Marston Thorold Primary School – Computing

Computing Knowledge Progression						
	Key Stage One: 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					
	Key Stage Two: 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.					
	Y1	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
Digital Literacy	**Unit 1:** Know how to log on safely. Know how to understand the ideas of 'ownership' of their creative work.	**Unit 1:** Know how to use the search facility on Purple Mash by year group and subject. Know how to share work to a display board.	**Unit 1:** Know that being a good digital citizen means being safe and responsible online. Know that digital devices can be distracting and recognise the	**Unit 1:** Know what their online and in-person responsibilities are and how to describe how their behaviour affects themselves and others.	**Unit 1:** Know how to describe their media choices and to begin to develop a definition of a healthy media balance. Know the difference between personal and	**Unit 1:** Know how to reflect on their media balance. Know how to create a personlised plan for healthy and balanced media use.

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	Know how to find saved work. Know how search Purple Mash to find resources. Know the types of resources available in the Topics section. Know what the icons are in the Topics section. Know how to explore the Tools section of Purple Mash. Know how to start to add pictures and text to work. Know the common icons used for save, print, open and new. Know the importance of logging out when I have finished. **Extra e-safety lessons after unit 5** Know when and why to take breaks from device time.	Know that work can be shared digitally on the internet. Know that Email is a form of digital communication. Know how we talk to others when they are not there in front of us. Know how to open and send simple online communication in the form of email using 2Respond on Purple Mash. Know that the information put online leaves a digital footprint or trail. Know how to think critically about the information they leave online. Know how to identify the steps that can be taken to keep personal data and hardware secure.	importance of device free time for themselves and others. Know the kind of information that is private. Know that they should never give out private information online. Know how to compare and contrast how they are connected to different people and places, in person and on the internet. Know what online meanness can look like and how it can make people feel. Know ways to respond to mean words online, using S-T-O-P. Know what it means to give credit when using content they find online. **Unit 5:**	Know why a strong password is important and how to create a memorable and strong password. Know how posting selfies or other images can lead to others making assumptions about them. Know how to post on-line in a way that best reflects who they are. Know what a community is both in person and online. Know why it is important to think about the words we use because everyone interprets things differently. Know how to explain the use of S-T-O-P when dealing with mean posts online. Know which kinds of statements are OK to say online and which are not.	private information and explain why it is risky to share private information online. Know what 'digital footprint' means and identify online activities that contribute to it. Know what responsibilities they have for the digital footprints of themselves and others. Know what the positives and negatives are of social interaction in online games. Know and recognise what cyberbullying is and the options they have for dealing with it.	Know what is meant by 'the curiosity gap' and how clickbait uses this to get your attention. Know strategies for avoiding clickbait. Know what is meant by 'gender stereotypes' and how they can be present online. Know how gender stereotypes can lead to unfairness or bias. Know how to compare and contrast different kinds of online-only friendships. Know the benefits and risks of online-only friendships. Know how to respond to an online-only friend if the friend asks something that makes them feel uncomfortable. Know the similarities and differences

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	Know why it's important to be aware and respectful of people while using devices. **Unit 9:** Know what is meant by 'technology'. Know what types of technology are used in and out of school. Know different examples of technology used away from school.	**Extra lesson after unit 4** Know how to be safe, responsible and respectful online. **Unit 5:** Know the meaning of key internet terms. Know the basic parts of a search engine and search page. Know how to read a web search results page. Know how to search for answers to a quiz on the internet. Know how to consolidate knowledge of effective internet searching by making a leaflet.	Know a range of different ways to communicate. Know how to use 2Connect to highlight the strengths and weaknesses of each method. Know how to open an email and respond to it. Know how to send emails to others in the class. Know how to stay safe when using email. Know how to navigate potentially unsafe scenarios when emailing. Know how to attach work to an email. Know what CC means and how to use it. Know how read and respond to a series of email communications.	Know that photos and videos can be altered digitally and why this might be done. **Unit 7:** Know how to structure search queries to locate specific information. Know how to use search effectively to answer a series of questions. Know how to analyse the contents of a web page for clues about the credibility of the information.		between in-person bullying, cyberbullying and being mean. Know strategies for dealing with cyberbullying and how to be an upstander for those being bullied. **Unit 4** Know how a blog can be used as an informative text. Know the key features of a blog. Know how to create a blog with a specific purpose. Know the importance of regularly updating the content of a blog. Know how to contribute to an existing blog. Know how and why blog posts are approved by the teacher.

