St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Computing Curriculum Overview						
Rationale	For all children to be - aware of how to stay safe online and use technology effectively and responsibly - versatile, confident and skilled to use technology to support their learning creatively - able to use a wide range of technology to express themselves and communicate digitally - adaptable and responsive users of technology.					
Approach	Structured learning experiences with a clear balance of skill development in three strands of learning: ○ Multimedia- still text & images; creating images; moving text & images - video; animation and presentation; sound - see also music overview ○ Handling Data- research/internet, databases, presenting and calculating data ○ Programming - manipulating software; manipulating hardware- see also Design Technology overview ○ Technology in our Lives- ○ Online safety- on-going modelling and talking about safe and responsible use of technology, with one discrete lesson at the start of each half term. ● Online safety taught half-termly with ongoing reinforcement in safe all uses of technology - see online safety overview ● Range of technology platforms used to allow versatility of technology application ● Constant review to maximise use of latest technology, applications, systems ● Specialist teaching used for some more technical aspects of the computing curriculum and to support non-specialists subject knowledge.					
SEND	Children who are identified as working below ARE may have specific needs which contribute to their difficulty in this area. Where needs are specifically related to a Special Educational Need or Disability, specific and targeted support will be outlined and reviewed through the child's EHCP and/ or Pupil Progress Meetings; elements of which may be recommended by external agencies. It is also important to recognise that children identified as having SEND may not always be the least able in Computing and could excel in the subject. Pupil's attainment will be assessed in a subject-specific manner and based on their strengths rather than barriers.					
Values	**Kindness**	**Tolerance**	**Friendship**	**Aiming High**	**Positivity**	
Our curriculum documents for EYFS are planned and sequenced in line with Development Matters and the National Curriculum subjects. Please see Early Years planning.						

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

EYFS	Autumn 1	Autumn 2	Spring 1
Topic title and knowledge outcomes	**Networks and systems 1: Using a computer** **At the end of this unit, children will be able to:** • Name a computer, Keyboard, monitor and mouse. • Recognise letters and numbers from a keyboard. • Demonstrate awareness of why it is important to have a password. • Use and navigate with the mouse.	**Programming 1: All about instructions** **At the end of this unit, children will be able to:** • Learn to give simple instructions e.g., go, move forwards, click. • Use appropriate vocabulary and positional language e.g., next to. • Give a two-part instruction e.g walk forwards then backwards. • An algorithm is a set of instructions.	**Computing systems and networks 2: Exploring hardware** **At the end of this unit, children will be able to:** • Recognise that a range of technology is used in places such as homes and schools. This can be a computer, tablet, phone, or camera. • Take a photograph.
Lesson Sequence Learning challenges in a sequenced order.	L1- What a keyboard is and how to locate relevant keys. L2- Learning to log in and out. L3- What a mouse is and developing control when using a mouse. L4- Developing basic mouse skills, including moving and clicking and using an online paint tool.	L1- The class follow instructions as part of practical activities and games. L2- Learning to give simple instructions. L3- The children follow instructions as part of a dressing up game and learn to give simple instructions. L4- Pupils learn that an algorithm is a set of instructions to conduct a task, in a specific order. They use logical reasoning to read simple instructions and predict the outcome.	L1- Pupils explore and tinker with different hardware and are introduced to the relevant vocabulary. L2- Children explore and tinker with hardware and identify where technology is used in places that they are familiar with, such as homes and school. L3- Children learn to operate a basic camera to take photographs of their independent play. L4- Children further develop their photography skills, taking photographs of

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			their discoveries on a walk around the school grounds. L5- Working with an adult, children take selfie photographs to create a class gallery.
Knowledge Capture Task	Test type questions based on the information taught, relevant to age group.	Test type questions based on the information taught, relevant to age group.	Test type questions based on the information taught, relevant to age group.
National Curriculum End Points			
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links	Communication and Language Physical Development Personal Social and Emotional Development Understanding the World Mathematics	Communication and Language Mathematics Physical Development Understanding the World	Communication and Language Physical Development Personal Social and Emotional Development Understanding the World Mathematics
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

EYFS	Spring 2	Summer 1	Summer 2
Topic title and knowledge outcomes	**Programming 2: Programming Bee-Bots** **At the end of this unit, children will be able to:** • Use vocabulary such as forwards, back, left and right. • Use their knowledge of the meaning of arrows to try to program the Bee-Bot by pressing the directional buttons. • Give the Bee-Bot a set of instructions. When we give instructions like this, it's called an algorithm.	**Data handling: Introduction to data** **At the end of this unit, children will be able to:** • Understand how to sort and categorise objects. • To explain how items have been sorted and categorised e.g. all items are red. All children have long hair. • understand how to represent data in a pictogram e.g. one star equals one child.	**E-Safety and consolidation of skills.**
Lesson Sequence Learning challenges in a sequenced order.	L1- Children learn the meaning of directional arrows and follow a simple sequence of instructions. L2- Children experiment with programming a Bee-Bot/Blue-Bot and tinker with hardware to develop familiarity and introduce relevant vocabulary. L3- Children experiment with programming a Bee-bot/Blue-bot and to learn how to give simple commands.	L1- Children sort and categorise objects. L2- Children sort themselves into groups based upon given categories and then independently. L3- Yes or no? Children respond to yes/no questions as an introduction to branching databases. L4- Children learn branching databases through physical sorting and categorising. L5- Children learn to interpret a basic pictogram.	

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	L4- Children follow an algorithm as part of an unplugged game and learn to debug instructions when things go wrong. L5- Experimenting with programming a Bee-Bot/Blue-Bot and learning how to give simple commands. Understanding how to debug instructions, with the help of an adult, when things go wrong.		
Knowledge Capture Task	Test type questions based on the information taught, relevant to age group.	Test type questions based on the information taught, relevant to age group.	Test type questions based on the information taught, relevant to age group.
National Curriculum End Points			
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links			
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 1	Autumn 1	Autumn 2	Spring 1
Topic title and knowledge outcomes	**Computing systems and networks – Technology around us** **On completion of the unit, pupils will know…** • Technology refers to tools, devices, or systems that assist us in various tasks, making them easier, faster, or more efficient. • Examples of technology in the classroom include computers, tablets, interactive whiteboards, projectors, and educational software. • Technology in the classroom enhances teaching and learning experiences, promotes collaboration, enables personalised learning, and prepares students for the digital age. • The main parts of a computer include the central processing unit (CPU), monitor, keyboard, mouse, and various ports (such as USB and HDMI). • To switch on a computer, you typically press the power button located on the CPU or the laptop. To log into a computer, you enter your username and password on the login screen. • A mouse is a pointing device that you can use to click and drag objects on the computer screen. Clicking involves pressing and releasing the mouse button, while dragging involves holding down the mouse button and moving the mouse to move an object on the screen. • To open a program using a mouse, you can click on the program's icon or select it from the start menu or taskbar. • Clicking and dragging with a mouse allows you to interact with objects on a screen. By clicking and holding the mouse button, you can move or rearrange objects, select text, or highlight portions of a document or image.	**Creating Media – Digital painting** **On completion of the unit, pupils will know…** • To make marks on a screen they use various digital drawing tools, such as brushes, pencils, or pens. They can explain which specific tool they used to create the marks. • To draw lines on a screen they use digital drawing tools, such as the line tool or brush tool. They can explain which tool they used to create the lines. • How to use paint tools, including brushes, pens, and fill tools, to create a picture digitally, applying different strokes, colours, and techniques. • How to make marks with the square and line tools, utilising these tools to create geometric shapes or straight lines on the screen. • How to effectively use shape and line tools to create precise shapes, lines, or outlines in my digital artwork. • How to use shape and line tools to recreate the work of an artist, employing these tools to replicate the artist's style or achieve similar visual effects. • The appropriate shapes for their artwork, selecting shapes that best suit the subject matter or overall composition. • To make appropriate colour choices by selecting colours that are suitable and harmonious for the desired effect or mood of the artwork. • How to create a picture in the style of an artist, incorporating their techniques, subject matter, and overall artistic style into their own artwork. • That different paint tools serve different purposes and can create various effects in digital artwork. • To choose appropriate paint tools and colours to accurately recreate the work of an artist, carefully selecting the tools that best replicate their techniques and choosing colours that match their palette.	**Programming A** **On completion of the unit, pupils will know…** • They can make accurate predictions about the outcome of a command on a device based on their understanding of its function and the command given. • To correctly match a command to the expected outcome it is intended to achieve. • To execute a command on a device they follow the appropriate steps or input the necessary instructions. • To effectively follow a set of instructions, each step is completed in the specified order. • To recall words that can be acted out, understanding their meanings and associated actions. • Providing clear and accurate directions will guide someone or something to a specific location or desired outcome. • How to differentiate between forward and backward movements, understanding the direction and orientation changes involved. • The importance of starting a sequence from the same initial position to ensure consistent results. • Reliable predictions about the outcome of a sequence of commands involving "forwards" and "backwards" movements. • How to distinguish between left and right turns, understanding the changes in direction involved.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• You can use a mouse to create a picture by utilising drawing or graphic design software. With the mouse, you can select different tools, such as brushes or pens, choose colours, and apply strokes or shapes to the canvas to create your desired picture or artwork. • A keyboard is an input device used for entering text, commands, and other data into a computer. It consists of a set of keys that are pressed to input characters and perform various functions. • To type their name on a computer they press the corresponding keys on the keyboard that represent the letters of their name. • To save their work to a file, they use the "Save" or "Save As" function in a software application. • To open their work from a file they use the "Open" function in a software application. • The arrow keys on the keyboard can be used to move the cursor or insertion point in different directions: up, down, left, or right within a document or text field. • To delete letters or characters they position the cursor before the letter they want to delete and press the "Delete" or "Backspace" key on the keyboard. The "Delete" key deletes the character to the right of the cursor, while the "Backspace" key deletes the character to the left of the cursor. • Rules to keep them safe and healthy when using technology in and beyond the home are important for maintaining their well-being and security. • Examples of these rules include limiting screen time; protecting personal information; using strong and unique passwords; taking breaks and maintaining a good posture; and being mindful about cybersecurity risks. • We benefit from these rules because: they promote physical and mental well-being; enhance online safety; and help maintain device performance.	• Which tools were helpful in creating their artwork and explain why they were useful in achieving the desired artistic effect or outcome. • How to create dots of colour on the page using the chosen paint tools, either for specific effects or to add details to the artwork. • To change the colour and brush sizes as needed, adapting the tools to achieve different visual effects or to work on different areas of the artwork. • How to use dots of colour to create a picture in the style of an artist independently. • That pictures can be made in various ways, highlighting the diversity of approaches, styles, and techniques used by artists to create their artwork. • The differences between painting on a computer and painting on paper, recognising the unique features and advantages of each. • Whether their personal preference for painting is using a computer or using paper, stating which method they prefer and providing reasons for their preference.	• How to experiment with "turn" and "move" commands to control the movement of a robot or object. • How to accurately predict the outcome of a sequence of up to four commands given specific instructions. • The intended functionality or purpose of their program. • How to make informed choices about the order of commands in a sequence to achieve the desired outcome. • How to identify and resolve any errors or issues (debug) in their program to ensure it runs correctly. • How to generate multiple possible solutions or approaches to solve a given problem or task. • How to plan and create two distinct programs, each with a specific purpose or desired outcome. • How to utilise two different programs to guide an object or character to the same designated location or endpoint.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Lesson Sequence Learning challenges in a sequenced order.	L1 -To identify technology. L2 -To identify a computer and its main parts. L3 -To use a mouse in different ways. L4 -To use a keyboard to type on a computer. L5 -To use the keyboard to edit text. L6 -To create rules for using technology responsibly.	L1 -To describe what different freehand tools do. L2 -To use the shape tool and the line tools. L3 -To make careful choices when painting a digital picture. L4 -To explain why I chose the tools I used. L5 -To use a computer on my own to paint a picture. L6 -To compare painting a picture on a computer and on paper.	L1 -To explain what a given command will do. L2 -To act out a given word. L3 -To combine forwards and backwards commands to make a sequence. L4 -To combine four direction commands to make sequences. L5 -To plan a simple program. L6 -To find more than one solution to a problem.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Recognise common uses of information technology beyond school. • Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. • 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.	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content.	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Recognise common uses of information technology beyond school
Possible Endpoints and	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

support for the least able	tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links		**KS1 Art and Design** • To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space • About the work of a range of artists, craft makers, and designers, describing the differences and similarities between different practices and disciplines and making links to their own work	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

