Computing
Knowledge, Skills & Progress

The Computing Progression of skills and knowledge gives an overview of the skills and knowledge covered in each phrase and strand and how these skills are developed in order to enable pupils to reach the end of key stage outcomes outlined in the National curriculum.

Within each key stage, knowledge is often introduced at the start of the unit so that there is time for that knowledge to be revisited and applied throughout the unit and in subsequent year groups.

Key for National Curriculum Links: Computer Science / Information Technology / Digital Literacy

EYFS	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links / Early Learning Goals	St. Andrews CEVA Primary School Values
Autumn 1	Digital Painting	Recognise that technology is used at home and in schools. Technology has a purpose.	Explore a painting app, draw lines, letters and numbers freehand. Use a paint brush tool to reinforce my fine motor skills using an iPad.	Tool Paintbrush Shape tools Line tool	NC: Effective use of Tools Creating Media ELG: Physical Development—Fine Motor Skills Literacy—Writing Understanding the World—The Natural World.	Ambition I can use different tools to create a piece of art. Perseverance I can make changes to my artwork.
Autumn 2	Storytelling	Recognise that technology is used at home and in schools. Technology has a purpose.	Record sounds / voices in storytelling with support. Use PuppetPals to create a simple animation, telling a story using one character or more.	Animation Puppet iPad	NC: Effective use of Tools Creating Media ELG: Communication & Language—Speaking Expressive Arts & Design— Being Imaginative and Expressive	Ambition I can recall my model text from my Talk 4 Writing unit and retell it using PuppetPal.

EYFS	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links / Early Learning Goals	St. Andrews CEVA Primary School Values
Spring 3	Moving a Robot	Recognise that technology is used at home and in schools. Technology has a purpose.	Give a Beebot an instruction and direct is around the classroom.	Robot Floor robots Directions Beebot	NC: Algorithms Programming ELG: Personal, Social & Emotional Development—Managing Self. Physical Development—Gross Motor Skills	Perseverance I will need to edit and adapt my algorithms to create a final program. Ambition I will need to take risks and see what happens.
Spring 4	Digital Photography Grouping Data	Recognise that technology is used at home and in schools. Technology has a purpose.	Capture a digital image. Hold the camera still to take a clear photograph. Sort objects, take a picture and discuss what I have done.	Photo Objects Group	NC: Data and Information Algorithms Effective Use of Tools Creating Media ELG: Expressive Art and Design—Creating with Materials	Responsibility I can use an iPad responsibly.

EYFS	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links / Early Learning Goals	St. Andrews CEVA Primary School Values
Summer 5	Digital Writing	Recognise that technology is used at home and in schools. Technology has a purpose.	Play on a game on an iPad. Use computers, keyboards and mouse's appropriately. I can type letters / my name onto a keyboard. I can dictate short sentences into an iPad.	iPad Computer Keyboard Mouse Keys	NC: Effective use of Tools Creating Media ELG: Personal, Social and Emotional Development—Managing Self, Building relationships. Literacy—Writing Understanding the World—Past and Present	Responsibility I can use an iPad responsibly. Self-Control & Responsibility I can work in my role play area with others and use the devices there responsibly.
Summer 6	Information Technology	Recognise that technology is used at home and in schools. Technology has a purpose.	I can record sounds / voices in storytelling. I can turn a computer on and off again.	On Off Computer	NC: Computing systems ELG: Understanding the World—Past and Present Expressive Arts & Design—Being Imaginative & Expressive	Ambition I can recall my model text from my Talk 4 Writing unit and retell it. Responsibility I can turn off and on a computer, using it responsibly.

Year 1	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 1	Technology Around Us	Technology has been made by people to help us. Technology is man made and not natural. Technology is things like computers, Ipads or traffic lights. There are important rules to help us use computers safely.	To choose a piece of technology to do a job and recognise that is can be used in different ways. To identify the switch, keyboard, mouse and screen on a computer. To use a mouse to click, drag and select some-thing. To use a keyboard to type and edit text. To show how to use technology safely.	Information Technology Personal Information Password Username Computer Keyboard Mouse Computer Screen	Computing systems Algorithms	Responsibility Information Technology is used responsibly everyday in a range of jobs. I need to ensure I use it responsibly and safely. Integrity There are different ways I can use Information Technology positively. Perseverance With perseverance technology and digital devices have changed over time.

