Computing Subject Rationale

Year Group	Unit	We teach this because…	We teach this now because…
Reception	**Computing Systems and Networks** What is technology?	This unit introduces children to the concept of technology, helping them to identify various forms of technology in their surroundings. By exploring everyday items such as tablets, computers, and smart devices, children begin to understand how technology impacts their lives. This foundational knowledge is crucial as it sets the stage for more complex ideas about technology and its uses in later years. Engaging activities encourage curiosity and promote discussions about how technology can assist in daily tasks.	This unit is introduced at the beginning of the academic year when children are settling into their learning environment. It establishes a foundational understanding of technology, which is essential for all subsequent units. By starting with this unit, educators can engage students' curiosity about the world around them and set the stage for more complex discussions about technology's role in their lives.
Reception	**Creating Media** How can I create patterns using the iPad?	In this unit, children are engaging with digital tools and children can express their artistic ideas while exploring mathematical concepts such as sequences and symmetry through pattern creation. This hands-on experience also helps develop their fine motor skills as they navigate the iPad, laying a foundation for future technological interactions and enhancing their overall learning journey.	Teaching this unit in autumn is strategically planned as children have settled into their school routines and are ready for more structured exploration. The vibrant colours and patterns of the autumn season provide a rich source of inspiration, making the learning experience more relevant and engaging. This timing encourages creativity and experimentation, while also preparing students for future units that build on their digital skills and artistic expression.
Reception	**Data and Information** How can I record my own work?	In this unit, children learn to use technology to document their thoughts and creations. Through simple applications on iPads, they can record audio, take photos, or create digital drawings. This not only fosters creativity but also enhances their communication skills as they express their ideas. Recording their work helps children to reflect on their learning and develop a sense of ownership over their creations, which is vital for their confidence and self-expression.	By the spring term, children have become more comfortable with their learning environment and are ready to explore how technology can be used for self-expression. This timing allows them to apply their understanding of technology to document their work creatively. It also aligns with their developmental stage, where they are eager to share their thoughts and ideas.
Reception	**Programming** How can I move my toy one spot to another?	This unit introduces basic programming concepts through hands-on activities with Beebots. Children learn to give simple instructions to move the robots, which promotes logical thinking and sequencing skills. By engaging in this interactive learning, children develop problem-solving abilities as they figure out how to navigate obstacles and reach their desired destination. This foundational understanding of programming concepts is essential as they progress to more complex programming tasks in later years.	As the academic year progresses, children are ready for hands-on, interactive learning experiences. This unit introduces basic programming concepts in a playful manner, allowing children to engage physically with the learning process. The summer term is an ideal time for this unit, as children are often more active and enthusiastic about exploring new ideas through play.
Year 1	**Computing Systems and Networks** What is technology and how do we use it responsibly?	This unit teaches students about the responsible use of technology, emphasising the importance of digital citizenship. By discussing scenarios involving technology use, students learn to identify safe practices and understand the potential risks associated with technology. This knowledge is crucial for their safety in an increasingly digital world. Engaging discussions and role-playing activities help reinforce these concepts, ensuring that students feel confident in their ability to navigate technology responsibly.	This unit is taught early in the year to establish a strong foundation in digital citizenship. By introducing responsible technology use at the beginning of Year 1, educators can instil good habits and safety awareness as students begin to interact with technology more frequently.
Year 1	**Creating Media** How can we paint using computers?	This unit encourages creativity and artistic expression through digital media. Students explore various painting applications on computers, allowing them to experiment with colours, shapes, and designs. By creating digital artwork, students learn to express	This unit is introduced in the autumn term when students are becoming more comfortable with technology. It allows them to explore their

		their ideas visually and develop their artistic skills. This unit also introduces the concept of digital literacy, as students learn to navigate software and understand the tools available for creating media.	creativity using digital tools, which aligns with their developmental stage where artistic expression is important. The timing encourages students to experiment and develop their digital literacy skills early on.
Year 1	**Programming** What instructions do we need to program a robot to move?	This unit engages students in hands-on programming with Beebots, where they learn to give precise instructions to make the robots move. By breaking down tasks into smaller steps, students develop computational thinking and problem-solving skills. This interactive approach not only makes learning fun but also reinforces the importance of clear communication in programming. As students experiment with different commands, they gain confidence in their ability to control technology.	As students approach the spring term in Year 1, they are ready for more interactive and engaging learning experiences. This unit introduces programming in a fun and accessible way, allowing students to apply their understanding of instructions and sequencing. The spring term is ideal for this unit, as students are often more eager to participate in active learning.