Year 2	**Autumn 1**	**Autumn 2**	**Spring 1**
Topic title and knowledge outcomes	**Computing systems and networks - IT around us** **On completion of the unit, pupils will know…** • Desktop computers, laptops, tablets, and smartphones are all examples of computers. • Word processing, internet browsing, multimedia editing, and data analysis are some uses of computers.	**Creating Media – Digital Photography** **On completion of the unit, pupils will know…** • Devices that can be used to take photographs, such as digital cameras, smartphones, and tablets. • How to take a photograph, discussing aspects like composition, lighting, and subject placement.	**Programming A - Robot Algorithms** **On completion of the unit, pupils will know…** • To follow instructions given by someone else, understanding and executing the steps as directed.
	• That a computer is a part of Information Technology (IT), which encompasses the hardware, software, and systems used to manage and process information. • Examples of IT, such as computer networks,	• What they did to capture a digital photo, describing the steps they took to frame the shot, adjust settings, and capture the image. • The process of taking a good photograph, discussing elements such as focus and timing.	• A series of words that can be enacted as a sequence, selecting words that can be acted out in a specific order. • To speak loudly to give clear instructions, communicating information or steps in a

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	databases, software applications, and telecommunications systems. • To sort school IT by its purpose, categorising IT tools and systems based on their specific uses in educational settings. • Some IT can be used in more than one way, recognising that certain technologies have versatile functionalities and can be applied in various contexts. • Computers, laptops, phones, interactive whiteboards, email, video calls, smart tv's and smart speakers are all examples of information technology in different settings, such as schools, offices, homes, and public spaces. • To sort IT by where it is found, categorising IT tools and devices based on their location or environment of use. • The uses of information technology, discussing how IT is utilised for communication, research, collaboration, entertainment, and problem-solving. • The common types of technology, including computers, smartphones, printers, routers, and digital cameras. • How IT devices work together, showing how interconnected devices can share information, communicate, and enhance productivity. • Why we use IT, recognising that IT improves efficiency, facilitates communication, stores and processes data, and enables access to information. • Uses of information technology, such as online learning, video conferencing, data analysis, digital content creation, and online banking. • The different rules for using IT, understanding that rules and guidelines help establish safe and responsible use of technology.	• How to take photos in both landscape and portrait format, adjusting the orientation of the camera to capture images in different dimensions. • Why a photo looks better in portrait or landscape format, understanding how the orientation can enhance the visual impact and convey a specific message. • What is wrong with a photograph, recognising issues such as poor lighting and blurriness? • How to take a good photograph, sharing tips and techniques for achieving better results in terms of lighting, composition, focus, and storytelling. • They can improve a photograph by retaking it, recognising when a photo can be enhanced by adjusting settings, composition, or retaking the shot from a different angle. • The effect that light has on a photo, experimenting with different lighting conditions to understand how it impacts the mood, colours, and overall quality of the image. • Experimenting with different light sources, using natural light, artificial light, and different angles can create different effects in photographs. • Why a picture may be unclear, understanding that factors such as camera shake, poor focus, or low resolution can contribute to the lack of clarity. • That images can be changed, understanding that photo editing tools and software can be used to alter photographs. • They can use a tool to achieve a desired effect, utilising photo editing software to adjust brightness, contrast, colours, and apply filters or other effects. • Their choices in photo editing, articulating why they made specific adjustments or enhancements to achieve a desired visual outcome. • A range of photography skills to capture a photo, combining knowledge of composition, lighting, focus, and camera settings to create compelling images.	concise and understandable manner. • They can use the same instructions to create different algorithms, applying the same set of instructions to create multiple sequences or programs. • To use an algorithm to program a sequence on a floor robot, utilising a set of instructions to guide the movements and actions of a robot. • The difference in outcomes between two sequences that consist of the same commands, demonstrating how different arrangements or orders of commands lead to different results. • To follow a sequence, they must understand and execute the steps in the specified order. • The outcome of a sequence, foreseeing the result or outcome based on the given set of instructions. • To compare their prediction to the program outcome, assessing whether their predicted outcome matches the actual result of the program. • The choices they made for their mat design, providing a rationale for the decisions made regarding the design elements and features of a mat. • Different routes around their mat, recognising and naming the various pathways or paths available within the layout of a mat. • To test their mat to make sure that it is usable, evaluating and assessing the functionality and usability of a mat based on predetermined criteria.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• How rules can help keep them safe when using IT, understanding that rules regarding privacy, cybersecurity, and appropriate online behaviour contribute to online safety. • The choices that they make when using IT, recognising that they have control over selecting devices, software, and online activities. • They can use IT for different types of activities, such as creating documents, conducting research, communicating with others, and accessing online resources. • The need to use IT in different ways, understanding that different tasks and contexts may require different approaches to effectively utilise information technology.	• Which photos have been changed through editing, identifying the differences between original and edited images. • Which photos are real, and which have been changed, distinguishing between unaltered photographs and those that have been digitally manipulated.	• What their algorithm should achieve, articulating the intended purpose or goal of a specific algorithm or set of instructions. • To create an algorithm to meet their goal, developing a sequence of instructions or steps that will accomplish a desired outcome. • To use their algorithm to create a program, translating the algorithm into a format that can be executed by a computer or a floor robot. • To test and debug each part of the program, systematically checking and correcting errors or issues in each segment or component of the program. • To plan algorithms for different parts of a task, devising a set of instructions or steps for various aspects or stages of a specific task. • To put together the different parts of their program, integrating and organising the various components or segments of a program into a cohesive whole.
Lesson Sequence Learning challenges in a sequenced order.	L1 - To recognise the uses and features of information technology. L2 - To identify the uses of information technology in the school. L3 - To identify information technology beyond school. L4 - To explain how information technology helps us. L5 - To explain how to use information technology safely.	L1 - To use a digital device to take a photograph. L2 - To make choices when taking a photograph. L3 - To describe what takes a good photograph. L4 - To decide how photographs can be improved. L5 - To use tools to change an image. L6 - To recognise that photos can be changed.	L1 - To describe a series of instructions as a sequence. L2 - To explain what happens when we change the order of instructions. L3 - To use logical reasoning to predict the outcome of a program. L4 - To explain that programming projects can have code and artwork. L5 - To design an algorithm.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	L6 - To recognise that choices are made when using information technology.		L6 - To create and debug a program that I have written.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. • Recognise common uses of information technology beyond school. • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. • Recognise common uses of information technology beyond school. • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Cross curricular Links	**Health, well-being, and lifestyle** • I can identify rules that help keep us safe and healthy in and beyond the home when using technology. • I can give some simple examples	**Art and design** • To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 2	Spring 2	Summer 1	Summer 2
Topic title and knowledge outcomes	**Data and information - Pictograms** **On completion of the unit, pupils will know…** • To record data in a tally chart they make vertical marks or lines to represent each unit or count. • They can represent a tally count as a total by grouping the tally marks into sets of five and converting them into numerical values. • They can compare totals in a tally chart by examining the numerical values associated with different sets of tally marks to determine which group has a higher or lower count. • To enter data onto a computer they input information or values into a digital system or software.	**Creating Media - Digital Music** **On completion of the unit, pupils will know…** • Simple differences in pieces of music involves recognising and distinguishing various elements, such as melodies, rhythms, harmonies, instrumentation, or dynamics, which set one piece apart from another. • Describing music using adjectives entails using descriptive words or phrases to convey the characteristics, mood, emotions, or overall qualities of a particular piece of music. • Their preferences by stating what one does and doesn't like about a piece of music involves articulating personal opinions or subjective judgments regarding elements like melody, rhythm, harmony, lyrics, genre, instrumentation,	**Programming B - Programming Quizzes** **On completion of the unit, pupils will know…** • Identifying the start of a sequence involves recognising the initial point or beginning of a series of commands or actions. • A program starts by initiating or launching a program to begin its execution. • Showing how to run a program entail demonstrating the steps or procedures to execute a program and observe its intended functionality.
	• To use a computer to view data in a different format, utilising digital tools or software to display and manipulate data in various ways. • To use pictograms, graphical representations using pictures or symbols, to answer simple questions about objects based on the data they represent. • To organise data in a tally chart they arrange and categorise information in a structured format for easy reference and analysis. • To use a tally chart to create a pictogram, transferring the collected data into a graphical representation using symbols or pictures. • What the pictogram shows, interpreting the meaning and representation of the graphical elements in the pictogram. • To tally objects using a common attribute, counting and recording data based on shared characteristics or properties. • They can create a pictogram to arrange objects by an attribute, using symbols or pictures to visually represent data organised by a specific characteristic. • To answer, "more than"/"less than" and "most/least" questions about an attribute, comparing the data in a pictogram to determine which category has a greater or lesser count.	or any other aspect of the music that resonates positively or negatively with the listener. • Creating a rhythm pattern involves arranging a series of beats or sounds in a particular sequence or pattern, often using elements like duration, accent, and spacing to establish a rhythmic structure. • Playing an instrument following a rhythm pattern entail using the chosen instrument to reproduce the specific rhythmic sequence or pattern accurately, coordinating the timing and duration of the notes or sounds with the established rhythm. • Music is created and played by humans, emphasising that it is a product of human creativity, skill, and expression, involving the composition, performance, and interpretation of musical elements. • Connecting images with sounds refers to the ability to associate visual stimuli or representations with auditory experiences, recognising and linking specific visual cues or symbols with corresponding musical sounds or concepts. • Using a computer to experiment with pitch involves utilising digital tools or software to explore and manipulate the frequency or musical pitch of sounds, allowing for experimentation and exploration of different tonal qualities.	• Predicting the outcome of a sequence of commands involves anticipating or determining the result or output that will be produced when a specific series of instructions or actions is executed. • Matching two sequences with the same outcome involves identifying and comparing different sets of commands or actions to determine if they produce the same result or produce equivalent outcomes. • Changing the outcome of a sequence of commands refers to modifying or altering the instructions or actions within a sequence to achieve a different result or desired outcome. • Working out the actions of a sprite in an algorithm involves understanding and determining the specific behaviours or movements that a sprite (a graphical object or character) should perform based on the instructions or logic defined in an algorithm. • Deciding which blocks to use to meet the design involves making informed choices or selections regarding the programming blocks or commands that best align with the