Year 1	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 2	Digital Painting	We can use digital devices to help us draw and paint. We can use different tools to create different effects. We can draw in different ways. We can make careful choices, by selecting different colours or brush sizes.	To create a picture using freehand tools. To use shape and line tools. To use a range of colours. To use the fill tool to colour. To use the undo button. To combine a range of tools to create a piece of artwork.	Tool Paintbrush Erase Fill tool Shape tools Line tool Undo Brush size	Effective use of Tools Creating Media	Ambition Graphic designers use digital painting to create logos, posters etc. I will need to take risks and use a range of tools to create a final image Perseverance To design, create and edit work I will need to persevere and make changes accordingly. Integrity I will only use images and work that is my own in order to follow Copyright rules.

Year 1	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 3	Moving a Robot	Bee-bots are a type of floor robot that can be programmed to move around on the floor. In order to move our Bee-bots we need to create clear routes, by giving commands. An algorithm helps me to program the floor robot to where I want it to go. Forwards on the Bee-bot will move the Bee-bot forwards, back-wards will move it back-wards, left and right will move it to the left or right. A program is a set of commands that a com-puter can run. A series of instructions can be issued before they are acted on.	To predict the outcome of a command on a device. To list which commands can be used on a given device. To run a command on a floor robot. To choose a command for a given purpose. To choose a series of words that can be run as a program. To build a sequence of commands in steps. To combine commands in a program. To run a program on a device.	Programming Robot Floor robots Command Route Directions Algorithm Beebot	Algorithms Programming	Perseverance I will need to edit and adapt my algorithms to create a final program. Ambition I will need to take risks and see what happens. Programmers and game designers use algorithms to create software.

Year 1	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 4	Grouping Data	Data can be numbers, words or pictures. Labels can be used to place objects into groups. This helps us to count and compare data easily. Computers can help us to group data by sorting different objects into groups. Computers can be programmed to count the total in each group. Objects can be grouped in order to answer questions and solve problems.	Identify some attributes of an object. Collect simple data. Show that collected data can be counted. Choose an attribute to group objects by. Explain that objects can be grouped by similarities.	Attributes Labels Similarities Grouping Counting Object Data Differences	Data and Information Algorithms	Ambition Scientists use data to observe and record patterns.

Year 1	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 5	Digital Writing	We can use digital devices to help us to write. The programs we can write on are called word processors. A keyboard is used an input device that lets a person enter letters, numbers and symbols into a computer. The buttons on a keyboard are called keys. You can choose where to write by moving the cursor (the arrow keys) over the page. The shift key changes the output of a key. We can change the look of text by changing the font, size and colour. The undo tool reverses the last thing you did. The toolbar is a set of buttons that are at the top of the page in a word processed, they can change the text in different ways.	To use letters, numbers and space keys to enter text into a computer. To use punctuation. To use the backspace key to remove text. Position text in a chose place. To use undo. Change the appearance of text on a computer.	Cursor Shift key Input Word processor Keys Font Spacebar Toolbar	Effective use of Tools Creating Media	Responsibility & Integrity When work is published it is somebodies work, I have the responsibility to ensure I do not copy their work as my own. Self-Control & Integrity When we publish text using a computer it is there forever. I need to make sure that what I publish is respectful and follows my school's Acceptable Use Policy. Ambition Media designers use posters to advertise their work. Digital writing is used on greeting cards and in book writing.

Year 1	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 6	Programming animations	Algorithms help me to program the sprite to do different things. The programming blocks must be dragged to the stage so that the sprite can move. Sometimes when things don't work there may be a problem with the algorithm. To fix this I need to debug my animation. On Scratch I can use the moving blocks to give commands to my Sprite. This helps them to move in different ways. A program is a set of commands a computer can run. A series of instructions can be given before they are acted on. To run my commands, I need to make sure I have a start block and an end block at the end of my program.	To choose a series of commands that can be run as a program. To run a program on a device.	Programming Sprite Debugging Command Sequence Run Algorithm Animation	Programming Design and Development	Perseverance To design, create and edit work I will need to persevere and make changes accordingly. Ambition I will need to take risks and see what happens. Programmers and game designers use algorithms to create software.

Year 2	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 1	It around us	Information technology is made up of computers and things that work with computers. There are rules that we need to follow in order to use technology safely for example if you see something upsetting online, you tell a trusted grown up. Information technology helps us in our daily lives, making things quicker and easier. Information technology can keep us safe and also help us to communicate with others. There are different types of information technology that we use in our homes and in the	To describe some uses of computers To identify information technology in school. To identify information technology beyond school. To show how to use information technology safely.	Information technology Computer Barcode Scanner Safely Communicate Rules Digital device	Networks Computing Systems	Responsibility I can use the internet responsibly. Integrity I can identify and discuss the positives and negatives of using the internet

Year 2	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 2	Digital Photography	We can use digital devices to help us to take and edit photographs.

