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St John's RC Primary School, Burnley
Whole School Progression Grid
Computing

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Personal Social and Emotional Development Show resilience and perseverance in the face of a challenge. • Know and talk about the different factors that support their overall health and wellbeing: - sensible amounts of 'screen time'. **Physical Development** • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. **Expressive Arts and Design** • Explore, use and refine a variety of artistic effects to express their ideas and feelings. **Personal, Social and Emotional Development** Managing Self • Be confident to try new activities and show independence, resilience and perseverance in the face of challenge . • Explain the reasons for rules, know right from wrong and try to behave accordingly. **Expressive Arts and Design** Creating with Materials • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.		**NC programmes of study – KS1 Pupils should be taught to:** 1. understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions 2. create and debug simple programs 3.use logical reasoning to predict the behaviour of simple programs 4.use technology purposefully to create, organise, store, manipulate and retrieve digital content 5. recognise common uses of information technology beyond school 6. 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		**NC programmes of study – KS2 Pupils should be taught to:** 1. design, write and debug programs that accomplish specific goals, including or simulating physical systems; solve problems by decomposing them into smaller parts 2. use sequence, selection, and repetition in programs; work with variables and various forms of input and output 3. use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 4. 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 5. use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 6. 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 7. use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		
1.Online Safety **NC aim:** are responsible, competent, confident and creative users of information and communication technology	I can talk about the different factors that support my overall health and wellbeing: - I know about sensible amounts of 'screen time' I can explain rules, know right from wrong and try to behave accordingly.	I can keep my password private. I can tell you what personal information is. I can tell an adult when I see something unexpected or worrying online. I can talk about why it's important to be kind and polite. I can recognise an age-appropriate website. I can agree and follow sensible e-Safety rules.	I can explain why I need to keep my password and personal information private. I can describe the things that happen online that I must tell an adult about. I can talk about why I should go online for a short amount of time. I can talk about why it is important to be kind and polite online and in real life. I know that not everyone is who they say they are on the Internet.	I can talk about what makes a secure password and why they are important. I can protect my personal information when I do different things online. I can use the safety features of websites as well as reporting concerns to an adult. I can recognise websites and games appropriate for my age. I can make good choices about how long I spend online. I ask an adult before downloading files and games from the Internet. I can post positive comments online.	I choose a secure password when I am using a website. I can talk about the ways I can protect myself and my friends from harm online. I use the safety features of websites as well as reporting concerns to an adult. I know that anything I post online can be seen by others. I choose websites and games that are appropriate for my age. I can help my friends make good choices about the time they spend online. I can talk about why I need to ask a trusted adult before downloading files and games from the Internet. I comment positively and respectfully online	I can protect my password and other personal information. I can explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult. I know that anything I post online can be seen, used and may affect others. I can talk about the dangers of spending too long online or playing a game. I can explain the importance of communicating kindly and respectfully. I can discuss the importance of choosing an age-appropriate website or game. I can explain why I need to protect my computer or device from harm. I know which resources on the Internet I can download and use.	I protect my password and other personal information. I can explain the consequences of sharing too much about myself online. I support my friends to protect themselves and make good choices online, including reporting concerns to an adult. I can explain the consequences of spending too much time online or on a game. I can explain the consequences to myself and others of not communicating kindly and respectfully. I protect my computer or device from harm on the Internet.