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• A suitable attribute to compare people, selecting a relevant characteristic or property to gather data and analyse differences among individuals. • To collect the data they need, actively gathering relevant information and recording it for further analysis. • To create a pictogram and draw conclusions from it, using the graphical representation of data to make informed observations and interpretations. • To use a computer program to present information in different ways, utilising digital tools or software to display data using various formats and visualisations. • To share what they have found out, using a computer, communicating and presenting information or findings using digital means. Personal safety, identity theft, cyberbullying and online scams are examples of why information should not be shared.	• Relating an idea to a piece of music involves establishing a connection or association between a concept, theme, or message and a specific musical composition, recognising how the music aligns with or expresses the idea. • That music is a sequence of notes and musical compositions are constructed by arranging a series of individual tones or pitches in a specific order, forming a cohesive melodic or harmonic structure. • Explaining how one's music can be played in different ways involves describing and understanding the flexibility and adaptability of a musical composition, recognising that various interpretations, arrangements, or performances can bring out different qualities or nuances in the music. • Refining a musical pattern on a computer entail using digital tools or software to modify, edit, or enhance a rhythmic or melodic sequence, allowing for iterative improvements or adjustments to the musical composition. • Creating a rhythm that represents an animal chosen involves crafting a rhythmic pattern that captures or embodies the characteristic movement, behaviour, or essence of the selected animal, using rhythm as a means of artistic representation or expression. • Creating an animal's rhythm on a computer involves utilising digital tools or software to design and construct a rhythmic pattern that evokes the chosen animal's attributes or qualities, leveraging technology for creative exploration and expression. • Adding a sequence of notes to a rhythm refers to incorporating a melodic component into a pre-existing rhythmic pattern, integrating a series of musical pitches or tones into the established rhythmic structure. •	desired design or functionality. • Building the sequences of blocks needed refers to assembling or constructing a series of programming blocks in a specific order or arrangement to achieve a desired behaviour or outcome. • Choosing backgrounds for their design involves selecting suitable visual backgrounds or settings that enhance or complement the overall aesthetic or theme of the design or project. • Choosing characters for the design entails selecting appropriate graphical objects, avatars, or representations that align with the design concept or purpose of the • project. • Creating a program based on the new design involves developing a set of instructions or code that implements the desired functionality or behaviour outlined in the new design or project requirements. • Choosing images for one's own design involves selecting relevant or visually appealing graphical assets, pictures, or illustrations that contribute to the overall visual presentation or storytelling of the design or project. • Creating an algorithm involves formulating a step-by-step procedure or set of instructions that defines a specific process or solves a particular problem within the context of programming or computational thinking.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

		• Reviewing one's work involves critically evaluating or assessing a musical composition, performance, or creation, considering its strengths, weaknesses, or areas for improvement, and providing thoughtful feedback or analysis. • Explaining how one changed their work involves articulating the modifications, adjustments, or transformations made to a musical composition, performance, or creation, describing the rationale, intentions, or motivations behind those changes. • Listening to music and describing how it makes one feel involves experiencing a musical piece and effectively expressing or communicating the emotional, psychological, or physiological responses and sensations evoked by the music through verbal or written descriptions.	• Building sequences of blocks to match one's design entails constructing a series of programming blocks or commands in a logical order or arrangement that aligns with the visual design, functionality, or behaviour specified by the design requirements. • Comparing their project to their design involves evaluating or assessing the project's implementation or output against the intended design specifications. • Improving their project by adding features involves enhancing or expanding the functionality, aesthetics, or capabilities of a project by incorporating additional elements, commands, or behaviours to meet specific goals or requirements. • Debugging their program refers to the process of identifying, locating, and resolving errors, bugs, or issues within a program's code or logic to ensure its proper functioning or behaviour.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Lesson Sequence Learning challenges in a sequenced order.	L1 - To recognise that we can count and compare objects using tally charts. L2 - To recognise that objects can be represented as pictures. L3 - To create a pictogram. L4 - To select objects by attribute and make comparisons. L5 - To recognise that people can be described by attributes. L6 - To explain that we can present information using a computer.	L1 - To say how music can make us feel. L2 - To identify that there are patterns in music. L3 - To experiment with sound using a computer. L4 - To use a computer to create a musical pattern. L5 - To create music for a purpose. L6 - To review and refine our computer work.	L1 - To explain that a sequence of commands has a start. L2 - To explain that a sequence of commands has an outcome. L3 - To create a program using a given design. L4 - To change a given design. L5 - To create a program using my own design. L6 - To decide how my project can be improved.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • 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.	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content.	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links	**Maths** • Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. • Ask and answer questions about totalling and comparing categorical data.	**Music** • Play tuned and untuned instruments musically. • Listen with concentration and understanding to a range of high-quality live and recorded music. • Experiment with, create, select, and combine sounds using the interrelated dimensions of music.	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 3	Autumn 1	Autumn 2	Spring 1
Topic title and knowledge outcomes	**Computing systems and networks - Connecting computers.** **On completion of the unit, pupils will know…** • Digital devices are designed to accept inputs, which can be in the form of data, commands, or signals provided by users or external sources. • Digital devices generate outputs as a result of processing the inputs received, producing information, results, or responses that can be displayed, heard, or otherwise presented. • To follow a process, they must sequentially execute a set of steps or instructions to accomplish a specific task or achieve a desired outcome. • To classify input and output devices by categorising them based on their primary function of either accepting inputs or producing outputs in a digital system. • They can design a digital device, considering factors such as user requirements, technological capabilities, and design constraints to create a device that fulfils specific objectives. • To describe a simple process, breaking it down into clear and concise steps or actions necessary to achieve a particular goal or desired result. • The various ways in which devices enable them to perform tasks, access information, and engage with digital content. • The similarities between using digital devices and non-digital tools, such as speed, storage capacity, and automation. • The differences between using digital devices and non-digital tools, highlighting factors such as speed, storage capacity, precision, accessibility, and versatility, which often favour digital devices over non-digital tools.	**Creating Media – Stop-frame animation.** **On completion of the unit, pupils will know…** • To draw a sequence of pictures, allowing them to create visual representations of different stages or actions. • Creating an effective flip book-style animation, employs a series of images that, when rapidly flipped, create the illusion of movement or change. • The functioning of an animation or flip book, understanding that it relies on the persistence of vision principle. • The visual outcome of an animation, foreseeing how a series of frames will come together to create a coherent and dynamic sequence. • The rationale behind making subtle changes for each frame in an animation, understanding that these incremental modifications contribute to the illusion of smooth and fluid motion. • How to create a compelling stop-frame animation, utilising the technique of capturing individual frames of an object or scene and arranging them in a sequential manner to convey movement. • To analyse a story, you break it down into its essential components, including settings, characters, and events, allowing for a systematic approach to designing an animation based on the narrative structure. • To describe an achievable animation that can be effectively produced on a screen or digital platform, taking into consideration technical limitations and feasibility. • How to develop a storyboard, a visual representation of an animation's sequence, depicting key frames, scenes, and actions to guide the production process. • That onion skinning is a technique that displays faint outlines of previous and subsequent frames, to facilitate	**Programming A - Sequencing sounds** **On completion of the unit, pupils will know…** • To identify and distinguish the objects present in a Scratch project, such as sprites (characters or objects) and backdrops (background images). • That objects in Scratch possess attributes, which are properties or characteristics associated with them, such as their appearance, position, and behaviour, and these attributes can be modified and linked to specific actions or events. • The commands in Scratch are represented as blocks, which can be dragged and assembled together to create sequences of instructions. • That each sprite in Scratch is controlled by the commands they select and arrange, determining their movements, interactions, and responses within the project. • To create a program in Scratch, following a predetermined design or plan, by organising and sequencing the appropriate blocks to achieve the desired outcomes. • To select a descriptive word that represents an on-screen action for their program, effectively capturing and conveying the intended behaviour or function. • The various ways to start a program in Scratch, including clicking on a flag, pressing a key, or triggering a specific event, depending on the desired program logic.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• The different connections, including physical and digital links that establish connectivity between devices, networks, or systems, enabling the transmission of data or information. • The process of transmitting data or information sequentially between devices, utilising interconnected pathways or channels. • The necessity of a network switch, which facilitates efficient data transmission, network traffic management, and communication between multiple devices in a network. • That a computer network comprises numerous devices such as computers, servers, routers, switches, and wireless access points, all working together to facilitate communication and data exchange. • By demonstrating the process of passing information between devices, they can exhibit the transmission of data or messages from one device to another, employing appropriate methods or technologies. • The role of a switch, server, and wireless access point in a network, highlighting how a switch directs network traffic, a server provides centralised services or resources, and a wireless access point enables wireless connectivity for devices within the network.	the creation of smooth transitions and consistent movements between frames. • To review a sequence of frames to assess the progress and accuracy of my animation, ensuring the intended motions and visual elements are portrayed effectively. • The quality of their animation, considering aspects such as fluidity, timing, storytelling, and visual appeal, to assess its overall effectiveness. • Various methods to enhance the quality of their animation, suggesting improvements in areas such as timing, transitions, character design, visual effects, or storytelling techniques. • To assess and provide feedback on another learner's animation, offering constructive criticism and highlighting areas of strength and areas for improvement. • They can incorporate feedback received into their animation, utilising suggestions and insights to refine and enhance the overall quality and impact of their project. • How to integrate other media, such as audio, music, or special effects, into their animation to enrich the viewer's experience and communicate additional layers of meaning or atmosphere. • The reasons behind incorporating other media into their animation, identifying the specific purposes or effects they serve, such as enhancing mood, conveying emotions, or adding narrative depth. • To evaluate their final film, considering factors such as storytelling effectiveness, technical execution, visuals, and alignment with the intended goals and messages of the animation.	• They can construct a coherent sequence of connected commands in Scratch by arranging blocks in a logical order to dictate the flow and execution of instructions. • That the objects in their Scratch project will respond exactly as programmed, following the instructions and behaviours specified in the code. • The concept of a sequence, understanding it as an ordered arrangement of commands or events that occur one after another, dictating the progression and flow of the program. • How to combine sound commands in Scratch, enabling the integration of audio effects, music, or spoken words into their projects. • They can arrange and order musical notes into a sequence, creating a musical composition or pattern within the Scratch environment. • They can construct a sequence of commands by arranging blocks in a particular order to achieve a desired outcome or behaviour in their program. • To make decisions regarding the actions and behaviours of each sprite in my Scratch program, determining their movements, interactions, and responses based on the project's requirements and objectives. • They can make design choices for the artwork in my Scratch project, considering factors such as colour, shape, size, and visual style to create visually appealing and engaging elements. • To identify and name the objects required for a Scratch project, understanding their roles and functions within the overall design. • To establish a connection between a task description and a design, understanding how the requirements and objectives of a given task align with the elements and structure of a project's design. • To implement their algorithmic thinking and problem-solving approach as actual code in

