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| **Cycle 1 and 2** |
| **Class**  | **Autumn**  | **Spring**  | **Summer**  |
| **Ash (EYFS)** | **Children working towards specific Early Learning Goal across the three terms:***15 Technology*• Children recognise that a range of technology is used in places such as homes and schools• Children select and use technology for particular purposes |
| **Birch (Yr1)** | **E-Safety** Taught through circle time /PSHE• Understand the importance of a password• When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable**Getting Started**Login, navigate and mouse skills.• Logging in and out and saving work on their own account• Learning where keys are located on the keyboard• Developing control of the mouse through dragging, clicking and resizing of images to create different effects• Understanding how to create digital art using an online paint tool**Rocket to the Moon**Keyboard skills, sequencing and debugging in a rocket project• Using a basic range of tools within graphic editing software• Identifying where digital content can have advantages over paper when storing and manipulating data• Follow a basic set of instructions• Representing data in tables, charts and pictograms | **Programming: Bee-Bot**Programming functions and capabilities• Programming a Bee-bot/Blue-bot to follow a planned route• Developing a how to video to explain how the Bee-bot/Blue-bot works. • Learning to debug instructions when things go wrong• Using decomposition to solve unplugged challenges• Using logical reasoning to predict the behaviour of simple programs**Algorithms Unplugged**Algorithms in real life• Learning that an algorithm is a set of step by step instructions used to carry out a task, in a specific order• Follow a basic set of instructions• Understanding that computers and devices around us use inputs and outputs, identifying some of these• Learning that an algorithm is a set of step by step instructions used to carry out a task, in a specific order• Learning to debug an algorithm in an unplugged scenario• Assembling instructions into a simple algorithm | **Digital Imagery**Photo capture and editing• Developing the skills associated with sequencing in unplugged activities• Learning how to operate a camera• Learning how to explore and tinker with hardware to find out how it works• Taking and editing photographs• Developing control of the mouse through dragging, clicking and resizing of images to create different effects• Searching and downloading images from the internet safely**Introduction to Data**Gathering and recording animal data• Representing data in tables, charts and pictograms• Introduction to spreadsheets• Sorting data and creating branching databases |
| **Hazel (Yr2)** | **Word Processing**Touch typing and staying safe online• Developing confidence with the keyboard and the basics of touch typing • Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts• Using word processing software to type and reformat text and reformat images• Understanding how to stay safe when talking to people online. Not sharing personal information and what to do if they see or hear something online that makes them feel upset or uncomfortable**International Space Station**Data collection, display and interpretation • Collecting and inputting data into a spreadsheet• Interpreting data• Creating and labelling images• Creating a clear and precise algorithm | **Algorithms and Debugging**Programming: Plugged-In and Unplugged• Articulating what decomposition is• Decomposing a game to predict the algorithms used to create it• Explaining what an algorithm is• Learning that computers use algorithms to make predictions• Following an algorithm• Using an algorithm to write a basic computer program• Creating a clear and precise algorithm• Learning what loops are• Incorporating loops within algorithms• Incorporating loops to make code more efficient• Learning what abstraction is• Learning that there are different levels of abstraction**Programming: Scratch JR**Programming apps• Using logical thinking to explore software, predicting, testing and explaining what it does• Using software to create story animations• Incorporating loops within algorithms• Incorporating loops to make code more efficient• Learning that programs execute by following precise instructions• Explaining what an algorithm is• Following an algorithm• Using an algorithm to write a basic computer program | **What is a Computer?**Inputs/Outputs and Uses• Understanding what a computer is and that it’s made up of different components• Recognising that buttons cause effects and that technology follows instructions• Using greater control when taking photos with tablets or computers• Learning how we know that technology is doing what we want it to do via its output• Learning how computers are used in the wider world**Stop Motion**Storyboarding then creating simple animations• Using software to create story animations• Using decomposition to decompose a story into smaller parts• Using greater control when taking photos with tablets or computers |
| **Hawthorn (Yr3)** | **Emailing**With attachments and cyberbullying• Learning to log in and out of an email account• Writing an email including a subject, ‘to’ and ‘from’• Sending an email with an attachment• Replying to an email• Understanding the purpose of emails.