2.<u>Computing systems and networks</u> NC Aim: can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation	I can use small motor skills so that I can use a range of tools competently, safely and confidently. I can show resilience and perseverance in the face of a challenge. I am confident to try new activities and show independence, resilience and perseverance in the face of challenge	I can explain how technology helps us I can locate examples of technology in the classroom" I can name the main parts of a computer and switch it on. I can use a mouse to click and drag and make objects on screen." I can use a mouse to open files and make a picture I can save my work to a file I can say what a keyboard is for and type my name. I can delete letters I can open my work from a file I can use the arrow keys to move the cursor" I can identify rules to keep us safe and healthy when we are using technology in and beyond the home"	I can describe some uses of computers and give examples I can identify that a computer is a part of IT I can identify examples of IT and know it can be used more than one way I can sort school IT by what it's used for I can find examples of information technology I can sort IT by where it is found I can talk about uses of information technology I can demonstrate how IT devices work together I can recognise common types of technology I can say why we use IT I can list different uses of information technology I can say how rules can help keep me safe I can explain the need to use IT in different ways I can identify the choices that I make when using IT I can use IT for different types of activities	I can explain that digital devices accept inputs and produce outputs I can follow a process" I can classify input and output devices I can describe a simple process I can design a digital device" I can explain how I use digital devices for different activities I can recognise similarities and differences between using digital devices and non-digital tools I can discuss why we need a network switch I can explain how messages are passed through multiple connections I can recognise different connections I can demonstrate how information can be passed between devices I can explain the role of a switch, server, and wireless access point in a network I can recognise that a computer network is made up of a number of devices I can identify how devices in a network are connected together I can identify networked devices around me I can identify the benefits of computer networks"	I can demonstrate how information is shared across the internet I can describe the internet as a network of networks I can discuss why a network needs protecting" I can describe networked devices and how they connect I can explain that the internet is used to provide many services I can recognise that the World Wide Web contains websites and web pages" I can describe how to access websites on the WWW I can explore the WWW and show an understanding of how and why it is used. I can explain that there are rules to protect content I can explain that websites and their content are created by people I can suggest who owns the content on websites " I can explain why I need to think carefully before I share or reshare content I can explain why some information I find online may not be honest, accurate, or legal"	I can describe that a computer system features inputs, processes, and outputs I can explain that computer systems communicate with other devices I can explain that systems are built using a number of parts I can describe computer systems and explain how they are used. I can compare results from different search engines I can make use of a web search to find specific information I can refine my web search I can explain why we need tools to find things online I can recognise the role of web crawlers in creating an index I can relate a search term to the search engine's index I can explain that a search engine follows rules to rank results I can give examples of criteria used by search engines to rank results I can order a list by rank I can describe some of the ways that search results can be influenced I can explain how search engines make money I can recognise some of the limitations of search engines	I can describe how computers use addresses to access websites I can explain that internet devices have addresses I can recognise that data is transferred using agreed methods " I can explain that all data transferred over the internet is in packets I can explain that data is transferred over networks in packets I can identify and explain the main parts of a data packet" I can explain that the internet allows different media to be shared I can recognise how to access shared files stored online I can send information over the internet in different ways" I can explain how the internet enables effective collaboration I can identify different ways of working together online I can recognise that working together on the internet can be public or private" I can choose methods of communication to suit particular purposes I can explain the different ways in which people communicate I can identify that there are a variety of ways to communicate over the internet" I can compare different methods of communicating on the internet I can decide when I should and should not share information online I can explain that communication on the internet may not be private

3. <u>Creating Media</u> NC Aim: can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems	I can safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. I can use small motor skills so that I can use a range of tools competently, safely and confidently. I can explore, use and refine a variety of artistic effects to express their ideas and feelings.	