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			Know how to attach files appropriately and use email communication to explore ideas. Challenge – Know why the terms CC and BCC are used. Know when to use CC or BCC. Challenge – Know how to order the various types of communication that have been using throughout history. Challenge – Know how to use the search option in the address book to find a classmate when sending an email. Challenge – Know the importance of draft. Challenge – Know how to create a title screen.			Know how to assess the effectiveness and impact of a blog. Know that they should carefully consider the end user when choosing content to be included in their blog.
Computer Science	**Unit 4:** Know the importance of following instructions.	**Unit 2:** Know that an algorithm is a set of instructions.	**Unit 2:** Know how to create a design that represents a sequential algorithm.	**Unit 2:** Know how to use a sketch or storyboard to represent a	**Unit 2:** Know how to use sketch or storyboard to represent a	**Unit 2:** Know how to plan a program before coding to anticipate the variables that will

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	Know that an algorithm is a precise, step-by-step set of instructions used to solve a problem or achieve an objective. Know how to follow and create simple instructions on the computer. Know that computers need precise instructions to follow. Know that an algorithm written for a computer to follow is called a program. Know how the order of instructions affects the results. Know how to organise simple instructions. Know that correcting errors in an algorithm or program is called 'debugging'. **Unit 5:** Know the functionality of the basic direction keys.	Know how to describe the algorithm they created. Know that a computer needs clear instructions to make something happen. Know how to use the repeat command with an object. Know how to include a button in a program. Begin to know how to make choices about which object type to use. Know how to use the timer command. Know how to compare the actions of different objects. Know what debugging means and how to debug simple programs. Know how to test and debug a program repeatedly.	Know how to use a flowchart design to create the code. Know what Object, Action, Output, Control and Event are in computer programming. Know how a program simulates a physical system e.g. my vehicle moves at different speeds and angles Know how to use the X and Y properties of objects in their coding. Know how to create an if statement in their program. Know how to use a timer and if statement to introduce a selection in their program. Know what a variable is in programming. Know why variables needs to be named.	program design and algorithm. Know how to create code that conforms to their design. Know how to create if/else statement. Know what a variable is in programming. Know how to create a variable. Know how to create a program which responds to the if/else command using the value of the variable. Know how to create a program with an object that repeats actions. Know how to use the Repeat Until command. Know how to program an object to respond to user keyboard input.	program design and algorithm. Know how to design and write a program that simulates a physical system. Know how to select relevant features of a situation to incorporate into a simulation using decomposition and abstraction. Know how to explain what a variable is in programming and can set/change the variable values appropriately. Know ways that text variables can be used in coding. Know how to combine the use of variables, if/else statements and repeats to achieve the desired effect in code. Know how to create loops using if/else statements and timers.	be required to achieve the desired effect. Know how to follow through plans to create the program. Know how to debug their own program. Know how to organise code into functions and explain what they are. Know how to include text inputs from the user in a program and attribute variables to user input. Know how to use flowcharts to test and debug a program. Know how to create a simulation of a room in which devices can be controlled. Know how to create a text-based adventure game. Know how to follow through code of how a

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	Know how to use the directions keys to complete challenges. Know how to undo my last move. Know how to create and debug a set of instructions (algorithm). Know how to change and extend the algorithm list. Know how to create a longer algorithm. Know how to apply my knowledge of algorithm to challenge others. **Unit 7:** Know what coding means in computing. Know how to create unambiguous instructions. Know how to use 2Code.	Know why it is important to save their work after each functioning iteration of the program they are making. Know how to create a computer program using different objects. Know how to predict what objects will do based on knowledge of the objects' limitations. **Unit 8:** Know how to use movement blocks and the reset button in ScratchJr. Know how to set backgrounds and start on the green flag triggering block. Know how to add new characters and start on tap triggering block.	Know how to create a variable in a program. Know how to set/change the variable values appropriately to create a timer. Know how to make a character repeat an actions and be able to explain it. Know how to experiment with the different methods of repeating blocks of code. Know how to explain how to make objects repeat actions. Know how to explain what debugging means and know how to debug simple programs. Know why it is important to save work after each functioning iteration of the program they are making.	Know how to make timers and counting machines using variables to print a new number to the screen every second. Know how to create an algorithm modelling the sequence of a simple event. Know how to use an algorithm when making a simulation of an event on the computer. Know what decomposition and abstraction are in computer science. Know how to break down aims for a coding task into smaller achievable steps. Know that they need to start coding at a basic level of abstraction to remove superfluous details from their program	Know how to read code so that it can be adapted, personalised and improved. Know how to include buttons and objects that launch windows to websites and programs within a program.	text adventure can be programmed. Know how to adapt an existing text adventure to make it unique. **Unit 5** Know how to create appropriate animations in Scratch. Know how to select appropriate characters or objects to fit within a scene. Know how to use rapid costume changes for a motion effect. Know how to use a repeat command to create gradual movement. Know how to sue a succession of glide commands. Know how to structure and control the timing of events.