Different devices can be used to take photographs for example digital cameras, iPads, phones and webcams.

We can use programs to edit and improve photos to get the result that we want.

We should understand that not all photographs that we see are real, they may have been edited. | To capture a digital image in both a landscape and portrait format.

To view photographs on a digital device and decide which ones to keep.

To hold the camera still to take a clear photograph.

To use zoom to change the composition of a photograph.

To use filters to edit the appearance of a photo- | Digital device

Capture

Landscape

Portrait

Editing

Composition

Zoom

Filters | Effective Use of Tools

Creating Media | Ambition

Photographers, marketing managers, video makers (YouTube) and web designers all use photography to sell their products.

Independence & Integrity

Not all images that I see online are real, some might have been edited or changed. |

Year 2	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 3	Robot Algorithms	To design a route for a Bee-Bot I need to think carefully about my starting point and my end point. I can use symbols to indicate the commands that I have input as a program. With larger programs we can break tasks into chunks. When I have created an error, I need to debug my program. This might be typing in my sequence incorrectly, typing in the wrong code or recreating my plan. When I press buttons on the Bee-bot I am creating a program for	Choose a series of words that can be used in a sequence. Choose a series of instructions that can be run as a program. Create a program. Run a program on a device. Debug a program that I have written.	Chunking Debugging Command Algorithm Programming Floor robots Sequence Bee-bot	Algorithms Programming	Perseverance I will need to edit and adapt my algorithms to create a final program. Ambition I will need to take risks and see what happens. Programmers and game designers use algorithms to create software.

Year 2	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 4	Pictograms	Data can be organised into groups and record-ed in different ways for example pictograms, tally charts and block charts. Programs such as J2da-ta can help us to create pictograms and block charts. Pictograms can be used to answer questions and solve problems. Headings are used on a pictogram and tally chart to explain the different data. Some data can be shared with others, whereas some can't as it is private. Objects can be com-pared based on their	I can enter data onto a computer. I can use a computer to view data in different formats. People, animals and objects can be de-scribed by attributes. Use pictograms to an-swer single-attribute questions. Use a computer to an-swer comparison ques-tions.	Attributes Data Headings Compare Tallying Grouping Block diagram Differences	Data & Information Effective Use of Tools	Ambition Mathematicians and Scientists can use pictograms to record their data. Integrity & Responsibility I can make sure that the information I share is not private or person-al information.

Year 2	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 5	Digital Music	We can use a digital device to help us create, edit and listen to music. We can also use lots of different apps and programs to edit and improve music for example Chrome Music Lab. Rhythm, pitch and temp can be used to change the sound and emotion of music. When using Song Maker on Chrome Music Lab, I can create different patterns to change the pitch. I can also change the instruments and the tempo. Making music on a computer is easier than using an instrument, such as recorders in my music lessons.	Experiment with musical patterns on a computer. Experiment with different sounds on a computer. Use a computer to create a musical pattern. Use a computer to compose a rhythm and a melody on a given theme. Use a computer to play the same music in different way for example tempo Evaluate a musical composition on a computer Improve a musical composition created on a computer.	Pitch Rhythm Pulse Tempo Emotion Instrument Pattern Editing	Creating Media Design & Development	Ambition Marketing managers and video makers can use Digital Music. Independence I can use an iPad to create a final product.

Year 2	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 6	Programming quizzes	Programming is when we make algorithms for a computer to follow. In Scratch I can use programming blocks to code and move my sprite around. Stacking blocks are used to create a sequence, allowing me to stack blocks together side by side in order. If I design my algorithm to make the quiz work in the way I want it to, I may not come across a problem. If I come across a problem, I will need to de-	Choose a series of words that can be given as a sequence Explain what happens when we change the order of instructions. Choose a series of commands that can be run as a program. To make and test a prediction by running a sequence. Create and debug a program. Run a program on a device.	Outcome Sprite Debugging Algorithm Design Sequence Evaluate Build	Programming Design & Development	Perseverance I will need to edit and adapt my algorithms to create a final program. Ambition I will need to take risks and see what happens. Programmers and game designers use algorithms to create software.

Year 3	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 1	Connecting Computers	To know that an input is something that sends a message to devices, giving examples. To explain that a process acts on the message inputted. For example the computer follows a program that tells it what to do when the keyboard is pressed. To explain that an output is something that is sent out, following the process. For example, the letter that you have typed is on the screen. To explain that computer networks allow us to send and receive information between computers that are in different places. To know that a connection describes a link between the computer and something else such as WiFi. Computers in a network can send and receive information to one another.	To identify input and output devices and explain how a computer accepts these processes. To explain how a computer network can be used to share information. To explain the role of a switch, server and wireless access point in a network. To identify network devices around me. Explain how networks can be connected to other networks.	Digital device Input Process Output Program Connection Network Network switch	Networks Computing Systems	Responsibility Information Technology is used day to day in our lives. I can use it responsibly following my school's Acceptable Use Policy. Integrity There are positive ways to use technology within my community and school.

