal personal information, such as passwords and credit cards numbers. • **Print Screen:** Capturing an image of the current screen on a device. Also known as a screen shot. • **Screen Time:** The time spent using a device with a screen, such as a computer, television, tablet or phone. • **Secure websites:** Secure website have particular privacy features to look out for such as a padlock or https. • **Spoof:** An imitation of something that appears to look genuine.
Unit 6.3 – Spreadsheets **Program: 2Calculate** • Know how to create a spreadsheet to help answer a mathematical question relating to probability. • Know how to take 'copy' and 'paste' shortcuts. • Know how to problem solve during mathematical investigations when using spreadsheets by using tools such as the 'Count tool'. • Know how to create a spreadsheet to produce computational models. For example, creating a spreadsheet that works out discounts and final price sales. Children will know how to use advanced formula to assist with this.	• Exploring Probability • Use of spreadsheets in 'real life' Creating a computational model • Use a spreadsheet to plan pocket money spending • Planning a school event and identifying the cost factors for this. • Linked to Sanctury – raising money for a good cause. • Know that control c means to copy and control v means paste in short codes and can locate these on the keyboard.	• **Advanced mode:** A mode in 2Calculate that displays rows and columns which gives cell addresses and enables formula wizard. • **Budget:** The amount of money available to spend on a project. • **Chart**: A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts. • **Columns**: Boxes running vertically in a spreadsheet. • **Count (How Many?) Tool:** Counts how many of a variable there are in a spreadsheet. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making.

• Know how to use a spreadsheet to help plan actions. For example, create a spreadsheet to plan how to spend pocket money and the effect of saving.		• **Dice Tool:** Simulates the roll of a die to a random number between 1 and 6 when you click on it. • **Expense:** A cost associated with a project. **Format Cell:** The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g. 4 ½ or include units such as £ or $. • **Formula**: A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is formulae. • **Formula Bar**: An area of the spreadsheet into which formulae can be entered using the '=' sign to open the formula. • **Formula wizard:** Helps a user create formulas which perform calculations on selected cells. For example, adding, multiplying, average, total. • **Move Cell Tool:** Allows selected cells to be draggable. • **Percentage:** Percentage or percent means one hundredth. For example 1% means 1/100 or one hundredth. Since percentages are hundredth parts, this means we can easily write them as fractions and decimals. E.g. 10%, 0.1 or 1/10. • **Probability**: The extent to which an event is likely to occur, measured by the ratio of the favourable cases to the whole number of cases possible. • **Profit:** Money that is earned in trade or business after paying the costs of producing and selling goods and services. • **Rows**: Boxes running horizontally in a spreadsheet. • **Spreadsheet**: A computer program that represents data in cells in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the value to be inserted based on the values in other cells.
Unit 6.4 – Blogging **Program: 2Blog** • Know the purpose of writing a blog.	• To identify the purpose of writing a blog. • To identify the features of successful blog writing. • To plan the theme and content for a blog.	• **Approval:** The act of acknowledging something is appropriate. • **Archive:** In this case, where older blog or vlog posts are stored. • **Blog:** A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.