I can use the paint tools and other painting programmes to create a picture using a range of marks and lines. I can use the shape and line tools to recreate the work of an artist I can choose appropriate shapes I can create a picture in the style of an artist I can make appropriate colour choices I can say which tools were helpful and why I know that different paint tools do different jobs I can change the colour and brush sizes I can make dots of colour on the page I can use dots of colour to create a picture in the style of an artist on my own" I can explain that pictures can be made in lots of different ways I can say whether I prefer painting using a computer or using paper I can spot the differences between painting on a computer and on paper	I can explain what I did to capture a digital photo I can recognise what devices can be used to take photographs and how to take photos I can take photos in different formats and explain which is better. I can identify what is wrong with a photograph I can improve a photograph by retaking it I can experiment with different light sources I can explain why a picture may be unclear I can explore the effect that light has on a photo I can explain my choices I can recognise that images can be changed I can use a tool to achieve a desired effect I can apply a range of photography skills to capture a photo I can identify which photos are real and which have been changed I can recognise which photos have been changed	I can create an effective stop-frame animation I can explain why little changes are needed for each frame I can predict what an animation will look like" I can break down a story into settings, characters and events and create a story board. I can describe an animation I can evaluate the quality of my animation I can review a sequence of frames to check my work I can use onion skinning to help me make small changes between frames I can evaluate another learner's animation I can explain ways to make my animation better I can improve my animation based on feedback I can add other media to my animation I can evaluate my final film I can explain why I added other media to my animation	I can explain that the person who records the sound can say who is allowed to use it I can identify the input and output devices used to record and play sound I can use a computer to record audio" I can discuss what sounds can be added to a podcast I can inspect the soundwave view to know where to trim my recording I can re-record my voice to improve my recording I can explain how sounds can be combined to make a podcast more engaging I can plan appropriate content for a podcast I can save my project so the different parts remain editable I can improve my voice recordings and improve the quality. I can record content following my plan I can arrange multiple sounds to create the effect I want I can explain the difference between saving a project and exporting an audio file I can choose appropriate edits to improve my podcast I can listen to an audio recording to identify its strengths I can suggest improvements to an audio recording	I can compare and identify features in different videos I can explain that video is a visual media format can experiment with different camera angles I can identify and find features on a digital video recording device I can make use of a microphone I can capture video using a range of filming techniques I can review how effective my video is I can create and save video content I can decide which filming techniques I will use I can outline the scenes of my video I can explain how to improve a video by reshooting and editing I can select the correct tools to make edits to my video I can store, retrieve, and export my recording to a computer I can evaluate my video and share my opinions I can make edits to my video and improve the final outcome	I can discuss the different types of media used on websites I can explore a website I know that websites are written in HTML I can draw a web page layout that suits my purpose I can recognise the common features of a web page I can suggest media to include on my page I can describe what is meant by the term 'fair use' I can find copyright-free images I can say why I should use copyright-free images" I can add content to my own web page I can evaluate what my web page looks like on different devices and suggest/make edits I can preview what my web page looks like I can explain and describe navigation paths I can make multiple web pages and link them using hyperlinks I can create hyperlinks to link to other people's work I can evaluate the user experience of a website I can explain the implication of linking to content owned by others

4. <u>Programming</u> NC Aim: can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems	I can show resilience and perseverance in the face of a challenge. I am confident to try new activities and show independence, resilience and perseverance in the face of challenge I can use small motor skills so that I can use a range of tools competently, safely and confidently.	I can match a command to an outcome I can predict the outcome of a command on a device I can run a command on a device" I can follow an instruction I can give directions I can recall words that can be acted out" I can compare forwards and backwards movements I can predict the outcome of a sequence involving forwards and backwards commands I can start a sequence from the same place" I can compare left and right turns I can experiment with turn and move commands to move a robot I can predict the outcome of a sequence involving up to four commands" I can choose the order of commands in a sequence I can debug my program# I can explain what my program should do" " -I can identify several possible solutions - I can plan two programs - I can use two different programs to get to the same place" " -I can compare different programming tools - I can find which commands to move a sprite - I can use commands to move a sprite" " -I can run my program - I can use a Start block in a program - I can use more than one block by joining them together" " -I can change the value - I can find blocks that have numbers - I can say what happens when I change a value"	I can choose a series of words that can be enacted as a sequence I can follow instructions given by someone else I can give clear instructions I can show the difference in outcomes between two sequences that consist of the same commands - I can use an algorithm to program a sequence on a floor robot - I can use the same instructions to create different algorithms" " -I can compare my prediction to the program outcome - I can follow a sequence - I can predict the outcome of a sequence" " -I can explain the choices I made for my mat design - I can identify different routes around my mat - I can test my mat to make sure that it is usable" " -I can create an algorithm to meet my goal - I can explain what my algorithm should achieve - I can use my algorithm to create a program" " -I can plan algorithms for different parts of a task - I can put together the different parts of my program - I can test and debug each part of the program" " -I can identify that a program needs to be started - I can identify the start of a sequence - I can show how to run my program" " -I can change the outcome of a sequence of commands - I can match two sequences with the same outcome - I can predict the outcome of a sequence of commands" " -I can build the sequences of blocks I need	I can explain that objects in Scratch have attributes (linked to) I can identify the objects in a Scratch project (sprites, backdrops) I can recognise that commands in Scratch are represented as blocks I can choose a word