Year 3	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 2	Stop-frame animation	Animation is a technique used to make objects and drawings appear to move. When creating an animation, a picture needs to be taken (captured), changing the drawing very slightly to keep it consistent. Storyboards can be used to plan an animation. You can add music or sound effects to improve the outcome of your project. When you are finished, press stop and export your animation to save it.	To plan an animation using a storyboard. To set up a work area to capture images. Use the onion skinning tool to review subject position. Move a subject between captures. Review a sequence of frames, removing some to make improvements. Add media to enhance and animation. Review a completed project.	Stop-frame animation Flip book Frame Sequence Onion skinning Storyboard Setting Character	Effective Use of Tools Creating Media	Integrity I can understand that not all images used in stop-frame animations are real, they can be edited and don't always show a true representation. Empathy I can discuss, listen and be respectful of others opinions even if they are different to my own.

Year 3	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 3	Sequencing Sounds	Programs start because of an input and include sequences of commands. A sequence is a pattern or process in which one thing follows another. In Scratch Event blocks are used to start sequences, they are orange and have a curved shape at the top. In order to create a carefully planned sequence I will need to design my algorithm carefully. The order of commands can affect a program's output, if its not correct I will need to debug my program. On Scratch, the Blocks Palette can be used to puzzle piece commands which control the animation. The Code Area in the middle is where the blocks are placed to create a program. The Stage is where the output of the program is presented.	Build a sequence of commands. Combine commands in a program. Order commands in a program. Create a sequence of commands to product produce a given out-come.	Programming blocks Code Sprite Debugging Algorithm Command Input Process	Programming Design & Development	Perseverance I will need to show perseverance when debugging my algorithms. Empathy I can work well in a team and respect the ideas and opinions of others.

Year 3	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 4	Branching Databases	Branching databases can help us to identify objects within sets of data. They are useful when we want to classify objects into different groups. Questions that require yes and no answers can be helpful for helping us to find out the attributes of different objects. Open ended questions have many different answers; therefore, it is not possible to make a branching database using them. We might need to split objects into more than two groups and so a yes or no question alone is not enough. We may have to ask multiple questions to sort our data. I can use a branching database to answer questions and solve problems, depending on the data I am trying to represent. For example, to identify different types of minibeasts. Programs such as j2data can help you to create a branching database. You can add as many questions as needed until all of your objects are sorted individually.	Create questions with yes / no answers Choose questions that will divide objects into evenly sized subgroups Repeatedly create subgroups of subjects Identify an object using a branching database Retrieve information from different levels of the branching database	Attributes Closed questions Open ended questions Branching database Classify Subgroups Decision tree Organise	Data & Information Effective Use of Tools	Integrity I can understand what information I can share about myself with others and what information is private. Responsibility I can understand how as a school we use databases responsibly and keep our information private.

Year 3	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 5	Desktop Publishing	Desktop publishing is when we create documents using page layout software. We can use desktop publishing to make things like newsletters, brochures, magazines and newspapers. When we are using desktop publishers, we can consider how images and text are laid out. Recognise how text and images can be used together to convey information. Define landscape and portrait as two different page orientations Consider how different layouts can suit different purpose Pages can be structured with placeholders. Different fonts can be used for different effects and purposes. Consider the benefits of using a desktop pub-	Show that a page orientation can be changed. Add text to a placeholder. Organise text and image placeholders in a page layout. Add and remove images to and from placeholders. Edit text in a placeholder. Choose fonts and apply effects to text. Move resize and rotate images. Review a document.	Desktop publishing Placeholder Purpose Layout Template Images Font Rotate	Effective Use of Tools Creating Media	Ambition Web designers and information guide creators can use desktop publishing to share information. Responsibility I can understand that not everything I read online is true, some information might be fake news.