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			Scratch, translating their logical and sequential steps into executable instructions within the Scratch programming environment.
Lesson Sequence Learning challenges in a sequenced order.	L1 - To explain how digital devices function. L2 -To identify input and output devices. L3 - To recognise how digital devices can change the way we work. L4 -To explain how a computer network can be used to share information. L5 -To explore how digital devices can be connected. L6 -To recognise the physical components of a network.	L1 -To explain that animation is a sequence of drawings or photographs. L2 -To relate animated movement with a sequence of images. L3 -To plan an animation. L4 -To identify the need to work consistently and carefully. L5 -To review and improve an animation. L6 -To evaluate the impact of adding other media to an animation.	L1 -To explore a new programming environment. L2 -To identify that commands have an outcome. L3 -To explain that a program has a start. L4 -To recognise that a sequence of commands can have an order. L5 -To change the appearance of my project. L6 -To create a project from a task description.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and the	• 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.	• Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	opportunities they offer for communication and collaboration • Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs • 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
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links	**Maths (Lesson 1)** • Number and place value: solve number problems and practical problems involving these ideas.	**Literacy** • Pupils should be taught to draft and write by in narratives, creating settings, characters and plot	

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	Art (Lesson 3) • To improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay]	• Pupils should be taught to proof-read for spelling and punctuation errors **History** • The Roman Empire and its impact on Britain	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

Year 3	**Spring 2**	**Summer 1**	**Summer 2**
Topic title and knowledge outcomes	**Data and information - Branching Databases** **On completion of the unit, pupils will know…** • To conduct investigations by asking questions that have yes/no answers, enabling them to explore and gather information effectively. • To generate a yes/no question about a collection of objects, formulating an inquiry that can be answered with either a "yes" or "no" response. • They can create two distinct groups of objects by separating them based on a specific attribute, organising them into separate subsets.	**Creating Media - Desktop publishing** **On completion of the unit, pupils will know…** • The distinction between text and images, understanding that text comprises written or typed words, while images consist of visual representations. • That both text and images have the capability to convey messages effectively, acknowledging their respective roles in communication.	**Programming B - Events and actions in programs** **On completion of the unit, pupils will know…** • The relationship between an event and an action, understanding that an event triggers a specific action or set of actions in a program.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• They can select an attribute that allows them to separate objects into different groups by choosing a characteristic or property that distinguishes them from one another. • They can create a subgroup of objects within an existing group by further organising them based on shared attributes or properties. • To arrange objects into a tree structure, establishing hierarchical relationships and organising them based on their attributes or properties. • To select specific objects to be arranged in a branching database, curating a subset of items from a larger collection that aligns with the criteria and attributes under consideration. • They can group objects using their own yes/no questions by creating inquiries that facilitate the classification and categorisation of items based on binary choices. • They can test the functionality and effectiveness of their branching database by conducting trials or scenarios, evaluating if the structure accurately organises and separates objects according to the defined questions and attributes. • They can create yes/no questions using given attributes by formulating inquiries that align with the provided characteristics or properties to establish effective sorting criteria. • They can compare and analyse two different branching database structures by assessing their similarities, differences, and effectiveness in organising and categorising objects. • They can explain the importance of carefully ordering questions in a branching database by understanding that proper sequencing is crucial to splitting objects into groups of similar sizes or characteristics. • They can independently create questions for use in a branching database by developing inquiries that effectively separate and classify objects based on specific attributes or properties.	• The advantages and disadvantages associated with using text and images, comprehending the strengths and limitations of each medium in conveying information. • They can modify font style, size, and colours to suit a particular purpose by demonstrating the ability to make deliberate choices in visual presentation. • To edit text by making changes and revisions to written content. • That text can be altered to enhance clarity and improve communication, understanding the importance of adapting and refining textual information. • The term "page orientation," refers to the orientation or alignment of a page, such as landscape or portrait. • Placeholders and articulate their significance, recognising their role as designated areas within a layout intended for the insertion of text or images. • To create templates tailored to specific purposes, developing pre-designed formats that can be easily customised. • To strategically determine the optimal placement of content, selecting appropriate locations within a layout to optimise visual impact and readability. • To assemble text and images to create a magazine cover, employing the skill of combining different elements to produce a cohesive design. • To make modifications to content even after it has been added, demonstrating the capacity to revise and update information within a layout. • The difference between various layout formats, identifying different arrangements and structures used in design. • To match a layout to a specific purpose, discerning the appropriate arrangement that best aligns with the intended communication goals. • To choose a suitable layout for a given purpose, applying their understanding of different layout styles to make informed decisions. • The practical applications of desktop publishing in real-world contexts, identifying that school resources, reports and meeting notes are where this technology is utilised for professional or personal purpose.	• To select appropriate keys to assign actions in a program, justifying their choices based on their relevance and ease of use. • The opportunities for program improvement by recognising areas where modifications or enhancements can be made to enhance functionality or user experience. • To choose a character for their project they select a visual representation that aligns with the theme or purpose of the program. • To determine a suitable size for a character within a maze they consider factors such as visibility, proportion, and navigational ease. • They program movement by implementing instructions that enable characters or objects to navigate within the program environment. • They can utilise programming extensions by leveraging additional functionalities or tools to enhance the capabilities of their program. • To consider real-world factors when making design choices, taking into account practicality, user experience, and alignment with real-life scenarios. • They can select and arrange programming blocks to set up their program by utilising the available coding components to establish the desired functionality. • They can identify additional features from a given set of blocks by recognising and choosing specific functionalities that can be incorporated into their program. • The suitable keys to activate additional features within the program by making informed choices that align with the overall design and user interaction. • They can construct multiple sequences of commands to ensure the functionality of their design by organising and arranging instructions to achieve the desired outcomes.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• They can create questions that enable the unique identification of objects by formulating inquiries that lead to distinct outcomes and allow for precise identification within a branching database. • They can create a physical version of a branching database by constructing a tangible representation or model that reflects the structure, questions, and categorisation of objects. • They can design and build a branching database that aligns with their plan and objectives by implementing the appropriate questions, attributes, and organisation to achieve the desired classification and sorting. • They can collaborate with a partner to test and evaluate the effectiveness of their identification tool by engaging in cooperative testing to ensure the accuracy and functionality of the branching database. • To suggest real-world applications and uses for branching databases by identifying scenarios or domains where this method of organising and categorising information can be valuable and applicable.	• That desktop publishing can be beneficial, articulating that time saving, organisation and consistency are advantages of using digital tools for creating and designing visual materials. • They can compare work produced using desktop publishing software with work created manually by hand by understanding the distinctions and evaluating the respective strengths and limitations of each approach.	• They can test a program against a given design by evaluating its performance and functionality to determine if it aligns with the intended specifications and objectives. • They can match a piece of code to a specific outcome by demonstrating the ability to understand and analyse the relationship between programming instructions and their corresponding effects. • To modify a program using a design by making necessary adjustments or refinements based on the desired specifications and visual representation. • To make design choices and provide justifications for their decisions, explaining the reasoning behind their design elements and their impact on the program. • They can implement their design, translating the conceptualised plan into a functional program using coding and design tools. • To evaluate their project by assessing its overall effectiveness, functionality, and alignment with the intended design and objectives.
Lesson Sequence Learning challenges in a sequenced order.	L1 -To create questions with yes/no answers. L2 -To identify the attributes needed to collect data about an object. L3 -To create a branching database. L4 -To explain why it is helpful for a database to be well structured. L5 -To plan the structure of a branching database. L6 -To independently create an identification tool.	L1 -To recognise how text and images convey information. L2 -To recognise that text and layout can be edited. L3 -To choose appropriate page settings. L4 -To add content to a desktop publishing publication. L5 -To consider how different layouts can suit different purposes. L6 -To consider the benefits of desktop publishing.	L1 -To explain how a sprite moves in an existing project. L2 -To create a program to move a sprite in four directions. L3 -To adapt a program to a new context. L4 -To develop my program by adding features. L5 -To identify and fix bugs in a program. L6 -To design and create a maze-based challenge.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • Use technology safely, respectfully and responsibly	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links			

