Andrews' Endowed Church of England Primary School

Computing CURRICULUM FRAMEWORK:WHOLE SCHOOL OVERVIEW

Year Group	Autumn		Spring		Summer	
EYFS	Child chosen – Operate CD players and other hardware. Child chosen – Showing an interest in items in knobs and pulleys Child chosen – Show skills in making a sound on purpose. Child chosen – To create movement or different images.		Beebots – coding on app and with the physical device.	Exploring age appropriate computer software.	Word documents – Typing using a keyboard, changing font, size and colour of letters.	Exploring age appropriate computer software.
Core Learning					-Use a mouse/ trackpad. -type letters by pressing buttons. -Understanding cursor	
Artists/ crafts people/ designers						

Year Group	Autumn		Spring		Summer	
Y1	**Computing systems and Networks** Technology around us. National Centre for Computing Education Planning	**Programming A** Moving a robot National Centre for Computing Education Planning	**Creating Media** Digital Painting National Centre for Computing Education Planning	**Coding** CS Fundamentals for Elementary Course A 12 lessons	**Data and Information** Grouping Data National Centre for Computing Education Planning	**Creating Media** Digital Writing National Centre for Computing Education Planning
Core Learning	- become familiar with the term 'technology' - classify what is and what is not technology in school. - get to know the main parts of a desktop or laptop computer. They will practise turning on and logging in to a computer. The learners will apply their knowledge of the different parts of a computer, to complete a mouse-based task. To use a mouse in different ways	-To undersatand what a fllor robot is. - direction command buttons, as well as the 'clear memory' and 'run program' buttons. - work with a partner to give and follow instructions. - focus on programming the floor robot to move forwards and backwards. - the robot moves forwards and backwards a fixed distance, showing robots follow a clear, fixed command in a	-To use the freehand tools available for digital painting. - to the line and shape tools and revisits the fill and undo tools used for digital painting. - learners to a range of shape tools. Learners create their own digital painting in the style of an artist. -To choose for myself the best tools to create a piece of artwork. - select appropriate colours, brush sizes, and brush tools to independently. - compare their preferences when creating paintings on	-Learn to drag and drop -develop sequential algorithms to move a squirrel character from one side of a maze to the acorn at the other side. To do this they will stack code blocks together in a linear sequence. -use their newfound programming skills in more complicated ways to navigate a tricky course with BB-8. -practice loops in programming puzzles where the goal is to help the squirrel reach the acorn. -learn to draw images by looping simple sequences of instructions. Here, loops are creating patterns. At the end of lesson 10, students will create their own images. -	-describe objects using labels. -I can match objects to groups -I can identify the label for a group of objects - to count a small number of objects before they grouping them -Tehn count groups of objects with the same label. -Understand that computers are not intelligent, and require input	-familiarise themselves with a word processor and think about how they might use this application in the future - adding text to their page by pressing keys on a keyboard. - To add and remove text on a computer - use the Caps Lock key to add capital letters to their writing and will begin thinking about how to use this successfully. Learners will match simple descriptions to the related keys. - exploring the different buttons available on the toolbar in more detail,

	I can use a mouse to open a program I can click and drag to make objects on a screen -I can use a mouse to create a picture To use a keyboard to type on a computer I can say what a keyboard is for I can type my name on a computer I can save my work to a file To use the keyboard to edit text I can open my work from a file I can use the arrow keys to move the cursor I can delete letters	precise and repeatable way. - use 'left turn' and 'right turn' commands along with 'forwards' and 'backwards' commands - create their programs through trial and error, before moving on to planning out their programs. - predict where given programs will move the robot to.. - decide what their program will do. They will then create their program and test it on the robot. - to plan routes around a mat before they start to write programs for those routes. -There is more than one way to solve a problem.	computers and on paper.		from humans to perform tasks. -To describe the properties of an object in many different ways. -To count objects with the same properties. -Compare groups of objects. - decide how to group objects to answer questions.	and use these to change their own text. -I can select a word by double-clicking -I can select all of the text by clicking and dragging I can change the font - I can use 'Undo' to remove changes -