• Know the features of successful blog writing. • Know how to plan a blog. • Know how to write a blog. • Know how to write a blog post. • Know that the way information is presented within a blog has an impact upon the audience. • Know how to contribute to others' blogs. • Know the importance of having an approval process when creating blog content or modifying it. • Know from Online Safety knowledge that content within blogs applies. For example, children know the issues surrounding inappropriate posts and cyberbullying.	• To understand how to write a blog. • To consider the effect upon the audience of changing the visual properties of the blog. • To understand the importance of regularly updating the content of a blog. • To understand how to contribute to an existing blog. • To understand how and why blog posts are approved by the teacher. • To understand the importance of commenting on blogs. • To peer-assess blogs against the agreed success criteria.	• **Blog post:** A piece of writing or other item of content published on a blog. • **Collaborate:** Work jointly on an activity or project. • **Commenting**: To express an opinion or reaction in speech or writing. • **Connections**: A relationship in which a person or thing is linked or associated with something else. • **Nodes:** a point in a diagram, in this case on 2Connect, at which lines or pathways intersect or branch. • **Vlog:** A personal website or social media account where a person regularly posts short videos.
Unit 6.5 – Text Adventures **Program 2Connect** • Know what a text based adventure is. • Know how to convert a simple story with 2 or 3 levels of decision making into a logical design. • Know how to use the functionality of 2Create a Story Adventure mode to create, test and debug using plans. • • Know the difference between a map-based game and a sequential story-based game. • Know how to use written plans to code a map-based adventure using 2Code. • Know how to recall existing knowledge to support coding a map-based adventure game. For example,	• To find out what a text adventure is. To plan a story adventure. • To make a story-based adventure. • To introduce map-based text adventures. • To code a map-based text adventure. • Know the features of a map and a story. • To use the features of yes/no and why it is important for coding.	• **Debug\ Debugging:** Fixing code that has errors so that the code will run the way it was designed to. • **Function:** In this context, a section of code that gets run when it is called from the main code. A function in a program is usually a piece of code that gets run lots of times. • **Link:** A way of connecting one page to another. • **QR Code:** a code consisting of black and white squares, typically used for storing URLs or other information for reading by the camera on a smartphone. • **Repeat**: To make something happen again. • **Sprite**: A computer graphic which may be moved on-screen. • **Text Adventure:** A computer game that uses text instead of graphics. • **Selection:** When selection is used, a program will choose a different outcome depending on a condition.

using functions, two-way selection (IF/ELSE statements) and repetition.		• **Variables**: A variable has a name and a value. The program can change this variable value.
Unit 6.6 – Networks • Know the difference between the World Wide Web and the Internet. • Know what a WAN and LAN is and the key differences between them. • Know how a school network accesses the Internet. • Know the history of the Internet. Know some of the major changes in technology which have taken place in their lifetime	• To discover what the pupils know about the internet. • To find out what a LAN and a WAN are. • To find out how we access the internet in school. • To look at the history and know where computing fits into a timeline. • To know what WWW stands for. • To understand how the internet works • To research and find out about the age of the internet. • To think about what the future might hold.	• **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **DNS (Domain Name Server):** The system that automatically translates internet addresses to the numeric machine addresses that computers use. • **Ethernet:** A system for connecting several computer systems to form a local area network. • **Hosting:** Where a website or other piece of information is stored. • **Hub\Switch:** The connection point for networks where data packets from many locations converge and are then sent out to different devices. • **Internet:** A global computer network providing a variety of information and communication facilities consisting of interconnected networks using standardized communication protocols. • **IP address:** A unique string of characters that identifies each computer using the Internet Protocol to communicate over a network. • **ISP (Internet Service Provider):** A company that provides subscribers with access to the internet. • **LAN (Local Area Network):** A computer network that links devices within a building or group of adjacent buildings, especially one with a radius of less than 1 km. **Network:** Several interconnected computers, machines, or operations. • **Router:** A device which forwards data packets to the appropriate parts of a computer network. • **Search engine:** A program that searches for and identifies items in a database that correspond to keywords or characters specified by the user, used especially for finding particular sites on the World Wide Web.