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	Know what a block of code is. Know how to read through combined blocks of code. Know how to add a background using Design Mode. Know how to add characters using Design Mode. Know how to use a drop-down menu. Know how to design a simple program that controls how a character will move. Know how to make a character move when clicked. Know how to program a character to move given a variety of input events. Know how to use collision direction to make objects interact.	Know how to record sound and use the wait and speed blocks. Know how to create simple character interaction using start on bump triggering block. Know how to create a tag game. Know how to add more character interaction. Know how to use message trigger and stop block.	Know and have a clear idea of how to use a design document to start debugging a program. **Unit 7:** Know that a computer simulation can represent real and imaginary situations. Know some examples of simulations. Know some advantages and problems of simulations. Know how to explore a simulation. Know how to use a simulation to try out different options and to test predictions. Know how to evaluate simulations by comparing them with real situations and considering their usefulness.	that do not contribute to the aim of the task. **Unit 5:** Know what the common instructions are in Logo and how to type them. Know how to follow simple Logo instructions to create shapes on paper and in Logo. Know how to create Logo instructions to draw patterns of increasing complexity. Know what the pu and pd commands are. Know how to use the Repeat function in Logo to create shapes. Know how to find the most efficient ways to draw shapes. Know how to build and use procedures in Logo.		Know how to uset the broadcast message block correctly. Know how to use the receive broadcast block correctly. Know how to combine broadcasts in code to sequence actions. Know how to control when objects need to be visible. Know how to locate and insert the show and hide blocks in a script. Know how to locate the correct place for a sprite to appear visible. Know how to sequence events to create a story narrative by ordering a series of backdrop settings, narrating events with required timing and using a button to change the backdrop.

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	Know how to program a sound to play when objects collide.		Know how to analyse choices made using a branching database. Know how to recognise patterns within simulations and make and test predictions. Know how to identify the relationships and rules on which the simulations care based and test their predictions. Know how to evaluate a simulation to determine its usefulness for purpose. Know how to create a simple simulation.			Know how to add voice sounds to enhance an animated story by recording own voice sounds, inserting blocks to play recordings, match the timing of sounds with speech bubbles and match character expression with speech. Know how to add interactive user features to a scene or story. Know how to add a sprite which remains hidden from the start. Know how to make a sprite visible on a particular key press. Know how to make a sprite invisible again after being animated. Know how to control the timing of interactive features.