Year Group	Autumn		Spring		Summer	
Y2	**Computing systems and Networks** IT around us National Centre for Computing Education Planning	**Programming A** Robot Algorithms National Centre for Computing Education Planning	**Programming / Coding** CS Fundamentals for Elementary Course B 12 lessons Drawing poster on pic art	**Creating Media** Digital Photography National Centre for Computing Education Planning	**Data and information** Pictograms National Centre for Computing Education Planning	**Creating Media** Making Music National Centre for Computing Education Planning
Core Learning	- identify devices that are computers and consider how IT can help them both at school and beyond. - consider common uses of information technology in a context. - identify examples of IT and be able to explain the purpose of different examples of IT in the school setting. - explore IT in environments beyond school, including home and	- To describe a series of instructions as a sequence - To explain what happens when we change the order of instructions - I can use an algorithm to program a sequence on a floor robot - use logical reasoning to make predictions. They will follow a program step by step and identify	-Develop sequential algorithms to move a bird from one side of a maze to the pig at the other side. To do this they will stack code blocks together in a linear sequence. -continue to develop sequential algorithms. -Debugging -Use Loops -draw images by looping simple sequences of instructions. Here, students use loops to create patterns.	- many devices can be used to take photographs. In the lesson, learners begin to capture their own photographs. - explore taking photographs in both portrait and landscape formats and explore the reasons why a photographer may favour one over the other.	To recognise that we can count and compare objects using tally charts - create pictograms manually and then progress to creating them using a computer. Learners will begin to understand the advantages of using computers rather than manual methods to create pictograms. - think about the importance of effective data collection and will consider the benefits	To say how music can make us feel - use a musical description word bank to describe how this music generates emotions. - create patterns and use those patterns as rhythms. They will use untuned percussion instruments and computers to hear the different rhythm patterns that they create. - explore how music can be used in different ways to express emotions and to trigger their imaginations. They

familiar places such as shops. - explore the benefits of using IT in the wider world. They will focus on the use of IT in a shop and how devices can work together. -consider how they use different forms of information technology safely, in a range of different environments. They will list different uses of IT and talk about the different rules that might be associated with using them.	what the outcome will be. - Learners will design, create, and test a mat for a floor robot. This will introduce the idea that design in programming not only includes code and algorithms, but also artefacts related to the project, such as artwork. - design an algorithm to move their robot around the mat that they designed. - To create and debug a program that I have written by planning algorithms for different parts of a task.		- learners discover what constitutes good photography composition and put this into practice by composing and capturing photos of their own. - concepts of light and focus as further important aspects of good photography composition. -Use Pixlr image editing software and use the 'Adjust' tool to change the colour effect of an image. -Images can be changed for a purpose.	of different data collection methods. They will collect data to create a tally chart and use this to make a pictogram on a computer. - ways in which objects can be grouped by attribute. They will then tally objects using a common attribute and present the data in the form of a pictogram. - using mathematical vocabulary such as 'more than'/'less than' and 'most'/'least'. - collect data needed to organise people using attributes and create a pictogram to show this pictorially. - use a pre-made tally chart to create a block diagram on their chromebook. - They will consider whether it is always OK to share data and when it is not OK.	will experiment with the pitch of notes to create their own piece of music. - use a computer to create and refine musical patterns. - choose an animal and create a piece of music using the animal as inspiration. Once they have defined a rhythm, they will create a musical pattern (melody) to go with it. -