which describes an on-screen action for my plan - I can create a program following a design - I can identify that each sprite is controlled by the commands I choose" " -I can create a sequence of connected commands - I can explain that the objects in my project will respond exactly to the code - I can start a program in different ways" " -I can combine sound commands - I can explain what a sequence is - I can order notes into a sequence" " -I can build a sequence of commands - I can decide the actions for each sprite in a program - I can make design choices for my artwork" " -I can identify and name the objects I will need for a project - I can implement my algorithm as code - I can relate a task description to a design" " -I can choose which keys to use for actions and explain my choices - I can explain the relationship between an event and an action - I can identify a way to improve a program" " -I can choose a character for my project - I can choose a suitable size for a character in a maze	can create a code snippet for a given purpose I can explain the effect of changing a value of a command I can program a computer by typing commands" I can test my algorithm in a text-based language I can use a template to create a design for my program - I can write an algorithm to produce a given outcome" " -I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome" " -I can choose which values to change in a loop - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop" " -I can explain that a computer can repeatedly call a procedure - I can identify 'chunks' of actions in the real world - I can use a procedure in a program" " -I can design a program that includes count-controlled loops - I can develop my program by debugging it - I can make use of my design to write a program" " -I can list an everyday task as a set of instructions including repetition - I can modify a snippet of code to create a given outcome - I can predict the outcome of a snippet of code" " -I can choose when to use a count-controlled and an infinite loop	I can create a simple circuit and connect it to a microcontroller I can explain what an infinite loop does I can program a microcontroller to make an LED switch on I can connect more than one output component to a microcontroller - I can design sequences that use count-controlled loops - I can use a count-controlled loop to control outputs" " -I can design a conditional loop - I can explain that a condition is either true or false - I can program a microcontroller to respond to an input" " -I can explain that a condition being met can start an action - I can identify a condition and an action in my project - I can use selection (an 'if…then…' statement) to direct the flow of a program" " -I can create a detailed drawing of my project - I can describe what my project will do - I can identify a real-world example of a condition starting an action" " -I can test and debug my project - I can use selection to produce an intended outcome - I can write an algorithm that describes what my model will do" " -I can identify conditions in a program - I can modify a condition in a program - I can recall how conditions are used in selection" " -I can create a program with different outcomes using selection - I can identify the condition and outcomes in an 'if... then… else...' statement	I can explain that the way a variable changes can be defined I can identify examples of information that is variable I can identify that variables can hold numbers or letters can explain that a variable has a name and a value I can identify a program variable as a placeholder in memory for a single value - I can recognise that the value of a variable can be changed" " -I can decide where in a program to change a variable - I can make use of an event in a program to set a variable - I can recognise that the value of a variable can be used by a program" " -I can choose the artwork for my project - I can create algorithms for my project - I can explain my design choices" " -I can choose a name that identifies the role of a variable - I can create the artwork for my project - I can test the code that I have written" " -I can identify ways that my game could be improved - I can share my game with others - I can use variables to extend my game" " -I can apply my knowledge of programming to a new environment - I can test my program on an emulator - I can transfer my program to a controllable device" " -I can determine the flow of a program using selection - I can identify examples of conditions in the real world - I can use a variable in an if, then, else statement to select the flow of a program" " -I can experiment with different physical inputs - I can explain that checking a variable doesn't change its value

		" -I can add blocks to each of my sprites - I can delete a sprite - I can show that a project can include more than one sprite" " -I can choose appropriate artwork for my project - I can create an algorithm for each sprite - I can decide how each sprite will move" " -I can add programming blocks based on my algorithm - I can test the programs I have created - I can use sprites that match my design"	- I can decide which blocks to use to meet the design - I can work out the actions of a sprite in an algorithm" " -I can choose backgrounds for the design - I can choose characters for the design - I can create a program based on the new design" " -I can build sequences of blocks to match my design - I can choose the images for my own design - I can create an algorithm" " -I can compare my project to my design - I can debug my program - I can improve my project by adding features	- I can program movement" " -I can choose blocks to set up my program - I can consider the real world when making design choices - I can use a programming extension" " -I can build more sequences of commands to make my design work - I can choose suitable keys to turn on additional features - I can identify additional features (from a given set of blocks)" " -I can match a piece of code to an outcome - I can modify a program using a design - I can test a program against a given design" " -I can evaluate my project - I can implement my design - I can make design choices and justify them"	- I can modify loops to produce a given outcome - I can recognise that some programming languages enable more than one process to be run at once" " -I can choose which action will be repeated for each object - I can evaluate the effectiveness of the repeated sequences used in my program - I can explain what the outcome of the repeated action should be" " -I can explain the effect of my changes - I can identify which parts of a loop can be changed - I can re-use existing code snippets on new