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| **Computing**  **Year 6**  **2024 – 2025** | | |
| **Autumn 1**  **Computing Systems and Networks: Bletchley Park** | | |
| Vocabulary | Knowledge | Objectives |
| * Acrostic Code * Brute force hacking * Caesar cipher * Chip and pin system * Date shift cipher * Nth Letter Cipher | * Explain that codes can be used for a number of different reasons and decode messages. * Explain how to ensure a password is secure and how this works. * Create a simple website with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. * Explain the importance of historical figures and their contribution towards computer science. * Present information about their historical figure in an interesting and engaging manner. | 1. To understand there are many different types of secret codes. 2. To understand the importance of having a secure password. 3. To understand the importance of Bletchley Park to the World War II war effort. 4. To research historical figures that contributed to technological advances in computing. 5. To research and present information about historical figures in computing. |
| **Autumn 2**  Programming: Introduction to Python | | |
| Vocabulary | Knowledge | Objectives |
| * Command * Indentation * Input * Instructions * Loop * Remix | * Iterate ideas, testing and changing throughout the lesson and explain what their program does. * Use nested loops in their designs, explaining why they need two repeats. * Alter the house drawing using Python commands; use comments to show a level of understanding around what their code does. * Use loops in Python and explain what the parts of a loop do. * Recognise that computers can choose random numbers; decompose the program into an algorithm and modify a program to personalise it. | 1. To tinker with a new piece of software. 2. To understand nested loops. 3. To understand basic Python commands. 4. To use loops when programming. 5. To understand the use of random numbers. |
| **Spring 1**  **Data Handling: Big Data 1** | | |
| Vocabulary | Knowledge | Objectives |
| * barcode * boolean * chip * commuter * encrypt * infrared | * Understand why barcodes and QR codes were created. * Create (and scan) their own QR code using a QR code generator website. * Explain how infrared can be used to transmit a Boolean type signal. * Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets. * Take real-time data and enter it effectively into a spreadsheet. * Presenting the data collected as an answer to a question. * Recognising the value of analysing real-time data. * Analyse and evaluate transport data and consider how this provides a useful service to commuters. | 1. To identify how barcodes and QR codes work. 2. To know how infrared waves transmit data. 3. To recognise how RFID is used. 4. To input and analyse real-world data. 5. To analyse and evaluate data. |
| **Spring 2**  **Creating Media: The History of Computers** | | |
| **Vocabulary** | **Knowledge** | **Objectives** |
| * background noise * CPU * FX * GPU * hard drive * memory storage | * Explain how to record sounds and add in sound effects over the top. * Produce a simple radio play with some special effects and simple edits which demonstrate an understanding of how to use the software. * Create a document that includes correct date information and facts about the computers and how they made a difference. * Demonstrate a clear understanding of their device and how it affected modern computers, including well-researched information with an understanding of the reliability of their sources. * Describe all of the features that we’d expect a computer to have including RAM, ROM, hard drive and processor, but of a higher specification than currently available | 1. To tinker with audio recording. 2. To record, edit and add sound effects to a radio play. 3. To understand how computers have changed and the impact this has had on the modern world. 4. To research one of the computers that changed the world and present information about it to the class. 5. To design a computer of the future. |
| **Summer 1**  **Data Handling: Big Data 2** | | |
| Vocabulary | Knowledge | Objectives |
| 1. Bluetooth 2. Corrupted 3. GPS 4. Infrared 5. QR codes 6. Revolution | * Recognise that data can become corrupted within a network and that data sent in packets is more robust, as well as identify the need to update devices and software. * Recognise differences between mobile data and WiFi and use a spreadsheet to compare and identify high-use data activities and low-use data activities. * Make links between the Internet of Things and Big Data and give a basic example of how data analysis/analytics can lead to improvement in town planning. * Explain ways that Big Data or IoT principles could be used to solve a problem or improve efficiency within the school and prepare a presentation about their idea, considering the privacy of some data. * Present their ideas about how Big Data/IoT can improve the school and provide feedback to others on their presentations. | 1. To explain how data can be safely transferred. 2. To investigate the data usage of different online activities. 3. To identify how data collection can improve city life. 4. To design a system for turning a school into a smart school. 5. To present ideas for turning a school into a smart school. |
| **Summer 2**  **Skills Showcase: Inventing a Product** | | |
| Vocabulary | Knowledge | Objectives |
| 1. algorithm 2. bugs 3. coding 4. debugging 5. electronic 6. image rights | * Evaluate code, understand what it does and adapt existing code for a specific purpose. * Debug programs and make them more efficient using sequence, selection, repetition or variables. * Design appropriate housing for their product using CAD software, including any input or output devices needed to make it work. * Create an appealing website for their product aimed at their target audience, which explains what their product is and what it does using persuasive language. * Create an edited video of their project, articulating the key benefits. * Describe and show how to search for information online and be aware of the accuracy of the results presented. | 1. To design an electronic product. 2. To code and debug a program. 3. To use CAD software to design a product. 4. To create a website. 5. To create a video advert |