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Information Technology	**Unit 2:** Know how to sort items using a range of criteria. Know how to sort items on the computer using 'grouping' activities. **Unit 3:** Know that data can be represented in picture format. Know how to use illustrations to create a simple pictogram. Know how to contribute to a class pictogram. Know how to use a pictogram to record the results of an experiment. **Unit 6:** Know the difference between a traditional book and an e-book.	**Unit 3:** Know and explain what rows and columns are in a spreadsheet. Know how to open, save and edit a spreadsheet. Know how to add allocate images a value. Know how to add the count tool to count items. Know how to use copying and pasting to help make spreadsheets. Know how to automatically total rows and columns. Know how to use images in a spreadsheet. Know how to use a spreadsheet to calculate.	**Unit 3:** Know how to create a table of data on a spreadsheet. Know how to use a spreadsheet program to automatically create charts and graphs from data. Know how to use 'more than', 'less than' and 'equals' tools to compare different number and help to work out solutions to calculations. Know how to use the 'spin' tool to count through times tables. Know how to describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row. Know how to find specified locations in a spreadsheet.	**Unit 3:** Know how to use the number formatting tools within 2Calculate to appropriately format numbers. Know how to add a formula to a cell to automatically make a calculation in that cell. Know how to use the timer, random number and spin button tools. Know how to combine tools to make fun ways to explore number. Know how to use a series of data in a spreadsheet to create a line graph. Know how to use a line graph for practical purposes. Know how to plan actions using a spreadsheet.	**Unit 3:** Know how to create a formula in a spreadsheet to convert units of measurement. Know how to use the count tool on a spreadsheet. Know how to use a spreadsheet to work out area and perimeter of rectangles. Know how to use the calculations to solve real-life problems. Know how to create simple formulae that use different variables. Know how to use a spreadsheet to model a real-life situation. **Unit 4:** Know how to search a database to answer questions correctly.	**Unit 3:** Know some uses of a spreadsheet and how to navigate using cell references. Know how to enter data into cells. Know how to carry out basic calculations on a spreadsheet. Know how to use the series fill function. Know how using formulae allows the data to change and the calculations to update automatically. Know how to use a spreadsheet to model a situation and to solve a problem. Know how to use the SUM function. Know how to present data in a spreadsheet by converting text to tables and splitting cells.

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	Know how to use different drawing skills to create a picture. Know how to add text to a page. Know how open previously saved worked. Know how to add animation to a story. Know how to save changes. Know how to add sound to a story. Know how to add a voice recording to a story. Know how to create music for a story. Know how to add a background to a story. Know how to copy and paste a page of a story. Know how to add extra pages to an ebook.	Know how to create a table of data on a spreadsheet. Know how to use data to create a block graph manually. **Unit 4** Know and understand that the information on pictograms cannot be used to answer more complicated questions. Know how to use a range of yes/no questions to separate information. Know what a binary tree is and that questions are limited to 'yes' and 'no'. Know how to design a binary tree. Know what a database is. Know how to use a database to answer simple and more complex search questions.	**Unit 4:** Know the names of the fingers. Know what is meant by 'home', 'bottom' and 'top' rows. Know how to navigate the home', 'bottom' and 'top' rows to develop the ability to touch type. Know how to use two hands to types the letters on the keyboard. Know how to touch type using the left hand. Know how to touch type using the right hand. **Unit 6** Know how YES/NO questions are structured and answered Know and use YES/NO questioning to play a	Know how to use the currency formatting in 2Calcaulate. Know how to allocate values to images and to use these to explore place value. Know how to use a spreadsheet in 2Calculate to check understanding of a mathematical concept. **Unit 4:** Know that font size and style can affect the impact of a text. Know how to interpret a variety of incoming communications. Know how to use a simulated scenario to produce a report. Know how to mind-map ideas for a community campaign. Know how to use criteria to assess texts for their suitability for	Know how to enter data into a class database. Know how to create their own database and add records to their database. Know what a database field is and how to correctly add field information. Know how to word questions so that they can be effectively answered using a search of their database. **Unit 5:** Know how to review and analyse a computer game. Know how to begin designing their own game. Know how to design the setting for their game.	Know what is meant by a delimiter. Know how to sort data. Know how to incorporate formulae for percentages, averages, max and min into their spreadsheets. Know some shortcuts that help to make data meaningful. Know that there are ways to represent their data graphically and that Excel can make these calculations for them. Know how a graphical representation can make data easier to interpret. Know how to make a chart using Excel recommendations. **Unit 6**