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 4	Autumn 1	Autumn 2	Spring 1
Topic title and knowledge outcomes	**Computing systems and networks - The internet** **On completion of the unit, pupils will know…** • The internet is described as a network of networks, connecting various interconnected devices and networks worldwide. • Information is shared across the internet through data transmission protocols, such as TCP/IP, which allow data packets to be exchanged between devices. • Networks require protection to safeguard against unauthorised access, data breaches, and malicious activities that can compromise the security and integrity of the network and its connected devices. • Networked devices are devices that are connected to a network, such as computers, smartphones, routers, and servers. They connect through wired or wireless connections. • The internet is utilised to provide a wide range of services, including email, file sharing, online communication, e-commerce, social media, streaming, and more. • The World Wide Web (WWW) encompasses websites and web pages, which are accessed through web browsers using URLs (Uniform Resource Locators). • Websites are stored on web servers when uploaded to the World Wide Web (WWW), allowing them to be accessed by users over the internet. • Websites on the WWW can contain various types of media, including text, images, videos, audio, documents, interactive elements, and more. • Users can contribute and add content to the World Wide Web (WWW) through various online platforms	**Creating Media – Audio production** **On completion of the unit, pupils will know…** • Input devices used to record sound include microphones, audio interfaces, and recording devices. • Output devices used to play sound include speakers, headphones, and audio playback devices. • Computers can be used to record audio using digital audio software and hardware. • The person who records the sound has the authority to determine who is allowed to use it and under what conditions. • Re-recording one's voice allows for improvement and refinement of the recording. • Inspecting the sound-wave view helps in identifying areas where trimming or editing may be necessary in a recording. • Various sounds can be added to a podcast, such as music, sound effects, interviews, or voiceovers. • Combining different sounds enhances the engagement and overall quality of a podcast. • Saving a project ensures that different parts remain editable, allowing for future modifications. • Planning appropriate content for a podcast involves considering the target audience, topic, format, and desired objectives. • Recording content for a podcast follows the planned structure and includes capturing relevant audio elements. • Reviewing the quality of recordings involves assessing aspects such as clarity, volume, background noise, and overall performance. • Improving voice recordings can be achieved through techniques such as proper microphone positioning, vocal techniques, and post-production adjustments.	**Programming A - Repetition in shapes** **On completion of the unit, pupils will know…** • Programming a computer involves entering commands through typing to instruct the computer. • Modifying the value of a command can alter its behaviour or output in a program. • A code snippet is a small section of code written for a specific purpose. • Templates can be used to create program designs that provide a structure or framework. • An algorithm is a step-by-step procedure designed to achieve a specific outcome. • Algorithms can be tested and implemented in text-based programming languages. • Everyday tasks often involve sequences with repetitive elements, such as brushing teeth or dance moves. • Patterns can be observed and identified within a sequence of actions. • Count-controlled loops are used to repeat a set of instructions a specific number of times. • Changing the number of repetitions in a count-controlled loop affects the outcome of a task. • Predictions can be made about the outcome of a program containing a count-controlled loop based on the number of repetitions. • Values within a loop can be selectively changed to achieve desired results. • Chunks refer to groups or segments of actions in real-world scenarios.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	and internet services, allowing them to create and share their own content. • Websites and their content are created and maintained by individuals, organisations, businesses, and other entities, reflecting the involvement of people in shaping the online landscape. • Ownership of content on websites typically lies with the individuals or organisations responsible for creating and publishing the content. • There are rules and regulations in place to protect content on the internet, such as copyright laws and intellectual property rights. • Not all information found on the World Wide Web (WWW) is true or accurate, and users need to exercise critical thinking and evaluate the credibility of online sources. • Online content may not always be honest, accurate, or legal, and users should be cautious and discerning when consuming or sharing content, considering the potential implications and consequences.	• Opening a project allows for continuing work on the podcast, making further edits or additions. • Arranging multiple sounds involves placing and layering audio elements in the desired order to create the desired effect or structure. • Saving a project retains the editable version, while exporting an audio file creates a finalised, non-editable version for distribution or sharing. • Listening to an audio recording helps identify its strengths, such as clear narration, impactful sound effects, or balanced levels. • Suggesting improvements to an audio recording involves providing constructive feedback on aspects like pacing, delivery, audio quality, or content structure. • Choosing appropriate edits involves selecting the most suitable modifications or enhancements to improve the overall quality and coherence of the podcast.	• Procedures can be used in programs to encapsulate a set of instructions that can be repeatedly called. • Computers can execute procedures repeatedly based on program instructions. • Program designs can include count-controlled loops to accomplish specific tasks. • Programs can be developed and refined by debugging, identifying and fixing errors or issues.
Lesson Sequence Learning challenges in a sequenced order.	1 -To describe how networks physically connect to other networks. 2 -To recognise how networked devices make up the internet. 3 -To outline how websites can be shared via the World Wide Web (WWW). 4 -To describe how content can be added and accessed on the World Wide Web (WWW).	1 -To identify that sound can be recorded. 2 -To explain that audio recordings can be edited. 3 -To recognise the different parts of creating a podcast project. 4 -To apply audio editing skills independently. 5 -To combine audio to enhance my podcast project. 6 -To evaluate the effective use of audio.	1 -To identify that accuracy in programming is important. 2 -To create a program in a text-based language. 3 -To explain what 'repeat' means. 4 -To modify a count-controlled loop to produce a given outcome. 5 -To decompose a task into small steps.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	5 -To recognise how the content of the WWW is created by people. 6 -To evaluate the consequences of unreliable content.		6 -To create a program that uses count-controlled loops to produce a given outcome.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links	**PSHE (Lesson 6)** • Evaluating content for honesty and accuracy	**Science (Lesson 2)** • Sound: Find patterns between the volume of a sound and the strength of the vibrations that produced it **English (Lesson 3)** • Composition: Plan their writing by discussing and recording ideas • Draft and write by: In non-narrative material, using simple organisational devices [for example, headings and subheadings] • Read aloud their own writing, to a group or the whole class, using appropriate intonation and controlling the tone and volume so that the meaning is clear	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 4	Spring 2	Summer 1	Summer 2
Topic title and knowledge outcomes	**Data and information - Data logging** **On completion of the unit, pupils will know…** • That when working with data, they can choose a suitable data set based on its relevance to a specific question or problem. • To generate meaningful questions that can be answered by analysing a given data set. • Time, trend, sequential, historical and cumulative data can be collected and observed over an extended period to track changes or patterns. • Sensors that measure temperature, light, motion and proximity are utilised to gather data from the environment or specific objects. • Data obtained from sensors can be used to address specific inquiries or solve problems. • The importance of recording data collected from sensors to ensure accuracy and enable further analysis. • That data loggers are devices designed to collect data at regular intervals or specific time points. • To identify and describe the intervals at which data is collected by a data logger. • To articulate the data, they have captured through appropriate observations and measurements. • To analyse and interpret collected data at different levels of detail to identify patterns, trends, or relationships. • That data can be sorted and organised to extract relevant information and derive meaningful insights. • Tables, graphs, charts and heat maps are various methods and techniques to visualise and represent data effectively. • To formulate questions or hypotheses that can be answered using data collected by a data logger. • To plan and execute data collection activities using a data logger, considering factors such as sampling frequency and duration. • To utilise a data logger to collect and record data according to a predefined plan or set of instructions.	**Creating Media - Photo editing** **On completion of the unit, pupils will know…** • Rotating an image can be used as a technique to improve its visual presentation. • Cropping an image involves removing unwanted parts of the image to enhance its composition or focus on specific elements. • Photo editing software can be used to crop images by selecting and removing unwanted portions. • Different colour effects in an image can evoke various emotions and convey different messages. • Experimenting with different colour effects allows for exploration and understanding of their impact on the viewer. • When choosing colour effects for an image, considerations such as mood, theme, and desired impact need to be taken into account. • Cloning is a technique used to add elements or enhance the composition of an image by duplicating and placing selected portions. • Identifying areas of improvement in a photo edit involves analysing the image for any flaws, inconsistencies, or areas that can be enhanced. • Cloning can be used to remove unwanted parts of an image by replacing them with cloned portions from other areas. • Experimenting with selection and copying tools allows for precise extraction of specific parts of an image for cloning or other purposes. • Utilising a range of tools enables the copying and merging of content between different images. • Photos may be edited to enhance their visual appeal, correct imperfections, or modify the overall appearance. • Describing the desired image involves articulating the specific characteristics, elements, and composition required for the project. • Selecting suitable images for a project involves considering their relevance, visual quality, and compatibility with the project's theme.	**Programming B - Repetition in games** **On completion of the unit, pupils will know…** • Everyday tasks can be represented as sets of instructions that include repetition to indicate actions that need to be performed multiple times. • Predicting the outcome of a snippet of code involves analysing the code logic and its impact on the program's behaviour to anticipate the result. • Modifying a snippet of code involves making changes to the code to achieve a specific desired outcome or behaviour. • Modifying loops allows for adjusting the repetition and behaviour of the code to produce a particular outcome. • The decision to use a count-controlled or an infinite loop depends on the specific requirements and conditions of the program or task at hand. • Some programming languages support concurrent execution, enabling multiple processes to run simultaneously. • Selecting the action to be repeated for each object involves identifying the specific task or operation that needs to be performed on each individual object in a program. • Explaining the expected outcome of the repeated action involves describing the intended result or effect of performing the action multiple times. • Evaluating the effectiveness of repeated sequences in a program involves assessing their efficiency, accuracy, and suitability in achieving the desired outcome. • Identifying the parts of a loop that can be

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• To interpret and analyse collected data from a data logger to draw accurate conclusions and make informed decisions. • The benefits of using data loggers, such as accurate and automated data collection, real-time monitoring capabilities, and reduced potential for human errors.	• Creating a project that combines multiple images requires integrating and arranging the selected images in a cohesive manner. • Reviewing images against given criteria involves evaluating their adherence to specific guidelines, standards, or expectations. • Feedback can be used to guide the process of making changes or improvements to an image. • Combining text with an image allows for the completion of a project that combines visual and textual elements, conveying a specific message or concept.	changed refers to recognising the elements within the loop structure that can be modified to alter its behaviour or characteristics. • Explaining the effect of changes made to a loop involves articulating the impact or consequences of modifying specific aspects of the loop on the program's execution or output. • Reusing existing code snippets on new sprites involves utilising previously written and tested code segments on different program elements or objects. • Evaluating the use of repetition in a project involves assessing the appropriateness, efficiency, and effectiveness of the repeated sequences in achieving the project's objectives. • Selecting key parts of a given project to use in one's own design involves identifying and extracting specific elements or components that are relevant and applicable to the new project. • Developing a design for a programming project entail creating a plan that outlines the intended functionality, features, and behaviour of the project. • Refining the algorithm in a design involves making improvements and adjustments to the logic and sequence of steps to enhance the program's efficiency and effectiveness. • Building a program that follows a design involves implementing the planned functionality and features using the chosen programming language and coding techniques. Evaluating the steps followed when building a project involves assessing the effectiveness, accuracy, and clarity of the process, and identifying areas for improvement or optimisation.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Lesson Sequence Learning challenges in a sequenced order.	L1 -To explain that data gathered over time can be used to answer questions. L2 -To use a digital device to collect data automatically. L3 -To explain that a data logger collects 'data points' from sensors over time. L4 -To recognise how a computer can help us analyse data. L5 -To identify the data needed to answer questions. L6 -To use data from sensors to answer questions.	L1 -To explain that the composition of digital images can be changed. L2 -To explain that colours can be changed in digital images. L3 -To explain how cloning can be used in photo editing. L4 -To explain that images can be combined. L5 -To combine images for a purpose. L6 -To evaluate how changes can improve an image.	L1 -To develop the use of count-controlled loops in a different programming environment. L2 -To explain that in programming there are infinite loops and count controlled loops. L3 -To develop a design that includes two or more loops which run at the same time. L4 -To modify an infinite loop in a given program. L5 -To design a project that includes repetition. L6 -To create a project that includes repetition.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