Year 3	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 6	Events and actions in programs	Programs start because of an input; we make a set of instructions for computers to follow. We can use event and action command blocks to make sprites carry out acts when certain prompts take place. We can use algorithms to sequence movements, actions and sounds, this is a process. A sequence is a pattern or process in which one thing follows another. In Scratch, blocks can stack vertically on top of one another to create sequences. Event blocks are yellow and are used to sense different events that happen. Action blocks include motion blocks (blue), sound blocks (pink) and look blocks (purple). They make the sprite move, make sounds and change appearance when the event is triggered.	To build a sequence of commands. To combine commands in a program. To order commands in a program. To create a sequence of commands to produce a given outcome.	Motion blocks Event Move Action Debugging Command Input Output	Programming Design & Development	Ambition Programmers and Gamers use these skills everyday. Perseverance I will need to show perseverance when designing, creating and evaluating my product.

Year 4	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 1	The Internet	The World Wide Web is part of the internet, where we can visit websites and webpages. When we use the World Wide Web, routers help us to journey to different networks in different parts of the world. Web browsers such as Google Chrome, help us to look at different pages on the internet. The internet is a network of networks, that are all connected together. Content published might be copyrighted or inaccurate to create	Recognise the need for security on the internet. Explain the benefits of the World Wide Web. Evaluate the reliability of content and whether it is reliable.	Copyright World wide web Website Server Router Wireless access point Network Network switch	Networks Safety & Security	Empathy I can respect the opinions of others online, even if I disagree. Responsibility I can show understanding that not everything I read online is reliable. Integrity I can ensure that I am a model citizen who shares positive content.

Year 4	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 2	Audio Production	The process of recording and listening to sound requires input devices (microphone) and an output device (speaker). Podcasts are a spoken word file that can be downloaded by listeners. People can have ownership over audio files and can copyright it. We use the input devices to send the audio to the device. We use the output devices to listen to the audio from the device. Some devices such as a mobile phone can act as both the input and the output.	Record sound using a computer. Play recorded audio. Import audio into a project. Delete a section of audio. Change the volume of tracks in a project.	Audio Record Playback Input device Output device Export Sound file Mixing	Effective Use of Tools Creating Media	Integrity I will not copy the work of others, following the Copyright Laws. Empathy I can show empathy towards others in my group and respect their opinions even if I disagree. Ambition DJs and radio presenters use audio to broadcast and share their ideas.

Year 4	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 3	Repetition in shapes	We can use algorithms to plan, model and test, in order to create accurate and imaginative shapes and patterns. Patterns are things that repeat in a logical way, in everyday life patterns are everywhere. FD: Forwards, always followed by a space and the number of steps. For example, FD 50. BK: Backwards, always followed by a space and the number of steps. For example, BK 50. LT: Left turn, always followed by a space and then the degrees to turn. For example, LT 90. RT: Right turn, always followed by a space and then the degrees to turn. For example, RT 90. CS: Clears any pen marks on your screen and takes the turtle back to the centre. PU: Stops the turtle from leaving a pen trail. PD: Makes the turtle leave a pen trail. In Logo, we can save time by repeating a sequence of instructions using the repeat function. By typing the code repeat, we can repeat commands a set number of times. The number following repeat is the number of times to repeat the code. For example, repeat 4 [FD 100 LT 90]. Repeating the code four times. This is a count-controlled loop. There can be an indefinite loop which will run until the program is stopped.	List and everyday tasks as a set of instructions including repetition. Use an indefinite loop to produce a given outcome. Use a count-controlled loop to produce a given outcome. Plan a program that includes appropriate loops to produce a given outcome. Recognise tools that enable more than one process to be run at the same time (concurrency). Create two or more sequences that run at the same time.	Command Code snippet Repetition Loop Count-controlled loop Indefinite loop Procedure Decompose	Algorithms Programming	

Year 4	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 4	Data logging	Data loggers and logging software can be used to automatically capture data. We can then draw conclusions in answer to our research questions. Data gathered over time can be used to answer important questions. Before collecting data, we need to carefully consider which questions we are trying to answer. Sensors detect things in our environment, computers use their input device sensors to help them sense things. Identify data that can be logged over time. Data loggers have sensors built into them. They can be used to detect and record data. Tables and graphs can be used to present data in a useful way. Computers can be used to record the data automatically, therefore data loggers can be set to measure at different intervals.	Use a digital device to collect data automatically Choose how often to automatically collect data samples. To use a set of logged data to find information Use a computer program to sort data by one attribute Export information in different formats.	Input device Sensor Interval Data point Data set Collection Review Conclusion	Computing systems Data & Information	Integrity I can understand what information I can share about myself with others and what information is private. Responsibility I can understand how as a school we use databases responsibly and keep our information private.