Year 1	**Data and Information** Why do objects and groups of objects need a label/group name?	In this unit, students are introduced to basic data organisation concepts. They learn the importance of categorising objects and the role of labels in helping to identify and group items effectively. Through practical activities, such as sorting and labelling classroom objects, students develop analytical skills and an understanding of how data can be organised. This foundational knowledge prepares them for more complex data management tasks in later years.	By the spring term, students have developed basic observational skills and are ready to engage in more structured data collection activities. This unit builds on their understanding of categorisation, which is essential for their cognitive development. The timing allows students to apply their knowledge in practical ways, reinforcing their learning through hands-on experiences.
Year 1	**Creating Media** What could word processors be used for?	In this unit, children are introduced to the practical applications of word processing software. By exploring how to create and edit text, students learn essential skills for communication and presentation. This unit fosters creativity as they express their ideas through writing and formatting, while also developing their digital literacy. Understanding the functionality of word processors prepares students for future academic tasks and enhances their confidence in using technology for various purposes.	Teaching this unit in the summer term is ideal as students are more comfortable with their learning environment and ready to apply their skills in a practical context. By this stage, they have developed foundational literacy skills and are eager to explore new ways to express themselves. The summer term allows for creative projects that can culminate in presentations or displays, encouraging collaboration and sharing of their work. This timing also prepares students for the transition to Year 2, where they will continue to build on their digital and writing skills.
Year 2	**Computing Systems and Networks** How can computers be used?	In this unit, it introduces the children to the various functions and applications of computers in everyday life. By exploring different uses of computers, students gain a foundational understanding of technology's role in communication, learning, and problem-solving. This unit encourages critical thinking as students discuss and identify how computers can assist them in various tasks, fostering digital literacy and preparing them for more advanced technology interactions in the future.	Teaching this unit in the autumn term is strategic as it aligns with students' growing curiosity about the world around them and their experiences with technology. At this stage, students are settling into the school year and are eager to learn about the tools they will use in their education. The autumn term provides an opportunity to establish a strong foundation in understanding computers, which is crucial for their ongoing learning and engagement with technology throughout the year.
Year 2	**Creating Media** How do you take a photograph with a digital device?	In this unit, it introduces children to the basics of photography and digital media. By learning how to use digital devices to capture images, students develop their creativity and observational skills. This unit not only enhances their understanding of visual communication but also encourages them to express their ideas and experiences through photography, fostering a sense of ownership over their work.	Teaching this unit in the autumn term is effective as it allows students to explore their environment and capture images that reflect their observations and experiences during this vibrant season. As students become familiar

			with using digital devices, they can apply their learning in practical ways, enhancing their engagement and enthusiasm for technology. The timing also sets the stage for future projects involving digital media, ensuring that students build a solid foundation for their creative expression throughout the year.
Year 2	**Programming** What do we need to build a programme?	In this unit, students explore the fundamental components of programming, including algorithms, sequences, and loops. Through hands-on activities with Beebots and simple coding exercises, students learn to create and debug their own programs. This unit promotes logical thinking and systematic problem-solving, as students must break down tasks into manageable steps. By developing these skills, students gain confidence in their ability to create functional programs.	By the spring term, students are ready to delve deeper into programming concepts. This unit builds on their previous experiences and encourages them to think critically about the components of programming. The timing allows for hands-on activities that reinforce their learning and prepare them for more complex programming tasks.
Year 2	**Data and Information** What do we use tally charts for?	In this unit, students learn about data collection and representation through tally charts. They engage in practical activities where they collect data on their classmates' preferences, such as favourite fruits or colours. By creating and interpreting tally charts, students develop their analytical skills and gain a deeper understanding of how data can be organised and presented. This foundational knowledge is essential for their future studies in statistics and data management.	By the spring term, students have a solid understanding of basic concepts and are ready to engage in data collection and representation. This unit builds on their previous knowledge and introduces them to practical applications of data in a way that is relevant to their everyday experiences. The timing allows for the integration of mathematics and computing skills.
Year 2	**Creating Media** How can a computer be used to make music?	In this unit, it introduces children to the creative possibilities of technology in music production. By exploring music-making software and applications, students learn to experiment with sounds, rhythms, and melodies, fostering their creativity and musical skills. This unit not only enhances their understanding of digital media but also encourages collaboration and self-expression, as students can share their musical creations with peers.	Teaching this unit in the summer term is ideal as students are often more engaged and excited about creative projects during this time. The end of the academic year provides an opportunity for students to apply their skills in a fun and interactive way, allowing them to create music that reflects their experiences and emotions. This timing also encourages collaboration, as students can work together to produce music, reinforcing teamwork and communication skills before transitioning to the next year.