Year Group	Autumn		Spring		Summer	
Y3	**Computing systems and Networks** Connecting Computers National Centre for Computing Education Planning	**Programming/ Coding** Algorithms – sequences: Code. org Course C	**Programming A** Sequence in Music (Scratch) National Centre for Computing Education See Learning Graph	**Programming / Coding** Algorithms – sequences: Code. org Course C	**Creating Media** Desktop Publishing National Centre for Computing Education Planning See Learning Graph (Can use Adobe Spark, Canva or MS Publisher - Computing Lead recommends Canva)	**Data and Information** Branching Databases. National Centre for Computing Education Planning
Core Learning	-To understand the computing processes of input, process and output. -To describe a simple process -To design a digital device. -To understand the benefits and disadvantages of using digital devices compared to non-digital tools. -To understand the benefit of connecting digital devices through wires for desktops, WI-FI for Laptops and tablets, and mobile phone networks for phones.	-Develop sequential algorithms to move a bird from one side of a maze to the pig at the other side. To do this they will stack code blocks together in a linear sequence, making them move straight, turn left, or turn right. -To encounter pre-written code that contains mistakes. They will need to step through the existing code to identify errors. -Use loops to help BB-8 efficiently traverse a maze.	- To use scratch online and save their work https://scratch.mit.edu - To program sprites - To understand and create sequences - To order commands - To combine motion and sound in one sequence - To create a musical	-Students loop new actions -Children to build their own animated game. -Students will collect data from a Play Lab project and visualize it using different graphs.	-To understand the terms 'text' and 'images'. -To understand different types of desktop publishing. -Learners will think about how to make careful choices regarding font size, colour, and type in an invitation. The use of the Return, Backspace, and Shift keys will be explored and learners will be taught how to type age-appropriate punctuation marks. -To build on the typing skills learned in the Year 1 'Digital painting' unit. -To understand and use 'templates', 'orientation' and 'placeholders' within	-To explore questions with yes or no answers, and how these can be used to identify and compare objects. -To arrange objects in a tree structure. -To order objects/images in a branching database structure. -To explain that questions need to be ordered carefully to split objects into similarly sized groups. -To identify objects using a branching database. -To compare the information shown in a pictogram with a branching database.

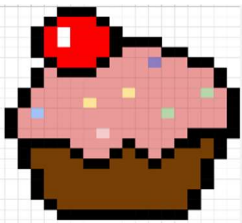|			instrument in scratch.		desktop publishing software. -To create a magazine template. -To understand that layouts can be edited once text and images have been inserted.	
	-To understand how and why devices are connected to form a network. -To introduce key components in a network including the server and Wireless access points (WAPs for Wi-Fi boxes) - To apply understanding of networks to a real word example (Our school).					

Year Group	Autumn		Spring		Summer	
Year 4	**Computing Systems and Networks** The Internet National Centre for Computing Education	**Creating Media** - Image editing.	**Programming/ Coding** CS Fundamentals for Elementary Course D 18 lessons **CS Fundamentals**	**Creating Media** Audacity – Sound recording and editing, linked to topic.	**Data and Information** Data Logging National Centre for Computing Education Planning	**Programming A** Repetition in Shapes - Logo National Centre for Computing Education Planning
Core Learning	-To understand how a network can share messages with another network to form the internet. -To understand what should be kept in and out of a network to keep safe. -To explore what can be shared on the World Wide Web and where websites are stored. -consider what content can be added to websites and	-to understand that a lot of images are 'fake' and have been airbrushed or edited in some way. -Choosing background -importing my taken picture -Use the wand tool to cut around an abject in an image. -To place images correctly. To export image and save in correct google drive folder.	-Students use symbols to instruct each other to colour squares on graph paper by "programming" one another to draw pictures. -students will practice their sequencing and debugging skills in maze puzzles. -practice debugging in the "collector" environment. Students will get to practice reading and editing code to fix puzzles with simple algorithms, loops and nested loops. -learn what events are and how programmers use them in video games. Students will build a game that they can customize with different speeds and sounds. -practice using events to build a game that they can share. -program an interactive dance party. -Draw shapes with loops building on the understanding of loops from previous learning and doubling as a debugging exercise for extra problem-solving practice. -learn how to program a loop inside of another loop. -To undersatand what a conditional is -To code with conditionals	-Plan what to explain from their topic information. -Basic interview skills. -Record narrative in the style of a radio DJ. -Input recorded audio into twisted wave audio editor or similar. -Edit mistakes out. -Overlap music as if a radio DJ -Export as MP3.	-To understand what data can be collected and how it is collected. -To understand questions that can and can't be answered using available data. -To build on the idea of collecting data over time, and be introduced to the idea of collecting data automatically using computers such as data loggers. -Computers can capture data from the physical world using input devices called 'sensors'. -Sensors can be connected to data loggers, which can	-To understand basic Logo commands. -To read and write basic Logo code. -Create algorithms - a precise set of ordered instructions, which can be turned into code. -To debug my own code by finding and fixing any errors that I spot. -Create algorithms for drawing a square. -To program a square the 'long' way, and recognise the repeated pattern within a square. -Use the repeat command within Logo to program squares the 'short' way.