Year 4	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 5	Photo Editing	There are lots of different ways we can edit photographs, because of this, not all images that we see are real, some may have been edited. We can crop an image if we only need part of a photograph. We can also enlarge and reduce the parts that we need. Editing programs often have filters, these can change the colours in a photograph. We can add and remove parts of an image by using cut, copy and paste tools. We can make more than one of an image by copying it. We can also rotate and flip images to create different effects. When the lighting of a photograph is not quite right, we can change the brightness or contrast. We can use Paint.net to edit our images, using the lasso tool we can change part of all of an image. There are positive and negative reasons for editing photos. Sometimes they can make things clearer, however, they can sometimes spread fake news or dishonest ideas.	Recognise that digital images can be manipulated. Recognise that digital images can be changed for different purposes. Choose the most appropriate tool for a particular purpose. Consider the impact of changes made on the quality of the image.	Crop Copyright Composition Retouch Original Clone Editing Quality	Effective Use of Tools Creating Media	Integrity I can understand that not all images used in stop-frame animations are real, they can be edited and don't always show a true representation. Empathy I can discuss, listen and be respectful of others opinions even if they are different to my own.

Year 4	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 6	Repetition in games	In Scratch you can use repeat blocks by selecting code and then the control blocks. Repeat blocks are placed around a command block that you want to repeat. The number of times is typed into the white area. To create shapes, select a motion block to determine the line that will be drawn. Turning a number of degrees changes the direction of the pen. Placing the repeat block around this will allow more complex shapes to be drawn. We can control the number of loops of a command with the number typed into the repeat block. The forever block makes a command continue infinitely.	List an everyday task as a set of instructions including repetition Use an indefinite loop to produce a given outcome. Use a count-controlled loop to produce a given outcome Plan a program that includes appropriate loops to produce a given outcome Recognise tools that enable more than one process to be run at the same time Create two or more sequences that run at the same time	Loop Count-controlled loop Forever block Duplicate Modify Animate Event Refine	Programming Design & Development	Ambition Game designers and Programmers use these skills to create and design their own games. Perseverance I will to show perseverance to design, create and edit my game.

Year 5	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 1	Sharing Information	There are many different kinds of computer systems all around the world. When we communicate we use an agreed set of protocols. Digital information we send is a packet. Computers and their users are not always in the same place. Computers use special addresses called IP addresses. Computer systems are made up of inputs, processes and outputs. Shared spaces and online drives can allow one or more person to edit information	To describe the input and output of a search engine. To demonstrate that different search terms produce different results. Evaluate the results of search terms	Connection Output Process Input System Protocol Collaboration Ip address	Networks Effective Use of Tools	Integrity I can understand what information I can share about myself with others and what information is private. Responsibility I can understand how as a school we use databases responsibly and keep our information private.

Year 5	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 2	Video production	Videos present moving images, often accompanied by sound. Many different devices can be used to record, edit and playback video and sound. Storyboards can be used to plan scenes, outlining the plot and key events. Static Cameras are cameras used in a fixed position, sometimes using a tripod. A number of special effects can be used to add transitions between shots. Remember to save projects regularly.	To use different camera angles. To use pan, tilt and zoom. To identify features of a video recording device or application. Combine filming techniques for a given purpose. Decide what changes need to be made such as reshooting a scene. Use split, trim and crop to edit a video.	Video Record Capture AV (Audio Visual) Transitions Zoom Pan Tilt	Creating Media Design & Development	Responsibility & Integrity When work is published it is somebodies work, I have the responsibility to ensure I do not copy their work as my own. Empathy Whilst working within my group I can discuss, listen and be respectful of others opinions even if they are different to my own.

Year 5	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 3	Selection in Physical Computing	The positive and negative power pads on the Sparkle need to be connected with the positive and negative power pads on the Crumble controller. The Sparkle's D pad needs to be connected to the D pad on the Crumble controller. Clicking the red square on the set sparkle to block allows you to change the colour. Commands places inside a do forever loop will be repeated until the program is stopped. A sequence of commands placed inside the block will be run multiple times. The number shown on the block can be changed. A condition can be used to trigger actions, it can only be true or false A count-controlled loops uses a number as a condition. The loop will repeat until the loop count matches the number set. A loop can be used to repeatedly check whether a condition has been met The correct order of 'if...then...else...' statements are important.	Create a condition-controlled loop Use a condition in an 'if...then...' statement to start an action Use selection to switch the program flow in one of two ways Use a condition in an 'if...then...else...' statement to produce given outcomes	Microcontroller Components Condition Infinite loop Sparkle Motor Algorithm Crumble	Programming Computing Systems	Ambition Programmers and Product Designers can use these skills to create their own product. Perseverance I will need to show perseverance when designing, creating and editing my product.