Year 3	**Computing Systems and Networks** What is an input, process and output?	This unit introduces children to fundamental concepts of computing systems. Understanding these components helps students grasp how computers function and how they can be used to solve problems. This foundational knowledge is essential for their ongoing studies in computing, as it lays the groundwork for more complex topics in programming and data management.	Teaching this unit in the autumn term is strategic as it aligns with students' growing curiosity about technology and its applications. At this stage, students are ready to explore the inner workings of computers, making this an ideal time to introduce core concepts. The autumn term allows educators to establish a solid foundation for students' understanding of computing systems, which is crucial for their future learning in the subject.
Year 3	**Creating Media** Can a picture move?	This unit introduces children to the concept of animation and the basics of creating moving images. By exploring simple animation techniques, students learn to express their ideas visually and creatively, enhancing their understanding of digital storytelling. This unit fosters critical thinking and problem-solving skills as students plan and execute their animations, encouraging them to think about how to convey messages through movement.	Teaching this unit in the autumn term is effective as it allows students to build on their understanding of digital media right after learning about computing systems. The timing encourages them to apply their knowledge creatively, as they can experiment with animation techniques while

			their interest in technology is high. This unit also sets the stage for future projects involving more advanced digital media skills, ensuring a smooth progression in their learning journey.
Year 3	**Programming** How can Scratch be used to programme a set of objects?	This unit introduces students to block-based programming using Scratch. They learn to create simple animations and interactive stories by programming characters to move and respond to user inputs. This engaging approach fosters creativity and critical thinking, as students must plan their projects and troubleshoot any issues that arise. By the end of the unit, students gain a solid understanding of programming concepts and the ability to create their own digital projects.	This unit is introduced in spring term of year 3 when students are ready to transition to more complex programming concepts. Scratch provides a user-friendly platform that allows students to experiment with programming in a creative way. The timing encourages students to apply their knowledge and skills in a project-based format, preparing them for future programming challenges.
Year 3	**Data and Information** How is a branching database created?	This unit teaches students about databases and how to create branching databases to organise information. Through practical activities, students learn to classify objects based on specific criteria and create their own databases. This foundational knowledge enhances their ability to manage and retrieve information effectively, preparing them for more advanced data handling tasks in later years. By understanding how databases work, students develop critical thinking skills that are essential for analysing data.	This unit is introduced at the end of Year 3 when students have developed a solid understanding of data concepts. The timing allows them to apply their knowledge in a practical way, creating databases that reflect their interests. This unit prepares them for more advanced data management tasks in subsequent years.
Year 3	**Programming** How do you control movement in computer games?	This unit introduces children to the fundamental concepts of programming through the engaging context of game design. By learning how to control character movement and game mechanics, students develop critical thinking and problem-solving skills. This unit not only enhances their understanding of programming logic but also encourages creativity as they design and implement their own game elements, fostering a sense of ownership over their projects.	This unit is taught in summer as students are often eager to apply their knowledge in fun and interactive ways at the end of the academic year. This timing allows them to consolidate their learning by creating projects that reflect their interests and creativity, making the learning experience more relevant and engaging. Additionally, the summer term provides an opportunity for collaboration, as students can work together to develop their games, reinforcing teamwork and communication skills before transitioning to the next year. This unit prepares them for more advanced programming concepts in subsequent years, ensuring a smooth progression in their learning journey.
Year 4	**Computing Systems and Networks** What is a network and how do they connect to each other?	This unit develops students' understanding of networking concepts, including how devices communicate with one another. Through interactive activities and discussions, students learn about the different types of networks and their functions. This foundational knowledge is crucial for grasping how the internet works and the role of networks in our daily lives. By understanding these concepts, students are better prepared to navigate the digital world safely and effectively.	This unit is taught early in Year 4 to provide students with a foundational understanding of networking concepts. As they begin to use technology more frequently, understanding how devices communicate becomes essential. The timing allows students to connect their knowledge of technology with real-world applications.