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	Know how to share my ebook on a display board. **Unit 8** Know how to navigate around a spreadsheet. Know what rows and columns are. Know how to save and open sheets. Know how to enter data into cells. Know how add clipart. Know how to use the 'move cell' tool to drag Know how to use the 'lock' tool to prevent changes to cells Know how to add the count tool to count items. Know how to add the speak tool so that the	**Unit 6** Know what 2Sequence is and how it works. Know how to use different sounds withing 2Sequence. Know how to change the volume of background sounds. Know how to upload and use a sound chosen from a bank of sounds. Know how to speed up and slow down sounds. Know how to add sounds. Know how to create, upload and use their own recorded sound. Know how to create their own tune using some chosen sounds. **Unit 7:**	simple game with t a friend. Know how to contribute to a branching database. Know how to choose a suitable topic for a branching database. Know how to select and save images. Know how to create a branching database. Know how to use and debug their own branching databases. Challenge – Know how to edit and adapt a branching data base Challenge – Know and explain why to choose a particular question to split their database. Challenge – Know how to use 'or more' and 'or less' in their questioning .	the intended audience. **Unit 6:** Know how animations are created by hand. Know that 2Animate can be used to create animations. Know how to make a simple animation using 2Animate. Know what the Onion Skin tool does in animation. Know how to use the Onion Skin tool to create an animated image. Know how to use backgrounds and sounds to make more complex and imaginative animations. Know what 'stop motion' animation is and how it is created.	Know how to upload images or use drawing tools to create setting. Know how to design characters for their game. Know how to decide upon and change the animations and sounds that the characters make. Know how to select appropriate options to maximise the playability. Know how to write informative instructions for their game. Know how to evaluate their own and peers' games to help improve their design for the future. **Unit 6:** Know what the design and make tool is for.	Know what a LAN and a WAN are. Know how we access the internet in school. Challenge : Know how to explain the differences between more than two network types such as: LAN, WAN, WLAN and SAN. Know how to explore a website. Know how to discuss different types of media used on websites. Know that websites are written in HTML. Know the common features of a web page. Know what media to include on my page. Know how to draw a web page layout that suits my purpose.

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	items can be counted out loud. Know how to use a spreadsheet to work out a fair to share items.	Know how to use 2Paint a Picture to create art. Know how to combine more than one effect in 2Paint a Picture. Know how to use the eCollage function in 2Paint a Picture using drawing and clipart. Know that digital content can be represented in many forms. Know how to make a quiz using 2Quiz. Know how to make improvements based on feedback. Know how to make a fact file. Know how to extract information from a 2Connect file. Know how to use a publisher fact file. Know how to add appropriate clipart.	**Unit 8:** Know what PowerPoint is. Know how to open PowerPoint. Know how to create a page in a presentation by adding text, formatting it and adding shapes. Know how to add media to a presentation by changing the design of the slides, inserting a new slide, inserting pictures, editing pictures and inserting video and audio. Know how to use animations and transitions in a presentation. Know how to add timings to a presentation. Know how to present using a slideshow.	Know how to use 'stop motion' to recreate their own animation. **Unit 8:** Know the names of the different parts that make up a computer. Know what the function of the different parts of a computer is.	Know the effect of moving points when designing. Know how to design a 3D model for a purpose. Know how to edit the polygon 3D models to design a 3D model for a purpose. Know how to place, view, move, rotate, resize, group and align different 3D shapes using TinkerCad. **Unit 7:** Know what a word processing tool is for. Know how to create a word processing document altering the look of the text and navigating around the document. Know how to add images to a word document.	Know why I should use copyright-free images. Know how to find copyright-free images. Know what is meant by the term 'fair use'. Know how to add content to my own web page. Know how to preview my web page. Know how to evaluate what my webpage looks like on different devices and make edits. Know what a navigation path is. Know why navigation paths are useful. Know how to make multiple web pages and link them using hyperlinks. Know the implications of linking content owned by others.

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		Know how to add an appropriate photo. Know how data can be structured in tables. Know how to use a variety of software to manipulate and present digital content and information. Know how to combine software packages.	Know how to create a presentation linked to a curriculum topic.		Know how to edit images to reduce their file size. Know how to wrap images and text. Know how to add appropriate text and format in a suitable way. Now how to use bullet points and numbering. Know how to add text boxes and shapes. Know how to consider paragraph formatting such as line spacing. Know how to use page breaks, headers and footers. Know how to add hyperlinks to places in the document and to an external website. Know how to add tables to present information. Know how to edit properties of tables.	Know how to create hyperlinks to link to other people's work. Know how to evaluate the user experience of a website. **Unit 7:** Know how to consider the audience's ability level and interests when creating an online quiz. Know how to create a quiz. Know how to use different question types. Know how to make a quiz that requires the player to search a database. Know how to edit and redesign quizzes from feedback.

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					Know how to add word art for a heading. Know how to use a Word template and edit it appropriately. Know how to format a page using a combination of images, headers and columns. Know how to group objects. Know how to lasso text to cut and paste within a page. Know how to save a document so that it cannot be edited.	