Year 5	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 4	Flat-file databases	A database is a collection of organised data that is easily stored and used. Many computer programs allow us to create data bases and have become more popular than paper databases, as data can be easily and quickly added or removed, sorted, filtered, edited or viewed at any time. Search functions allow us to type in the exact word/s that we are looking for. This can be useful if we are looking for a particular record. Data can be filtered into different fields when we are looking for specific information. Data can be shown visually using graphs and charts. This allows users to quickly and easily find answers to questions, see trends and sequence information. Charts and graphs can be created by selecting the charts icon and selecting which fields to display in the x-axis and y-axis.	Choose different ways to view data. Choose which attribute and value to search by to answer a given question. Ask questions that need more than one attribute to answer. Choose which attribute to sort data by to answer a given question. Choose multiple criteria to search data to answer a given question (AND and OR). Select an appropriate graph to visually compare data. Choose suitable ways to present information to other people.	Database Field Criteria Record Filter Order Chart Graph	Data & Information Effective Use of Tools	Responsibility I can be responsible with the information that I share, knowing that some information is personal and private.

Year 5	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 5	Introduction to vector graphics	Vector drawings are computer graphic images that are made using 2D shapes. The drawings are connected by lines and curves to form polygons and other shapes, forming a complete picture. When the shapes overlap in a vector drawing, start with the objects that are furthest away. You can save a lot of time by duplicating shapes. This can be down by holding ctrl + c and pasting by holding ctrl +v. You can enlarge or reduce an object by clicking on it and dragging the handles to the desired size/ You can rotate an object by dragging the circular handle at the top. The line tools can be used to help you change the colour and weight of the line. The Alignment guides pop up as your move objects around on Google Drawings, helping you to align and size objects.	To add an object to a vector drawing. Select one object or multiple objects Delete objects Move objects between the layers of a drawing Group and ungroup selected objects Duplicate objects using copy and paste Modify objects Reposition objects Combine options to achieve a desired effect Create a vector drawing for a given purpose	Vector Object Duplicate Modify Layers Alignment grid Group Drawing tools	Effective Use of Tools Creating Media	Integrity I can show understanding that some images are not my own and are protected under Copyright Laws. Perseverance I can show perseverance when designing, creating and editing my vector drawing.

Year 5	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 6	Selection in quizzes	A condition can be true of false A count-controlled loop contains a condition Compare a count-controlled loop with a condition-controlled loop A condition-controlled loop will stop when a condition is met When a condition is met a loop will complete a cycle before it stops A selection can be used to branch the flow of a program A loop can be used to repeatedly check whether a condition has been met Explain the importance of instruction order in 'if...then... else... state-	Choose a condition to use in a program Create a condition-controlled loop Use a condition in an 'if... then...' statement to start an action Use selection to switch program flow Use 'if... then... else...' to switch program flow in one of two ways	Selection Condition Count-controlled loop Condition-controlled loop Outcomes True False Programming	Algorithms Programming	Perseverance I can show perseverance when designing, creating and editing my quiz. Ambition Programmers can use the skills in their everyday job.

Year 6	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 1	Communication and collaboration	A search engine is a program that finds websites and webpages based on key words entered.

Some examples of search engines are Bing, Google and Yahoo.

You can type searches into the address bar of a browser.

We can communicate in lots of different ways on the internet for example emails, social media and video calling.

Public communication is visible to all, whilst private communication is restricted.

Not all types of communication are appropriate to our needs, safety and privacy. | Outline methods of communicating and collaborating using the internet.

Choose methods of internet communication and collaboration for given purposes.

Evaluate different methods of online communication and collaboration.

Decide what you should and should not share online. | Search engine

Communication

Searching

World wide web

Browser

Website

Webpages

Links | Networks

Effective Use of Tools | Empathy

I can discuss, listen and be respectful of others opinions even if they are different to my own.

Responsibility

I can responsibly share and protect information online. |

Year 6	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Autumn 2	Creating webpages	Webpages are made up of a code called Hypertext Markup Language (HTML) Websites can be found using browsers. Navigation Pathways are also known as breadcrumb trails. Hyperlinks allow different pages to be linked together, helping the audience to navigate the website easily. A website is made up of different components, for example a website name, a slogan, a logo, a search bar, menu and pictures. There can sometimes be hyperlinks to other areas of the website or	To review an existing website. To create a new blank web page. To add text on a web page, setting out its style and changing its appearance. To embed media in a web page. To add web pages to a website. To insert hyperlinks between pages and to another site. To preview a webpage.	Webpages Website Browser Hyperlink Hypertext Markup Language World wide web Copyright Layout	Creating Media Design & Development	Ambition I can design a website to showcase my knowledge. Perseverance I can make changes and persevere when there are errors within my work. Responsibility & Integrity When work is published it is somebodies work, I have the responsibility to ensure I do not copy their work as my own.