National Curriculum End Points	• Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • 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 **Science** • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.	• Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	including collecting, analysing, evaluating and presenting data and information
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Cross curricular Links			
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 5	Autumn 1	Autumn 2	Spring 1
Topic title and knowledge outcomes	**Computing systems and networks - Systems and searching** **On completion of the unit, pupils will know…** • Systems are constructed by integrating multiple components or parts that work together to achieve a specific purpose or functionality. • A computer system consists of inputs, processes, and outputs. Inputs are the data or information provided to the system, processes refer to the actions or operations performed on the input, and outputs are the results or outcomes produced by the system. • Computer systems communicate with other devices or systems through various means such as networks, protocols, and interfaces. • Certain tasks or functions are managed and performed by computer systems, which can include data processing, storage, calculations, automation, and control. • The human elements of a computer system refer to the individuals who interact with or operate the system, including users, administrators, programmers, and other stakeholders. • The benefits of a specific computer system can vary but may include increased efficiency, productivity, accuracy, speed, automation, data analysis, and improved decision-making. • Conducting web searches involves using online search tools to find specific information or resources on the internet. • Refining a web search involves modifying and specifying search terms or parameters to narrow down search results and obtain more relevant information.	**Creating Media – Video production** **On completion of the unit, pupils will know…** • Video is a visual media format that combines moving images and often includes accompanying audio. • Features of videos include frames or shots, motion, duration, audio, lighting, composition, camera angles, transitions, special effects, and editing. • Comparing features in different videos involves analysing and identifying similarities and differences in elements such as camera angles, editing styles, visual effects, storytelling techniques, or audio quality. • Digital video recording devices have features such as adjustable focus, zoom capabilities, exposure control, white balance settings, audio inputs, storage options, playback functionality, and menu settings. • Experimenting with different camera angles involves capturing video footage from various perspectives, such as high angle, low angle, wide angle, close-up, or bird's eye view, to achieve different visual effects and convey specific messages or emotions. • A microphone is a device used to capture audio during video recording, ensuring clear and high-quality sound. • Suggesting filming techniques for a given purpose entails recommending specific approaches or methods of capturing video based on the desired outcome, such as using a Steadicam for smooth movement, employing jump cuts for fast-paced editing, or utilising time-lapse for capturing changes over an extended period. • Capturing video using a range of filming techniques involves applying various approaches, such as panning, tracking, dolly shots, handheld shots, long takes, or incorporating different shot sizes (e.g., wide,	**Programming A - Selection in physical computing** **On completion of the unit, pupils will know…** • A simple circuit consists of interconnected components, such as resistors, capacitors, and an LED, which allow the flow of electric current. • Connecting a microcontroller to a circuit involves physically attaching the microcontroller's input/output pins to the corresponding components in the circuit to enable communication and control. • Programming a microcontroller to make an LED switch on involves writing code that instructs the microcontroller to send a signal to the LED, activating it and causing it to emit light. • An infinite loop is a loop construct in programming that repeats indefinitely until a specific condition is met or an external action interrupt it. • Connecting more than one output component to a microcontroller involves linking multiple components, such as LEDs or motors, to different output pins of the microcontroller, allowing individual control of each component. • Using a count-controlled loop to control outputs involves utilising a loop structure that repeats a specific number of times to control the behaviour of connected output components, such as turning on and off LEDs in a specific sequence. • A condition is a statement or expression that evaluates to either true or false, determining

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• Comparing results from different search engines entails evaluating and analysing the outcomes obtained from various search engine platforms to identify similarities, differences, and the preferred search engine for specific requirements. • Tools for finding things online are necessary due to the vastness of the internet, the abundance of information, and the need for efficient and targeted search capabilities to locate specific content or resources. • Web crawlers, also known as spiders or bots, play a crucial role in creating an index by systematically scanning and cataloguing web pages to build a searchable database of content. • Search terms used by individuals correspond to the search engine's index, which is a structured collection of information that enables efficient retrieval of relevant search results. • Ordering a list by rank involves arranging search results based on their relevance, popularity, authority, or other ranking criteria determined by the search engine's algorithm. • Search engines follow specific rules and algorithms to rank search results, considering factors such as keywords, relevance, user behaviour, quality of content, and website authority. • Criteria used by search engines to rank results can include factors like keyword relevance, backlinks, website reputation, user engagement, page load speed, and content quality. • Search results can be influenced through search engine optimisation (SEO) techniques, content marketing, advertising, social media presence, and other strategies to improve visibility and ranking. • Limitations of search engines include the inability to index all web pages, the potential for biased or incomplete results, the influence of SEO practices, privacy concerns, and the reliance on algorithmic ranking methods. • Search engines generate revenue through various means such as advertising, sponsored search	medium, close-up) to achieve desired visual effects or storytelling elements. • Reviewing the effectiveness of a video entails evaluating its overall quality, storytelling, visuals, audio, editing, pacing, and impact on the intended audience or purpose. • Outlining the scenes of a video involves planning and organising the sequence of shots or segments that will comprise the final video, considering factors such as the narrative flow, location changes, shot types, and transitions. • Deciding which filming techniques to use involves selecting specific approaches, camera angles, shot sizes, and visual effects that best convey the desired message, mood, or style of the video. • Creating and saving video content involves recording, editing, and storing video files in a suitable format for future use or distribution. • Storing, retrieving, and exporting video recordings to a computer involves transferring the video files from the recording device to a computer or other storage devices for backup, editing, sharing, or further processing. • Improving a video by reshooting and editing involves identifying areas that need refinement, such as adjusting camera angles, re-recording certain scenes, trimming unnecessary footage, applying visual effects, enhancing audio, or refining the overall pacing and storytelling. • Selecting the correct tools to make edits to a video involves choosing suitable video editing software or applications that offer desired features, such as trimming, cropping, adding effects, adjusting colour grading, or synchronising audio. • Making edits to a video and improving the final outcome includes performing actions such as cutting or rearranging clips, adding transitions, adjusting audio levels, applying visual effects, enhancing image quality, and ensuring overall coherence and impact.	the path of execution in a program based on the outcome. • Designing a conditional loop involves constructing a loop structure that incorporates a condition, using control statements such as "if...then" or "if...else" to make decisions and control the flow of the program. • Programming a microcontroller to respond to an input involves writing code that monitors an input pin of the microcontroller and triggers specific actions or outputs based on the state or value of the input signal. • A condition being met refers to a specific condition or criteria being satisfied, triggering a corresponding action or behaviour in a program or system. • Identifying a condition and an action in a project entail recognising a specific requirement or situation (condition) and the corresponding task or behaviour (action) that needs to occur based on that condition. • Selection, often implemented using an "if...then..." statement, is a programming construct that enables the program to make decisions and control the flow of execution based on the evaluation of specific conditions. • Real-world examples of a condition starting an action include scenarios such as a motion sensor detecting movement and turning on a light, or a temperature sensor triggering an air conditioning system when the temperature exceeds a certain threshold. • Describing a project involves providing a clear and concise explanation of the intended purpose, functionality, and desired outcome of the project. • Creating a detailed drawing of a project involves illustrating the physical layout, connections, and components involved in the project, providing a visual representation of the design.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	results, partnerships, data analysis, and targeted marketing based on user behaviour and preferences.	• Choices made when creating a video, such as filming techniques, camera angles, audio quality, lighting, or editing decisions, directly impact the quality, effectiveness, and overall impression of the final video. • Evaluating a video involves critically analysing its strengths, weaknesses, impact, coherence, storytelling, technical aspects, and effectiveness in achieving its intended purpose, and sharing one's opinions or feedback based on these assessments.	• Writing an algorithm that describes what a model will do involves specifying a step-by-step sequence of instructions and actions to achieve the desired behaviour and functionality of the model. • Using selection to produce an intended outcome involves incorporating conditional statements and decision-making logic in the program to control the behaviour and response of the system, ensuring the desired outcome is achieved based on specific conditions. • Testing and debugging a project involve systematically checking the functionality, identifying and resolving any errors or issues, and ensuring the project performs as intended through iterative testing and refinement.
Lesson Sequence Learning challenges in a sequenced order.	L1 -To explain that computers can be connected to form systems. L2 -To recognise the role of computer systems in our lives. L3 -To experiment with search engines. L4 -To describe how search engines select results. L5 -To explain how search results are ranked. L6 -To recognise why the order of results is important, and to whom.	L1 -To explain what makes a video effective. L2 -To identify digital devices that can record video. L3 -To capture video using a range of techniques. L4 -To create a storyboard. L5 -To identify that video can be improved through reshooting and editing. L6 -To consider the impact of the choices made when making and sharing a video.	L1 -To control a simple circuit connected to a computer. L2 -To write a program that includes count-controlled loops. L3 -To explain that a loop can stop when a condition is met. L4 -To explain that a loop can be used to repeatedly check whether a condition has been met. L5 -To design a physical project that includes selection.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			L6 -To create a program that controls a physical computing project.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact **Internet safety** • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour	• Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links			**Design & Technology** • Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design • Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining, and finishing], accurately • Select from and use a wider range of materials and components, including construction materials, textiles, and ingredients, according to their functional properties and aesthetic qualities • Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			• Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors] • Apply their understanding of computing to program, monitor, and control their products
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

Year 5	Spring 2	Summer 1	Summer 2
Topic title and knowledge outcomes	**Data and information - Flat-file databases** **On completion of the unit, pupils will know…** • Creating a database using cards involves organising and storing information on individual cards, where each card represents a single entry or data record. • Information can be recorded in a database by inputting data into specific fields within the database structure, capturing relevant details for each record or entry. • Ordering, sorting, and grouping data cards involve arranging the cards in a specific sequence,	**Creating Media - Introduction to vector graphics** **On completion of the unit, pupils will know…** • Vector drawings are created using shapes, which are the fundamental building blocks of the drawing. • Experimenting with shape and line tools allows for exploring different drawing techniques and styles within the vector drawing software. • Vector drawings differ from paper-based drawings as they are created digitally using mathematical formulas to	**Programming B - Selection in quizzes** **On completion of the unit, pupils will know…** • Conditions are used in selection statements to determine which path the program will take based on the evaluation of a condition. • Conditions in a program are expressions that evaluate to either true or false and are used to control the flow of the program.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	organising them based on criteria such as alphabetical order, numerical value, or specific categories. • In a database, a field refers to a specific category or attribute that holds a particular type of data, while a record represents a complete set of related information containing values for each field. • Navigating a flat-file database allows users to explore different views or perspectives of the information, enabling comparisons and analysis from various angles or sorting/filtering arrangements. • Choosing which field to sort data by to answer a given question involves selecting a relevant field as the basis for arranging the data in a specific order to provide insights or address the question effectively. • Data can be grouped in a database by using chosen values or specific criteria, bringing together related records or entries based on shared characteristics or attributes. • Grouping information using a database entail categorising or organising the data based on selected criteria, enabling a more structured and comprehensive view of the information. • Combining grouping and sorting in a database allows for answering specific questions or obtaining insights by arranging the data in a particular order and grouping relevant records together. • Choosing the required field and value to answer a given question involves identifying the specific attribute or category (field) and the corresponding data value that is needed to address the question or query effectively. • 'AND' and 'OR' operators can be used to refine data selection in a database by specifying multiple criteria or conditions that records must meet, enabling more precise and targeted data retrieval. • Selecting multiple criteria to answer a given question involves identifying multiple conditions or attributes that records must satisfy, allowing for a more comprehensive and accurate data selection.	define shapes and lines, enabling scalability and easy editing without loss of quality. • Shapes commonly used in vector drawings include rectangles, circles, triangles, polygons, and various curved or custom shapes. • Each element added to a vector drawing, such as a shape or line, is treated as an individual object with its own properties and attributes. • Objects in a vector drawing can be moved, resized, and rotated, especially after duplicating them to create multiple instances. • The zoom tool helps in magnifying the drawing area to add finer details and work on intricate parts of the vector drawing. • Alignment grids and resize handles can be utilised to ensure consistency and precision in the positioning and sizing of objects within the vector drawing. • Modifying objects in a vector drawing allows for transforming and adjusting their shape, size, colour, or other attributes to create a new or customised image. • Each added object in a vector drawing creates a new layer, which represents a separate visual element or stack of elements in the drawing. • The order of layers in a vector drawing can be changed to control the visibility and arrangement of objects, influencing the overall composition. • Layering is a technique used in vector drawings to organise and structure the elements of the drawing by placing related objects on separate layers. • Copying part of a drawing involves duplicating multiple objects to replicate a specific portion of the vector drawing. • Grouping and ungrouping objects is necessary when multiple objects need to be treated as a single unit or when individual objects within a group need to be edited independently. • Reusing a group of objects allows for efficient workflow and further development of the vector drawing by utilising pre-assembled elements. • Creating a vector drawing for a specific purpose involves designing and composing visual elements to achieve a	• Modifying a condition in a program involves changing the expression or logic used to evaluate the condition, potentially altering the program's behaviour. • Selection in an infinite loop involves using a condition to check whether the loop should continue executing or terminate. • An 'if...then...else...' statement in programming consists of a condition that, when evaluated to true, executes one set of instructions, and when false, executes an alternative set of instructions. • Creating a program with different outcomes using selection involves incorporating multiple 'if...then...else...' statements or other conditional constructs to handle different cases or scenarios. • Program flow can branch according to a condition, meaning that the program's execution can take different paths based on the evaluation of the condition. • Designing the flow of a program that contains 'if...then...else...' statements involves planning and structuring the sequence of instructions based on the anticipated conditions and outcomes. • A condition can direct program flow in one of two ways: by branching to different sections of code based on the evaluation or by deciding whether to execute specific instructions within a section. • Outlining a given task involves providing a clear description of the problem or objective to be addressed by the program. • Using a design format, such as pseudocode or a flowchart, helps in outlining and visually representing the structure and logic of the program before implementation. • The outcome of user input in an algorithm refers to the result or action triggered by the