	what factors they should consider before adding content to a website. (WWW) -To explore who owns the content on the World Wide Web. (Copyright) -To understand not everything they see on the internet is true, honest, or accurate. -To review images and decide whether or not they are real, before looking at why web searches can return ambiguous (and sometimes misleading) results.		-Allow children to write code that functions differently depending on the specific conditions the program encounters. -To learn about "until" loops. Students will build programs that have the main character repeat actions "until" they reach their desired stopping point.		automatically collect data. -To record data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals. -To open an existing data file and use software to find out key information. -To analyse a data file which is a five-hour log of hot water cooling to room temperature. -Think about questions that can be answered using collected data. -Access and review the data that they have collected using a data logger.	-To use count-controlled loops in a range of contexts. -To trace code to predict which shapes will be drawn, and they will modify existing code by changing values within the code snippet. -To break down everyday tasks into smaller parts and think about how code snippets can be broken down to make them easier to plan and work with. -create, name, and call procedures in Logo. -To create a program containing a count-controlled loop.

Year Group	Autumn		Spring		Summer	
Year 5	**Computing Systems and Networks** Sharing Information National Centre for Computing Education Planning	**Coding** CS Fundamentals for Elementary Course E 18 lessons OR **CS Fundamentals International Course 3**	**Data and Information** Flat File Databases - Planning from National Centre for Computing Education. See learning graph for this unit.	**Programming A** - Selection in Physical Computing National Centre for Computing Education Planning	**Creating Media** - Animation - Using Google Slides/ Lego stop motion maker to create Stop Animation. **Or** Creating Media - Video Editing unit from National Centre for Computing Education Planning	**Coding** CS Fundamentals for Elementary Course E 18 lessons OR **CS Fundamentals International Course 3**
Core Learning	-To develop their understanding of components working together to make a whole. They will outline how digital systems might work and the physical and electronic connections that exist. -To consider how larger computer systems work. -Learners will consider how devices and processes are connected. -To understand that parts of a computer system are not always in the same place or	-Code with sprites, using blocked based programming to make simple animations and games, recapping on LKS2 understanding. -Digital citizenship – private and personal information - students will create intricate designs using the Artist. -To create their own designs using nested loops.	-Create and save a new google sheets document in the correct place. -To understand what a database is, by creating a paper version of a record card database. -To use a computer based database to examine how data can be recorded, stored and viewed. -a database consists of 'records', and	-To become familiar with the Crumble controller. -To connect a sparkle to a crumble, and program the crumble to make the sparkle flash different colours. -To connect a Sparkle and Motor to the crumble controller. -To design sequences of actions for these components. -To use conditions, and	-To plan a narrative to record. -Create lego or other models to use in video. -To hold the camera still or the 'onion skin' effect will occur. -Edit voice/ sound or music over the top of the video. -Remove unwanted frame of video.	-To understand why combining chunks of code into functions can be helpful. -To understand how functions can be helpful! - To use functions with the Artist. - Use conditionals with functions.