		• **WAN (Wide Area Network):** A collection of local-area networks (LANs) or other networks that communicate with one another over a large physical area or even globally. • **Web Page:** A document on the World Wide Web. • **Web server:** Software and hardware that uses HTTP (Hypertext Transfer Protocol) and other protocols via the World Wide Web. • **Website:** a set of related web pages located under a single domain name, typically produced by a single person or organization. • **WLAN: (Wireless Local Area Network):** A collection of devices connected together wirelessly in one physical location • **Wi-Fi**: A facility allowing computers, smartphones, or other devices to connect to the internet or communicate with one another wirelessly within a particular area. • **World Wide Web:** An information system on the Internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another.
Unit 6.7 – Quizzing **Practising: 2Quiz and 2Investigate** • Know how to use create activities for younger children using software such as 2DIY. • Know about different question types within quizzing software tools such as 2Quiz. • Know how to give and respond to feedback based on quizzes made. • Know how to create their own grammar games.	• To create a picture-based quiz for young pupils. • To learn how to use the question types within 2Quiz. • To explore the grammar quizzes. • To make a quiz that requires the player to search a database. • To look at some quiz shows and identify what makes a good question. • Are you smarter than a 10- (or 11-) year-old? To make a quiz to test your teachers or parents.	• **Audience:** People who watch a performance or use a resource. • **Audio:** Sound (especially when recorded). • **Case-Sensitive:** (of a computer program or function) differentiating between capital and lower-case letters. • **Clipart:** Simple pictures to use on computers. • **Clone**: To make a complete copy of something. • **Cloze:** A test in which words are removed from a text and replaced with spaces. The learner has to fill each space with the correct word(s). • **Copy\Paste:** A way to copy objects such as text or images using technology.

• Know how to use multiple pieces of software to enhance a quiz. For example, creating a quiz that requires children to look up information on a database.		• **Database:** A collection of data organised in such a way that it can be searched, and information found easily. • **Database Record:** Information about one item in the database. • **Database Field:** The separate pieces of information collected for each record of the database. • **Image:** Pictures (includes clipart, illustrations and photos). **Image Filter:** Function of a computer program that changes the appearance of uploaded images. • **Selfie:** A photo taken by a person of themselves. • **Statistics:** Statistics is the study and manipulation of data, including ways to gather, review, analyse, and draw conclusions from data. • **Undo\Redo:** Using functions to undo the last action(s) performed and (optionally) redo it. • **Preview**: To see what something (or part of something) looks like before committing to it being the final version. • **Quiz:** An activity in which participants answer questions and receive a score dependent upon correct answers. •
Unit 6.8 – Binary • Know that all data in a computer is saved in the computer memory in a binary format. • Know that binary uses only the integers 0 and 1. • Know that we can relate 0 as an 'off' switch and 1 to an 'on' switch. • Know how to count up from 0 in binary using visual aids if required. • Know that bits are related to computer storage. • Know how to convert numbers to binary using the division by two method.	• To understand that data is made from 0 and 1. • Click a light switch and understand that 0 is off and 1 is on. • To understand why binary is important. • To use a converter to understand the binary compositions.	• **Binary:** A number system in which there are two separate integers that can be used to make all numbers. This is also called the base 2. • **Bit:** A single 0 or 1 is called a bit. This word comes from '**B**inary Dig**it**'. • **Decimal:** A fraction whose denominator is a power of ten and whose numerator is expressed by figures placed to the right of a decimal point. • **Denary:** A number system in which there are ten separate integers that can be used to make all numbers. This is also called the **base 10** and **decimal system.** • **Digit**: A single integer used to show a number.

• Know how to use a converter tool to check binary conversions.		• **Game States:** How states within computer programs and games are often represented in code using binary values of 1 (for on) and 0 (for off). This is usually done using a variable. • **Integer:** Any whole number. This includes negative and positive numbers but not fractions or decimals. • **Microprocessor:** Known as the **computer chip**. It contains many transistors to pass signals. • **Nanotechnology**: The science of manipulating materials at their smallest level. At this level, the molecules of a material can be seen. • **Nibble, Byte, Kilobyte, Megabyte, Gigabyte and Terabyte:** Words used to describe numbers of bits and the computer memory space that they use. (Nibble - 4 bits, Byte - 8 bits, Kilobyte (KB) - 1024 bytes, Megabyte (MB) - 1024 KB, Gigabyte (GB) - 1024 MB, Terabyte (TB) - 1024 GB). • **Switch**: An act of changing to or adopting one thing in place of another. • **Transistor:** A transistor is a tiny switch that is activated by the electronic signals it receives. • **Variable**: A named area in computer memory. A variable has a **name** and a **value**. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running.
Unit 6.9 – Spreadsheets (Alternative) • Know the uses of spreadsheets and familiar with the spreadsheet environment. • Know how to navigate around a spreadsheet using cell references. • Know key vocabulary: Cells, columns, rows, cell names, sheets, workbooks. • Know how to use a spreadsheet to carry out basic calculations including addition, subtraction, multiplication and division formulae.		• **Auto fit**: A function of a spreadsheet that alters column widths to fit data. • **Average**: A number expressing the typical value in a set of data. Also known as the mean. It is calculated by dividing the sum of the values in the set by their number. • **Budget**: The amount of money available to spend on a project. • **Calculation:** The process or result of adding, subtracting, multiplying, or dividing or a combination of these operations. • **Categories Ribbon†:** The way that icons are organised into related functions in the Microsoft menu bar.