sprites" " -I can develop my own design explaining what my project will do - I can evaluate the use of repetition in a project - I can select key parts of a given project to use in my own design" " -I can build a program that follows my design - I can evaluate the steps I followed when building my project - I can refine the algorithm in my design"	- I can use selection in an infinite loop to check a condition" " -I can design the flow of a program which contains 'if… then… else…' - I can explain that program flow can branch according to a condition - I can show that a condition can direct program flow in one of two ways" " -I can identify the outcome of user input in an algorithm - I can outline a given task - I can use a design format to outline my project" " -I can implement my algorithm to create the first section of my program - I can share my program with others - I can test my program" " -I can extend my program further - I can identify the setup code I need in my program - I can identify ways the program could be improved"	- I can use a condition to change a variable" " -I can explain the importance of the order of conditions in else, if statements - I can modify a program to achieve a different outcome - I can use an operand (e.g. <>=) in an if, then statement" " -I can decide what variables to include in a project - I can design the algorithm for my project - I can design the program flow for my project" " -I can create a program based on my design - I can test my program against my design - I can use a range of approaches to find and fix bugs"

5. Data and information	confident to try new activities and show independence, resilience and perseverance in the face of challenge	I can describe objects using labels I can identify the label for a group of objects I can match objects to groups I can count a group of objects I can describe an object and its properties I can find objects with similar properties I can group objects in more than one way I can describe groups of objects I can record how many objects are in a group" I can compare groups of objects I can decide how to group objects to answer a question I can record and share what I have found"	I can compare totals in a tally chart I can record data in a tally chart I can represent a tally count as a total I can enter data onto a computer I can use a computer to view data in a different format I can use pictograms to answer simple questions about objects" I can explain what the pictogram shows I can organise data in a tally chart I can use a tally chart to create a pictogram I can answer 'more than'/'less than' and 'most/least' questions about an attribute I can create a pictogram to arrange objects by an attribute I can tally objects using a common attribute I can choose a suitable attribute to compare people I can give simple examples of why information should not be shared I can share what I have found out using a computer I can use a computer program to present information in different ways	I can create two groups of objects separated by one attribute I can investigate questions with yes/no answers I can make up a yes/no question about a collection of objects I can arrange objects into a tree structure I can create a group of objects within an existing group I can select an attribute to separate objects into groups I can group objects using my own yes/no questions I can select objects to arrange in a branching database I can test my branching database to see if it works" I can compare two branching database structures I can explain that questions need to be ordered carefully to split objects into similarly sized groups" I can create a physical version of a branching database I can create questions that will enable objects to be uniquely identified I can independently create questions to use in a branching database I can create a branching database that reflects my plan I can suggest real-world uses for branching databases I can work with a partner to test my identification tool	can choose a data set to answer a given question I can identify data that can be gathered over time I can suggest questions that can be answered using a given data set" I can explain what data can be collected using sensors I can identify that data from sensors can be recorded I can use data from a sensor to answer a given question I can identify the intervals used to collect data I can recognise that a data logger collects data at given points I can talk about the data that I have captured I can explain that there are different ways to view data I can sort data to find information I can view data at different levels of detail I can plan how to collect data using a data logger I can propose a question that can be answered using logged data I can use a data logger to collect data I can draw conclusions from the data that I have collected I can interpret data that has been collected using a data logger	I can create a database using cards I can explain how information can be recorded I can order, sort, and group my data cards" I can choose which field to sort data by to answer a given question I can explain what a field and a record is in a database I can navigate a flat-file database to compare different views of information I can combine grouping and sorting to answer specific questions I can explain that data can be grouped using chosen values I can group information using a database I can choose multiple criteria to answer a given question I can choose which field and value are required to answer a given question I can outline how 'AND' and 'OR' can be used to refine data selection I can explain the benefits of using a computer to create charts I can refine a chart by selecting a particular filter I can select an appropriate chart to visually compare data I can ask questions that will need more than one field to answer I can present my findings to a group I can refine a search in a real-world context	I can collect data I can enter data into a spreadsheet I can suggest how to structure my data I can apply an appropriate format to a cell I can choose an appropriate format for a cell I can explain what an item of data is I can construct a formula in a spreadsheet I can explain which data types can be used in calculations I can identify that changing inputs changes outputs I can apply a formula to multiple cells by duplicating it I can calculate data using different operations I can create a formula which includes a range of cells" I can apply a formula to calculate the data I need to answer questions I can explain why data should be organised I can use a spreadsheet to answer questions" I can produce a chart I can suggest when to use a table or chart I can use a chart to show the answer to questions