Year 4	**Creating Media** What software and computing skills do we need to create podcasts?	This unit introduces children to the process of audio production and the skills required for effective communication through digital media. By learning to use podcasting software, students develop their technical skills in audio editing, sound mixing, and storytelling. This unit not only enhances their understanding of media production but also fosters creativity and collaboration as they work in groups to produce their own podcasts, encouraging them to express their ideas and perspectives.	It is taught in autumn term as it allows students to build on their previous experiences with digital media while introducing them to new technologies. The timing encourages students to explore their interests and engage in meaningful discussions about topics they are passionate about, making the learning

			experience more relevant. Additionally, starting the year with a focus on podcasting sets a creative tone for the term, allowing students to develop their communication skills early on, which will be beneficial for future projects and presentations.
Year 4	**Programming** How can you programme a computer by typing commands?	This unit introduces children to text-based programming, enhancing their understanding of coding concepts and logic. By learning to write commands, students develop critical thinking and problem-solving skills as they create and debug their own programs. This unit not only reinforces their programming knowledge but also prepares them for more advanced coding languages and concepts in the future.	Teaching this unit in the spring term is effective as students have already developed foundational programming skills and are ready to tackle more complex concepts. The timing allows them to build on their previous learning experiences, transitioning from block-based programming to text-based commands. This progression is essential for their development as programmers, as it encourages them to think more critically about how code works. Additionally, the spring term provides an opportunity for students to apply their skills in practical projects, reinforcing their learning and preparing them for future challenges in programming.
Year 4	**Data and Information** What data can be collected using sensors?	In this unit, students explore data collection through sensors, linking technology with real-world applications. They learn about different types of sensors and how to interpret the data collected. This unit promotes scientific inquiry and critical thinking, as students analyse data and draw conclusions based on their findings. By understanding how sensors work, students gain valuable insights into the role of technology in data collection and analysis.	This unit is taught at the end of Year 4 when students are ready to explore real-world applications of technology. The timing allows them to engage in scientific inquiry and critical thinking as they analyse data collected from sensors. This unit prepares them for future studies in science and technology, reinforcing the importance of data in decision-making.
Year 4	**Programming** Which types of loops are effective?	This unit introduces children to the concept of loops in programming, a fundamental building block for creating efficient and effective code. By exploring different types of loops, such as for-loops and while-loops, students learn how to automate repetitive tasks in their programs, enhancing their problem-solving skills and logical thinking. This unit encourages creativity as students experiment with loops to create interactive projects, reinforcing their understanding of how loops can simplify coding and improve program functionality.	It is taught in summer as students are ready to apply their programming knowledge in more complex ways after a year of foundational learning. The timing allows them to consolidate their understanding of programming concepts and see the practical applications of loops in their projects. Additionally, the summer term provides an opportunity for students to engage in collaborative projects, where they can share ideas and learn from each other while implementing loops in their coding. This unit prepares them for more advanced programming concepts in subsequent years, ensuring a smooth transition in their learning journey.
Year 5	**Computing Systems and Networks** How do search engines find things on the World Wide Web?	This unit develops students' digital literacy by teaching them how search engines work and how to effectively use them. Students learn about keywords, search algorithms, and the importance of evaluating sources. By understanding how to navigate the vast amount of information available online, students become more discerning consumers of digital content. This knowledge is crucial for their safety and success in an increasingly digital world.	This unit is introduced in the autumn term when students are becoming more proficient in using technology. The timing allows them to develop digital literacy skills and understand how to navigate the vast amount of information available online. This knowledge is crucial for their safety and success in an increasingly digital world.

Year 5	**Creating Media** What techniques can we use to make a video?	In this unit, students learn about video production techniques, including planning, filming, and editing. They work collaboratively to create their own short films, which fosters teamwork and communication skills. By engaging in this creative process, students develop a deeper understanding of media literacy and the impact of visual storytelling. This unit not only enhances their technical skills but also encourages them to think critically about the messages conveyed through media.	This unit is taught in the autumn term when students are ready to engage in collaborative projects. The timing encourages teamwork and communication skills as students work together to create videos. By introducing media production early in the year, students can apply their creativity and technical skills throughout the term.
Year 5	**Programming** How do we control a simple circuit connected to a computer?	This unit introduces students to physical computing, linking programming with hardware. They learn to control simple circuits using programming languages, which enhances their understanding of how software and hardware interact. Through hands-on activities, students develop problem-solving skills as they troubleshoot and refine their projects. This practical approach to programming prepares students for more complex programming tasks in the future.	This unit is introduced in the spring term when students are ready to explore the intersection of programming and hardware. The timing allows for hands-on experimentation with physical computing, reinforcing their understanding of how software and hardware interact. This practical approach enhances their problem-solving skills.