• Know how to use the series fill function. • Know that using formulae allows the data to change and the calculations to update automatically. • Know how to use a spreadsheet to solve a problem. • Know how to use the SUM function. • Know how to manipulate the way data is presented. For example, flash fill, convert text to tables, splitting cells, sorting data. • Know what is meant by a delimiter. • Know how to create formulae that deals with percentages, averages, max and min. • Know what range notation is. • Know that there are ways to present data graphically. • Know how to use charting features to create charts from data in cells. • Know how to use sparklines and data bars to illustrate data. • Know the advantages to using formulae when data is subject to change in a spreadsheet. **Know how to print spreadsheets.**		• **Cell:** An individual section of a spreadsheet grid. It contains data or calculations. • **Cell Reference:** Each cell has a cell reference that shows its position. The cell reference is displayed in the box on the top left (not on tablet version). • **Chart**: A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts. • **Column:** Vertical, lettered reference points for the cells in a spreadsheet. • **Computational Model:** Creating or using a simulation (a model) of a real-life situation, on a computer. • **Conditional formatting**: When a cell or cells are formatted in a specific way depending upon the values in the cell or cells. • **Currency**: A system of money in general use in a particular country. • **Data:** A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision making. • **Delimiter***: A character that separates each piece of data. • **Expense**: A cost associated with a project. • **Filter**: Changing the view of the spreadsheet to see only certain data by selecting from the available data in the columns. • **Flash-fill*:** A function of Excel that fills cells using a pattern started by the user. • **Formatting**: The way that text looks (in a cell). • **Formula:** A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is **formulae**. • **Formula Bar:** An area of the spreadsheet into which formulae can be entered using the '=' sign to open the formula. • **Graph**: A diagram that represents data there are specific layouts for graphs including bar graphs and line graphs. • **Horizontal axis:** The x-axis of a graph is called the horizontal axis. **Maximum**: The largest amount or number.

		• **Minimum**: The smallest amount or number. • **Profit**: Money that is earned in trade or business after paying the costs of producing and selling goods and services. • **Range:** A collection of selected cells: all the numbers you want to appear in a calculation. For example, A1:A12 includes all the cells from A1 to A12. • **Row:** Horizontal, numbered reference points for the cells in a spreadsheet. • **Series:** Data that follows a pattern. • **Sheet:** The label used to describe each individual page in a spreadsheet workbook. • **Sorting**: Organising data by a rule such as alphabetical or numerical. • **Spreadsheet:** a software tool used for organising information and performing calculations on the data. • **Template**: A document that has been pre-formatted for a purpose including formulae to be used. • **Text Wrapping:** This displays the cells contents on multiple lines rather than one long line, allowing all the contents to be shown. • **Vertical axis:** The y-axis of a graph is called the vertical axis. • **Workbook:** A spreadsheet file that can contain 1 or more spreadsheets. *Full version only †Microsoft only

Key skills children are learning:
Coding and computational thinking
Spreadsheets
Internet and email
Art and design

Music
Data bases and graphing
Writing and presenting
Communication and networks.