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• Selecting an appropriate chart to visually compare data involves choosing a suitable graphical representation (e.g., bar chart, line graph, pie chart) that effectively presents and highlights the relationships or patterns within the data. • Refining a chart by selecting a particular filter involves applying specific filters or conditions to modify the displayed data within the chart, focusing on relevant subsets or segments of the overall dataset. • The benefits of using a computer to create charts include automated data processing, accurate and consistent visualisation, flexibility in design and customisation, and the ability to update or modify charts easily. • Asking questions that require more than one field to answer involves formulating queries or inquiries that consider multiple attributes or categories within the database, allowing for comprehensive and detailed responses. • Refining a search in a real-world context involves narrowing down search parameters or modifying search criteria based on specific requirements, ensuring more relevant and targeted results. • Presenting findings to a group involves effectively communicating and sharing the results, insights, or conclusions derived from the database analysis with a specific audience or team.	particular objective, such as illustrating a concept or conveying a message. • Reflecting on the skills used in vector drawing involves considering the techniques, tools, and approaches employed during the creation process and understanding the reasons for their application. • Comparing vector drawings to freehand paint drawings highlights the differences in their creation process, scalability, editing capabilities, and overall visual style.	specific input values provided by the user during program execution. • Implementing an algorithm involves translating the step-by-step instructions or logic into actual code to create the desired functionality in the program. • Testing the program involves executing it with various inputs and scenarios to ensure that it produces the expected outcomes and behaves correctly. • Sharing the program with others involves distributing or making the program accessible to other individuals, such as peers, teachers, or users, for their evaluation or use. • Identifying ways, the program could be improved entails recognising areas where enhancements, optimisations, or additional features can be incorporated to enhance the program's functionality or user experience. • The setup code in a program refers to the initial configuration or initialisation instructions required to prepare the environment, resources, or variables before the main execution of the program. • Extending a program further involves adding new features, functionality, or sections of code to enhance or expand the program's capabilities and address additional requirements or use cases.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Lesson Sequence Learning challenges in a sequenced order.	L1 -To use a form to record information. L2 -To compare paper and computer-based databases. L3 -To outline how you can answer questions by grouping and then sorting data. L4 -To explain that tools can be used to select specific data. L5 -To explain that computer programs can be used to compare data visually. L6 -To use a real-world database to answer questions.	L1 -To identify that drawing tools can be used to produce different outcomes. L2 -To create a vector drawing by combining shapes. L3 -To use tools to achieve a desired effect. L4 -To recognise that vector drawings consist of layers. L5 -To group objects to make them easier to work with. L6 -To apply what I have learned about vector drawings.	L1 -To explain how selection is used in computer programs. L2 -To relate that a conditional statement connects a condition to an outcome. L3 -To explain how selection directs the flow of a program. L4 -To design a program which uses selection. L5 -To design a program which uses selection. L6 -To evaluate my program
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information	• 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.	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			and correct errors in algorithms and programs • 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
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links			
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Year 6	Autumn 1	Autumn 2	Spring 1
Topic title and knowledge outcomes	**Computing systems and networks - Communication and collaboration** **On completion of the unit, pupils will know…** • Data is transferred using agreed methods or protocols, which define the rules and procedures for transmitting and receiving information. • Internet devices, such as computers, smartphones, and servers, have unique addresses called IP addresses, which are used to identify and locate them on the internet. • Computers use IP addresses to access websites by sending requests to the appropriate IP address associated with the desired website. • A data packet is the basic unit of data transferred over a network. It typically consists of a header (containing information about the packet) and a payload (containing the actual data being transmitted). • Data is transferred over networks in packets to efficiently transmit information across different devices and networks. • All data transferred over the internet is broken down into packets for transmission and then reassembled at the receiving end. • Accessing shared files stored online involves using specific methods, such as logging into a cloud storage service or accessing a shared folder on a network. • Information can be sent over the internet in various ways, including emails, instant messaging, file transfers, video conferencing, and online collaboration tools. • The internet allows different forms of media, such as text, images, audio, and video, to be shared and transmitted between users.	**Creating Media – Web page creation** **On completion of the unit, pupils will know…** • Exploring a website involves navigating through its different pages, sections, and interactive elements to access information, media, and functionalities. • Websites commonly use various types of media, including text, images, videos, audio, animations, and interactive elements, to enhance the user experience and convey information effectively. • Websites are written using HTML (Hypertext Markup Language), which is a markup language for structuring and presenting content on the web. • Common features of a web page include a header, navigation menu, content area, images, text, links, buttons, forms, and a footer. • Suggestions for media to include on a web page can be based on the purpose of the page, the target audience, and the desired visual and interactive elements. • Drawing a web page layout involves sketching the arrangement and placement of various elements on the page, including headers, menus, content sections, media, and interactive components. • Using copyright-free images is important to avoid legal issues related to the unauthorised use of copyrighted material and to respect the rights of content creators. • Copyright-free images can be found through various online sources that provide royalty-free or Creative Commons licensed images. • "Fair use" is a legal doctrine that allows limited use of copyrighted material without permission from the copyright holder, typically for purposes such as criticism, commentary, education, or research. • Adding content to a web page involves creating and formatting text, inserting images and multimedia,	**Programming A - Variables in games** **On completion of the unit, pupils will know…** • Examples of information that is variable include data that can change or be different in different circumstances, such as user inputs, sensor readings, time, or scores in a game. • The way a variable change can be defined by specifying the rules, conditions, or operations that manipulate the variable's value, such as incrementing, decrementing, assigning new values, or performing calculations. • Variables can hold both numbers (numeric data) and letters (textual data) depending on their data type. • In programming, a program variable is a named placeholder in the computer's memory that stores a single value or data. • A variable has a name, which is used to refer to it in the program, and a value, which is the current content stored in the variable. • The value of a variable can be changed during the execution of a program by assigning a new value to it or modifying its existing value using appropriate operations or calculations. • The programmer decides where in a program to change a variable based on the desired logic, sequence, or condition under which the variable should be updated. • Events in a program can be utilised to trigger specific actions or operations that set

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• Different ways of working together online include collaborative document editing, project management tools, shared virtual spaces, and online forums or communities. • Working together on the internet can be either public, where information is openly shared with a wide audience, or private, where access is restricted to a specific group or individuals. • The internet enables effective collaboration by providing real-time communication, instant access to shared resources, and the ability to work together remotely. • People communicate through various means, such as text-based messaging, voice calls, video calls, social media platforms, emails, and online forums. • There are a variety of ways to communicate over the internet, including instant messaging apps, video conferencing platforms, social media platforms, emails, and voice-over-IP (VoIP) services. • Choosing methods of communication on the internet depends on specific purposes, such as the need for real-time interaction, privacy, or the nature of the information being conveyed. • Different methods of communication on the internet can be compared based on factors like speed, convenience, accessibility, security, and the ability to convey different types of information effectively. • Deciding when to share information online involves considering privacy concerns, the sensitivity of the information, the intended audience, and the potential risks associated with sharing. • Communication on the internet may not always be private or secure, as information can be intercepted, monitored, or accessed by unauthorised parties.	organising information into sections, and structuring the content using HTML tags. • Previewing a web page allows the creator to see how the page looks and functions before it is published, making it possible to identify and address any design or layout issues. • Evaluating a web page on different devices involves checking its responsiveness and appearance on various screen sizes, such as desktops, laptops, tablets, and smartphones. Edits can be made to ensure optimal viewing and usability across different devices. • A navigation path refers to the sequence of pages or links that a user follows to navigate through a website and access specific content or functionalities. • Navigation paths are useful for providing a clear and structured way for users to move between different pages or sections of a website, making it easier to find information and explore the site's offerings. • Creating multiple web pages and linking them using hyperlinks allows users to navigate between different pages within a website, enabling seamless access to various sections or related content. • Linking to content owned by others may have legal implications if not properly authorised or attributed. • Creating hyperlinks to link to other people's work involves using appropriate HTML tags and providing the necessary attribution or permissions when necessary. • Evaluating the user experience of a website involves considering factors such as navigation ease, visual appeal, content accessibility, responsiveness, interactivity, and overall satisfaction for users interacting with the site.	or modify the value of a variable based on certain conditions or user interactions. • The value of a variable can be used by a program in various ways, such as in calculations, conditional statements, displaying information, or controlling the program flow. • When choosing artwork for a project, one can consider factors such as visual appeal, relevance to the project's theme or purpose, aesthetics, and the target audience's preferences. • Algorithms can be created for a project to define the logical steps, actions, and sequences required to achieve the desired outcome or functionality. • Design choices refer to the decisions made regarding the overall look, layout, colours, typography, and graphical elements in a project, taking into account the project's goals, audience, and context. • Creating artwork for a project involves designing and producing visual elements, graphics, illustrations, or images that align with the project's requirements and design vision. • Choosing a name that identifies the role of a variable involves selecting a meaningful and descriptive name that reflects the purpose or function of the variable within the program, aiding readability and understanding. • Testing the code involves running and executing the program, verifying that it behaves as intended, and checking for any errors, bugs, or unexpected outcomes. • Identifying ways that a game could be improved involves assessing its gameplay, user experience, visuals, performance, and overall satisfaction, and suggesting