Year 6	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 3	Variables in games	Variables are changeable elements of a program. Scratch is one app in which we can explore variables. In computer programming we use variables to store information that might change and can be used later in our program. Select variables (dark orange circle) from the menu on the left. Either choose from the available variables or 'Make A Variable'. Select Events (light orange circle) from the menu and choose what needs to happen for the variable to chance. Select variables again and choose what will happen when the event happens. Variables should always have a value and an appropriate name. Many games requite sprites to change position, this is achieved when using the motion commands. When programming my game I understand that errors may occur. For example, sequence errors, keying errors and logical errors.	Identify a variable in an existing program Experiment with the value of an existing variable Choose a name that identifies the role of a variable to make it easier for humans to understand it Decide where in a program to set a variable Update a variable with a user input Use an event in a program to update a variable Use a variable in a conditional statement to control the flow of a program Use the same variable in more than one location	Variable Keying errors Sequence errors Value Logical errors Code Callout Event	Programming Design & Development	Ambition Computer programmers, game designers and website designers use programming to create games. Perseverance I can edit and make changes to games when creating a final product.

Year 6	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Spring 4	Introduction to spreadsheets	Formatting makes a spreadsheet easier to read. Data is raw numbers and figures. Information is what we can understand from analysing data. Large amounts of data can require multiple or complex sums. The 'fx' or 'sigma' icon can help you to find averages, add many cells together and many other calculations. Data headings allow data to be stored in a meaningful way. A formula can tell a computer which mathematical operation to use for a calculation: add, multiply, divide or subtract. Recognise cells can be linked A spreadsheet is a computer application that allows users to organise, analyse and store data in a table. Programs such as Microsoft Excel help users to make spreadsheets. A spreadsheet can be made up of multiple worksheets. They can be recorded and re-names. Each cell has a unique reference, made up of a number (the row) and letter (the column), Charts and graphs can be created using the data in the spreadsheet.	Calculate data using a formula for each operation Use functions to create new data Use existing cells within a formula Choose suitable ways to present spreadsheet data	Spreadsheet Data Cells Attributes Cell reference Evaluate Format Formula	Effective Use of Tools Data & Information	Perseverance I can persevere and problem solve when issues arise. Integrity & Responsibility I can discuss how the information I share may be private and need to be protected.

Year 6	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 5	3D Modelling	3D modelling involves using computer software to create 3D shapes, in order to produce models of real-world objects. 3D modelling allows us to view designs from different angles and experiment with various designs. The ViewCube allows us to switch the view of the model. Objects can be resized by dragging the handles. Change the colour/shading of your model and make them solid. 3D objects can be dragged into the workspace and remodelled. Holes can be used to create objects that are not solid and have space inside / within them. To achieve this, you need to add a 3D shape onto the workspace, then drag one of the holes shapes and adjust the dimension accordingly. Complex shapes are made up of a number of 3D shapes, we can position and merge them together to combine them.	Position 3D shapes relative to one another Use digital tools to modify 3D objects Combine objects to create a 3D digital artefact Use digital tools to accurately size 3D objects Construct a 3D model which reflects a real-world object	Modelling Workspace Faces Vertices Edges Position Design Modify	Effective Use of Tools Creating Media	Ambition Computer programmers, game designers and website designers all use 3D modelling.. Perseverance I can show perseverance when designing, creating and editing my 3D model.

Year 6	Unit Titles	Key Knowledge	Key Sills	Vocabulary	National Curriculum Links	St. Andrews CEVA Primary School Values
Summer 6	Sensing movement	Variables are changeable elements of a program. Micro:bit is one app in which we can explore variables. MakeCode can be used to create if, then, else statements. When using MakeCode, in order to start my programming I need to use a wrap-around block such as on start, forever of on button pressed. In computer programming we use variables to store information that might change and can be used later in our program. Variables should always have a value and an appropriate name. The value of a variable can be updated and changed. If you change the value of a variable, you cannot access	Use the same variable in more than one location in a program Use a variable in a conditional statement to control the flow of a program Update a variable with a user input Use an event in a program to update a variable Decide where in a program to set a variable Choose a name that identifies the role of a variable to make it more useable to humans Experiment with the value of an existing variable Identify a variable in an existing program	Operands Input Output Process Accelerometer Condition Variable Debugging	Programming Computing Systems	Ambition Programmers and Product Designers use this software to create products. Integrity I can show understanding that products I create are my own and not a copy of somebody else's work. Perseverance I can show perseverance when designing, creating and editing my code.