Inclusion

Possible challenges for learning	Recommendations
• Remembering instructions • Decoding information • Taking longer to sequence computer programs • Reading algorithms • Organization • Coordination • Concentration • Working and long -term memory • Social communication • Wellbeing and self esteem • Audio/ oral challenges • Sensory challenges • Over stimulation • Dysregulation • Typing difficulties	• Dyslexia friendly fonts • Different ways to represent algorithms such as objects or stickers. • Coloured overlays for screens • Simple instructions • Chunked information • Rosenshine's method of short and frequent inputs/check ins • Make a code as many times as needed- repetition • Look to evaluate children's responses and check-ins for wellbeing • Colour code actions and sequences • Practical opportunities available – moving bodies for instructions for example. • Other ways to represent learning though physical objects • Ear defenders/ headphones • Mainstream core standards • Instruments adapted for users for example using paper to section the keyboard. • Stickers used to colour (colour code) chords for specific keys. • Memory breaks • Assisted technology to allow accessibility for all learners • Having word mats available for communication • Support from school staff and available spaces to practise

Bug

An error in a program which that stops the program from running as expected.

Debugging

Fixing and correcting the algorithm or programming code.

Coding

Putting information and commands into a program.

Internet

A network of computers linked all over the world.

Data

Data is information.

Software

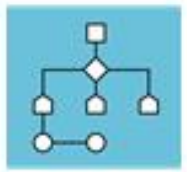
The non-physical part of the computer. Can be created using programming language

Network

Computers linked within a building or area.

LAN—Local Area Network

WAN– Wide Area Network



Algorithm

Step by step instructions that we need to complete /achieve a task.

Binary

The language that computers use. It is a series of 1s and 0s.

Hardware

Computers, ipads, phones, tablets, keyboards, mouse and laptops that need software to run.

Click

Pressing the mouse button

Double click

Pressing the mouse button very quickly, two times.

Drag

Click the mouse button and hold as you move the mouse pointer to a new location.

Drop

Release your mouse button to 'let go' of an item you are dragging.

Search engine

A program that searches for an identifies items in a database that correspond to the keywords, specified by the user.

Computer science

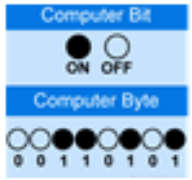
Using the power of computes to solve problems.

Computational thinking

Changing a problem in such a way that it can be modelled or solves using a computer or machine.

Command

An instruction for the computer



Bit

A bit is a single unit in a computer, represented as 0 or 1.

Byte

The most common unit of digital data. A singly byte is 8 bits-worth of data.

There are kilobytes, megabytes and gigabytes.

Typing

Pressing the QWERTY keyboard to input text, symbols or pictures onto the computer software.

Touch typing

A quick form of typing on the keyboard.

COMPUTING

Programming

Is a collection of instructions of algorithms designed to simplify processes.

Input and output

Input– information that goes into the computer.

Output—information that comes out of the computer.

Website

A collection of interlinked web pages on the World Wide Web

Wifi

A wireless method of sending information using radio waves

Cyberbully

Doing something on the internet, again and again to make another person feel angry, sad or scared.

Digital Citizen

Someone who acts safely, responsibly and respectfully online.

Digital footprint

The information about someone on the internet.

Pixel

Picture element the unit of a digital image. It is a square dot that contains a single point of colour.

tool box

A grey bar on the software that contains all of the commands you need to perform a program.

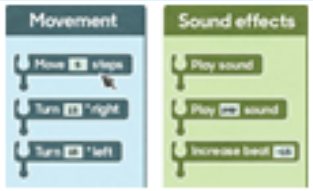
URL

Universal resource locator—easy remember address for calling a webpage.

Username and password

Username– a name you make up so that you can do things on a website, sometime called a 'screen name'

Password- To be kept secret from anybody else that allows access to devices and websites.



Decompose

Break a problem down to smaller pieces.

Define a function

Figure out the details of the problems you are trying to face

Sequence

When you choose part of something.

Abstraction

A simple representation of something more complex.

Function

A piece of code you can easily call over and over again.

Repeat

To do something again

Run program

Cause the computer to execute the commands you've written in the program.

If– statements

The programming structure that implements conditional statements.

Conditionals

Statements that only run under certain conditions.