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			modifications, enhancements, or new features to enhance its quality or appeal. • Using variables to extend a game allows for introducing dynamic elements, tracking scores, implementing game mechanics, managing game states, or enabling customisation and player interactions. • Sharing the game with others involves distributing the game files or making it accessible for others to play and experience, potentially gathering feedback or engaging in multiplayer experiences.
Lesson Sequence Learning challenges in a sequenced order.	L1 -To explain the importance of internet addresses. L2 -To recognise how data is transferred across the internet. L3 -To explain how sharing information online can help people to work together. L4 -To evaluate different ways of working together online. L5 -To recognise how we communicate using technology. L6 -To evaluate different methods of online communication.	L1 -To review an existing website and consider its structure. L2 -To plan the features of a web page. L3 -To consider the ownership and use of images (copyright). L4 -To recognise the need to preview pages. L5 -To outline the need for a navigation path. L6 -To recognise the implications of linking to content owned by other people.	L1 -To define a 'variable' as something that is changeable. L2 -To explain why a variable is used in a program. L3 -To choose how to improve a game by using variables. L4 -To design a project that builds on a given example. L5 -To use my design to create a project. L6 -To evaluate my project.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

National Curriculum End Points	• 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 • Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information. • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour.	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

Cross curricular Links		**English** • Writing composition: Identifying the audience for and purpose of the writing, selecting the appropriate form, and using other similar writing as models for their own.	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		

Year 6	**Spring 2**	**Summer 1**	**Summer 2**
Topic title and knowledge outcomes	**Data and information - Introduction to spreadsheets** **On completion of the unit, pupils will know…** • Collecting data involves gathering information from various sources, such as surveys, observations, or measurements. • Structuring data refers to organising and arranging data in a logical and meaningful way, such as using columns and rows in a spreadsheet or a database. • Entering data into a spreadsheet involves inputting the collected information into the respective cells of a spreadsheet software. • An item of data is a single piece or value of information, such as a number, text, date, or Boolean value, which represents a specific attribute or characteristic.	**Creating Media - 3D modelling** **On completion of the unit, pupils will know…** • Adding 3D shapes to a project involves including three-dimensional objects or models in a digital environment or design software. • Viewing 3D shapes from different perspectives allows for examining and analysing the shape, structure, and details of the object from various angles or viewpoints. • Moving 3D shapes relative to one another refers to repositioning or arranging the objects in relation to one another within the 3D space. • Resizing an object in three dimensions involves changing the dimensions or scale of the object along the X, Y, and Z axes to make it larger or smaller.	**Programming B - Sensing movement** **On completion of the unit, pupils will know…** • Applying knowledge of programming to a new environment involves utilising programming concepts, principles, and skills in a different programming language, platform, or development environment. • Testing a program on an emulator refers to running and evaluating the program on a software-based emulation or simulation of the target hardware or device. • Transferring a program to a controllable device involves deploying or loading the program onto a physical device or hardware

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• Choosing an appropriate format for a cell involves selecting the formatting options that best represent and display the type of data contained in that cell, such as numbers, currency, percentages, dates, or text. • Applying an appropriate format to a cell means modifying the visual representation of the cell's data based on the desired formatting options, ensuring clarity and consistency. • Data types that can be used in calculations include numeric values (integers, decimals), Boolean values (true/false), and dates (if supported by the spreadsheet software). • Constructing a formula in a spreadsheet involves using mathematical operators, functions, and references to manipulate and calculate data based on predefined rules and operations. • Changing inputs in a formula or spreadsheet can cause the outputs or calculated results to update or change accordingly, reflecting the dynamic nature of the calculations. • Calculating data using different operations involves applying arithmetic operations (addition, subtraction, multiplication, division), as well as more complex functions (sum, average, count, etc.), to perform calculations on the data in a spreadsheet. • Creating a formula that includes a range of cells allows for performing calculations or operations on multiple data points simultaneously, aggregating the results. • Applying a formula to multiple cells by duplicating it refers to copying the formula to other cells or cell ranges, maintaining the same relative references and allowing the formula to be applied to new data. • Using a spreadsheet to answer questions involves analysing and manipulating data using formulas, functions, and charts to derive insights, make comparisons, or draw conclusions. • Organising data is important to ensure data integrity, ease of analysis, and efficient retrieval of	• Lifting or lowering 3D objects refers to changing the height or elevation of the objects within the 3D environment, positioning them at different vertical levels. • Recolouring a 3D object involves changing the colour or appearance of the object's surface or material, allowing for customisation or visual enhancement. • Rotating objects in three dimensions allows for spinning or turning the objects around the X, Y, and Z axes, altering their orientation or position in space. • Duplicating 3D objects involves creating exact copies or replicas of the objects, allowing for repetition or multiple instances within the 3D model or scene. • Grouping 3D objects involves combining or organising multiple objects into a single unit or entity, facilitating easier manipulation, movement, or modification of the grouped objects collectively. • Accurately sizing 3D objects refers to ensuring that the dimensions and proportions of the objects are precise and match the desired specifications or requirements. • Showing that placeholders can create holes in 3D objects involves using placeholder shapes or voids within the 3D model to create empty spaces or openings in the objects. • Combining a number of 3D objects involves merging or joining multiple objects together to create a more complex or composite shape or structure. • Analysing a 3D model involves examining and evaluating the characteristics, composition, functionality, or aesthetics of the model, often for assessment or improvement purposes. • Choosing objects to use in a 3D model involves selecting the appropriate shapes, structures, or components that fulfil the intended design or serve specific functions within the model. • Combining objects in a design involves integrating or assembling various elements, parts, or components to create a cohesive and functional 3D model or design. • Constructing a 3D model based on a design involves building or creating the desired object or structure in a digital environment using the chosen design specifications, measurements, or visual references.	platform capable of executing the program's instructions. • Identifying examples of conditions in the real world involves recognising and understanding situations or scenarios where certain criteria, circumstances, or factors determine different outcomes, actions, or decisions. • Using a variable in an if, then, else statement to select the flow of a program involves employing a program variable as the condition or criterion that determines the execution path or behaviour of the program. • Determining the flow of a program using selection refers to controlling the program's execution based on specific conditions or logical tests, enabling different code paths or actions to be taken depending on the outcome of the conditions. • Using a condition to change a variable involves using the evaluation or result of a condition to modify the value or state of a program variable, potentially influencing subsequent program behaviour or actions. • Experimenting with different physical inputs involves testing and observing the behaviour or response of a program when different types of input, such as sensors, buttons, or physical controls, are interacted with or manipulated. • Explaining that checking a variable doesn't change its value emphasises that simply evaluating or examining the value of a variable does not alter or modify the variable's value itself. • Using an operand (e.g., <, >, =) in an if, then statement involves employing a comparison operator or relational operator to evaluate the relationship or condition between two values or variables in a logical expression.

	information, as it allows for logical grouping, categorisation, and structuring of data elements. • Applying a formula to calculate the data needed to answer questions involves using appropriate formulas and functions to perform calculations based on the given requirements or criteria. • Producing a chart involves visually representing data using graphical elements, such as bars, lines, or pie slices, to convey trends, patterns, or comparisons in a more understandable and engaging manner. • Using a chart to show the answer to questions involves selecting the appropriate chart type that effectively represents the data and visually communicates the desired information or insights. • Choosing between a table or a chart depends on the specific purpose and context. Tables are useful for presenting raw data, making comparisons, or organising information, while charts are effective for visualising trends, relationships, or patterns in the data.	• Explaining how a 3D model could be improved involves providing critical evaluation, feedback, or suggestions on how to enhance the design, functionality, or aesthetics of the model. • Modifying a 3D model to improve it involves making changes, adjustments, or refinements to the existing design, addressing the identified areas for improvement or incorporating new ideas and features.	• Explaining the importance of the order of conditions in else, if statements highlights that the order in which conditions are evaluated in a sequence of else if statements can impact the program's behaviour, as only the first condition that evaluates to true will be executed. • Modifying a program to achieve a different outcome involves making changes or adjustments to the code, logic, or algorithms of the program to alter its behaviour, functionality, or output according to desired specifications or requirements. • Deciding what variables to include in a project involves determining and selecting the necessary program variables that store and manipulate data relevant to the project's objectives, requirements, or functionality. • Designing the algorithm for a project involves planning and outlining the step-by-step logic or instructions that define the program's behaviour, calculations, operations, and decision-making processes to achieve the desired outcomes. • Designing the program flow for a project involves mapping out the sequence, structure, and control flow of the program, including the arrangement of statements, loops, conditions, and functions to ensure proper execution and desired behaviour. • Creating a program based on the design involves translating the algorithm, program flow, and specifications into actual code, implementing the necessary instructions, functions, and logic using the chosen programming language. • Testing a program against the design involves verifying and validating the program's functionality, behaviour, and adherence to the intended specifications

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

			and requirements outlined in the design through systematic testing and evaluation. • Using a range of approaches to find and fix bugs involves employing various debugging techniques, tools, and strategies to identify, locate, and resolve issues, errors, or unexpected behaviour in the program, ensuring its correctness and functionality.
Lesson Sequence Learning challenges in a sequenced order.	L1 -To create a data set in a spreadsheet. L2 -To build a data set in a spreadsheet. L3 -To explain that formulas can be used to produce calculated data. L4 -To apply formulas to data. L5 -To create a spreadsheet to plan an event. L6 -To choose suitable ways to present data.	L1 -To recognise that you can work in three dimensions on a computer. L2 -To identify that digital 3D objects can be modified. L3 -To recognise that objects can be combined in a 3D model. L4 -To create a 3D model for a given purpose. L5 -To plan my own 3D model. L6 -To create my own digital 3D model.	L1 -To create a program to run on a controllable device. L2 -To explain that selection can control the flow of a program. L3 -To update a variable with a user input. L4 -To use a conditional statement to compare a variable to a value. L5 -To design a project that uses inputs and outputs on a controllable device. L6 -To develop a program to use inputs and outputs on a controllable device.
Knowledge Capture Task	Test type questions based on the information taught.	Test type questions based on the information taught.	Test type questions based on the information taught.
National Curriculum End Points	• 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	• 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	• Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

		• Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	• Use sequence, selection, and repetition in programs, work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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
Possible Endpoints and support for the least able	**The key to success in the classroom lies in having appropriate adaptations, accommodations, and modifications made to the curriculum.** As some pupils with SEND may need longer to master particular areas of the curriculum, all staff are committed to adapting their teaching and providing tailored or specialised resources to enable pupils with SEND to access the curriculum. Subject-specific interventions are also planned and delivered if necessary.		
Cross curricular Links	**Mathematics** • Solve problems involving addition, subtraction, multiplication, and division	**Art and design** • To improve their mastery of art and design techniques, including drawing, painting, and sculpture with a range of materials	

St. Mary's R.C. Primary School

Learn and Grow Together in Christ

	• Interpret and construct pie charts and line graphs, and use these to solve problems • Calculate and interpret the mean as an average	**Design and technology** • Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design **Mathematics** • Recognise, describe, and build simple 3D shapes, including making nets	
Trips and visitors			
Prior Learning links	Please recap on the previous year groups learning before embarking on the current topic. Each unit of work will start with a gathering of knowledge and finish with a knowledge capture task.		