Year 5	**Data and Information** Why do we use databases?	In this unit, students explore the importance of databases in managing large amounts of data. They learn about different types of databases and their applications in various fields. Through practical activities, students gain hands-on experience in creating and querying databases, enhancing their data management skills. This foundational knowledge is essential for their future studies in data analysis and information retrieval.	This unit is taught at the end of Year 5 when students have a solid understanding of data concepts. The timing allows them to explore the importance of databases in managing information, preparing them for more advanced data handling tasks in Year 6 and secondary school. This unit reinforces their analytical skills and understanding of data organisation.
Year 5	**Programming** How is selection used in computer programs?	This unit deepens students' understanding of programming concepts, particularly conditionals and selection. Through hands-on activities, students learn to create interactive programs that respond to user inputs. This practical approach enhances their problem-solving skills and reinforces the importance of logical reasoning in programming. By mastering these concepts, students are better prepared for more advanced programming tasks in secondary education.	This unit is introduced in the summer term when students are ready to deepen their understanding of programming concepts. The timing allows for hands-on activities that reinforce their learning and prepare them for more advanced programming tasks. By mastering these concepts, students gain confidence in their programming abilities.
Year 6	**Computing Systems and Networks** How do you use the internet?	This unit provides children with essential skills and knowledge for navigating the online world safely and effectively. By exploring various aspects of internet usage, including searching for information, evaluating sources, and understanding online safety, students develop digital literacy and critical thinking skills. This unit prepares them for the challenges they may face in secondary education and beyond, ensuring they are equipped to use the internet responsibly and effectively for research, communication, and collaboration.	This unit is taught in autumn as Year 6 students are preparing for the transition to secondary school, where they will encounter more complex online environments. The timing allows them to establish a strong foundation in internet usage and digital citizenship at a critical point in their education. By starting the year with a focus on internet skills, educators can ensure that students are well-prepared to engage with digital resources throughout their studies. Additionally, this unit encourages discussions about online safety and ethics, which are essential topics as students become more independent users of technology
Year 6	**Creating Media** What makes a good website?	In this unit, students learn about web design principles, including usability, aesthetics, and accessibility. They evaluate existing websites and create their own, applying the concepts learned. This unit fosters critical thinking and creativity, as students must consider their audience and the purpose of their website. By	This unit is taught early in Year 6 to prepare students for their transition to secondary education. The timing allows them to explore web design principles and apply their creativity in a project-based format.

		understanding the elements of effective web design, students develop valuable skills for future digital projects.	By understanding effective web design, students develop valuable skills that will serve them in future digital projects.
Year 6	**Programming** What could be set and changed to improve a game?	In this unit, students engage in game design, learning to modify existing games to enhance gameplay. They explore concepts such as user experience and game mechanics, fostering creativity and critical thinking. By experimenting with different elements, students develop problem-solving skills and gain a deeper understanding of programming concepts. This hands-on approach to game design encourages	This unit is taught in the spring term when students are ready to engage in creative problem-solving. The timing encourages them to think critically about game design and user experience, fostering innovation and collaboration. By introducing this unit at this stage, students can apply their programming skills in a meaningful context.
Year 6	**Data and Information** How can we modify spreadsheets?	This unit introduces students to spreadsheet software, teaching them how to manipulate data and perform calculations. Through practical activities, students learn to create and format spreadsheets, enhancing their data management skills. This foundational knowledge is essential for their future studies in mathematics and data analysis. By understanding how to use spreadsheets effectively, students gain valuable skills that are applicable in various fields.	This unit is introduced in the spring term of Y6 when students are ready to explore data manipulation in greater depth. The timing allows them to apply their mathematical skills in a practical way, enhancing their understanding of data analysis. This foundational knowledge is essential for their future studies in mathematics and data management.
Year 6	**Programming** What is micro: bit?	This unit introduces children to physical computing and the practical applications of programming in the real world. By exploring the micro: bit, a small programmable device, students learn how to create interactive projects that bridge the gap between software and hardware. This unit enhances their understanding of coding concepts while fostering creativity and problem-solving skills as they design and implement their own projects using the micro:bit.	This is taught in summer term as students are ready to apply their programming knowledge in a hands-on and engaging way after a year of foundational learning. The timing allows them to experiment with physical computing, which can be particularly motivating and exciting as they see their code come to life in tangible forms. Additionally, the summer term provides an opportunity for collaborative projects, encouraging teamwork and innovation as students work together to create functional devices. This unit not only reinforces their programming skills but also prepares them for future challenges in technology and engineering as they transition to secondary education.