	country. Instead, those parts of a system must transfer information using the internet. - To build on the introduction to the internet in the Year 4 'What is the internet?' unit, adding awareness of IP addresses and the rules (protocols) that computers have for communicating with one another. -To consider how people can work together when they are not in the same location. This task builds on the Year 3 'Desktop publishing' unit. To develop their own ideas of good collective working practices online. -reusing and modifying work done by someone else. (Using someone else's work needs to be done within the bounds of copyright and with the relevant		that each record contains 'fields'. - To search Databases. -To use 'grouping' and 'sorting' to answer questions from data. -To create charts from Data. -To use a real life database to answer meaningful questions within context.	understand how they can be used in programs to control their flow. -To identify conditions in statements, stating if they are true or false. -To use a Crumble switch, and learn how it can provide the Crumble controller with an input that can be used as a condition. -To understand how to write programs that use an input as a condition.	

permissions.) This lesson uses the Scratch programming tool, which allows learners to use other people's work.					

Year Group	Autumn		Spring		Summer	
Year 6	**Computing Systems and Networks** Communication. National Centre for Computing Education Planning Pixels, how screens work and how videos work in understanding technology.	**Creating Media** Google Sites creation on Ancient Benin, Calshot and Ancient Sumer.	**Programming A** Selection in Physical Computing National Centre for Computing Education Planning	**Data and Information** Spreadsheets	**Creating Media** 3D Modeling - National Centre for Computing Education Planning. See Unit Learning Graph for more key skills.	**Programming B - Sensing** National Centre for Computing Education This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'.
Core Learning	- Understand how screens work by understanding what a pixel is. -Used excel to create pixel art by making each cell square and filling each square in a different colour. -To identify how to use a search engine, refining my search	-Lay out a website menu with pages. -Inputting images -Hyperlinks to internal and external websites -Think about who the chn are writing to as a reader of their website. -How to clearly layout images and text. -Edit headers for each website page. -	-To make sprites. - Students will write programs that respond to timed events and user input. -To create a virtual pet with sprites and the code they have learnt in KS2. - use fill-in-the-blank stories (similar to Mad Libs®) as a context for understanding how computers take and store input from a user, then use it later as a program runs. -To understand and code for variables with a user in a program.	Begin to use the SUM function for a specific a purpose, such as calculating a League Table. Order data using the Sort function and produce a graph to present the data. Children will create totals and averages for existing data; sort according to either column then add or edit the data by following instructions. Begin to understand the benefit of automatic recalculation when editing. Children are given an investigation where the solution to a problem is best	-To login with tinkercad.com with their own google logins. **Planning** -To create a drawing identifying the 3D shapes required to produce the model are identified. **Manipulation of 3D objects** - A drawing identifying the 3D shapes required to produce the model are identified. **Placing and grouping of 3D Objects** -3D objects are grouped together. **Evaluation**	-To create a program to run on a controllable device (Micro:Bit). -To explain that selection can control the flow of a program -To update a variable with a user input -To use a conditional statement to compare a variable to a value E.g I can use an operand (e.g. <>=) in an if, then statement -To design a project that uses inputs and outputs on a controllable device

| | terms to find specific information.
-To describe how search engines select results.
-To explain how search results are ranked.
-To recognise why the order of results is important, and to whom by exploring how the person performing a web search can influence the results that are returned, and how content creators can optimise their sites for searching.
-evaluate which methods of communication suit particular purposes.
-use information provided and their own prior knowledge to categorise different forms of internet communication.
-Explore issues around privacy and information security. | | -Draw with loops
- Explore the creation of repetitive designs using variables in the Artist environment.
-Students will learn how variables make code easier to write and easier to read.
- To figure out how minor changes in loops will affect their program.
- To understand how variables can make programs more dynamic by allowing values to change while the code is running.
-To focus on 'for loops' and using an incrementing variable to solve more complicated puzzles.
- | calculated using a spreadsheet. | -Comments are made on how the criteria is met.
-Possible enhancements are suggested and an attempt is made to implement changes. | -To develop a program to use inputs and outputs on a controllable device |