• Learning to be a responsible digital citizen; understanding their responsibilities to treat others respectfully and recognising when digital behaviour is unkind• Learning about cyberbullying• Learning that not all emails are genuine, recognising when an email might be fake and what to do about it**Networks**Sharing information and the internet• Learning what a network is and its purpose• Identifying the key components within a network, including whether they are wired or wireless• Learning what a server does• Learning how data is transferred• Recognising links between networks and the internet | **Programming: Scratch**Programming apps• Using logical thinking to explore more complex software; predicting, testing and explaining what it does• Incorporating loops to make code more efficient• Using repetition in programs• Remixing existing code• Using decomposition to explore the code behind an animation• Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected• Explaining the purpose of an algorithm• Using logical reasoning to explain how simple algorithms work• Forming algorithms independently**Digital Literacy**Creating book trailers• Taking photographs and recording video to tell a story• Using software to edit and enhance their video adding music, sounds and text on screen with transitions | **Top Trumps Databases**Understanding and using databases• Understanding the vocabulary associated with databases: field, record, data• Learning about the pros and cons of digital versus paper databases• Sorting and filtering databases to easily retrieve information• Creating and interpreting charts and graphs to understand data**Journey Inside a Computer**Inputs/outputs and purpose• Understanding that computers follow instructions• Using decomposition to explain the parts of a laptop computer• Using an algorithm to explain the roles of different parts of a computer• Understanding what the different components of a computer do and how they work together• Drawing comparisons across different types of computers |
| **Oak (Yr4)** | **Collaborative Learning**Google Docs, Slides, Form and Sheet• Recognising what appropriate behaviour is when collaborating with others online• Understanding that software can be used collaboratively online to work as a team• Work collaboratively with others• Use Google online software for documents, presentations, forms and spreadsheets.**The Internet**Websites and data transfer• Consolidating understanding of the key components of a network• Understanding that websites & videos are files that are shared from one computer to another• Learning about the purpose of routers• Learning about the role of packets | **Website Design**Website creation and Google Sites• Building a web page and creating content for it• Designing andcreating a webpagefor a given purpose**HTML**Editing the HTML and CSS of a web page to change the layout of a website and the text and images • Understanding that websites can be altered by exploring the code beneath the site• Building a web page and creating content for it• Using abstraction and pattern recognition to modify code• Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others | **Computational Thinking**Plugged and unplugged activities to develop the four areas of computational thinking• Solving unplugged problems by decomposing them into smaller parts• Using decomposition to understand the purpose of a script of code• Using decomposition to help solve problems• Coding a simple game• Using abstraction and pattern recognition to modify code• Using abstraction to identify the important parts when completing both plugged and unplugged activities• Identifying patterns through unplugged activities• Using past experiences to help solve new problems• Creating algorithms for a specific purpose**Investigating weather**Researching and storing data and green screen video• Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration• Designing a weather station which gathers and records sensor data• Creating algorithms for a specific purpose |
| **Willow (Yr5)** | **Online Safety**Potential dangers and safety• Identifying possible dangers online and learning how to stay safe.• Using the animation software: Stop Motion to create video animation• Creating an animation about digital safety**Search Engines**Research skills and finding accurate information• Learning what a search engine is• Recognising that information on the Internet might not be true or correct and learning ways of checking validity• Developing searching skills to help find relevant information on the internet• Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns | **Mars Rover 1**Data transfer and binary code • Learning that external devices can be programmed by a separate computer• Learning thevocabulary associated with data: data and transmit• Understanding how data is collected• Learning that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations• Learning the difference between ROM and RAM• Recognising how the size of RAM affects the processing of data• Recognising that computers transfer data in binary and understanding simple binary addition• Relating binary signals (Boolean) to the simple character-based language, ASCII**Mars Rover 2**3D design skills• Understanding how bit patterns represent images as pixels• Learning how the data for digital images can be compressed• Understanding the fetch, decode, execute cycle• Learning the difference between ROM and RAM• Independently learning how to use 3D design software package TinkerCAD• Identify ways to improve and edit final products• Learning to use an online community safely | **Micro:bit**The meaning and purpose of programming• Using logical thinking to explore software more independently, making predictions based on their previous experience• Programming an animation• Decomposing animations into a series of images• Predicting how software will work based on previous experience• Decomposing a program without support• Using a range of programming commands• Iterating and developing their programming as they work• Writing more complex algorithms for a purpose• Debugging their own code**Sonic Pi**Music programming apps• Using software programme Sonic Pi to create music• Beginning to use nested loops (loops within loops)• Debugging their own code • Writing code to create a desired effect• Decomposing a story to be able to plan a program to tell a story• Using repetition within a program• Amending code within a live scenario |
| **Beech (Yr6)** | **Bletchley Park 1**Code breaking and password hacking• Understanding the importance of secure passwords and how to create them• Learning about the history of computers and how they have evolved over time• Understanding how search engines work• Using search engines safely and effectively• Creating a website with embedded links and multiple pages• Using search and word processing skills to create a presentation**Bletchley Park 2**WWII and the first computers• Planning, recording and editing a radio play• Creating and editing sound recordings for a specific purpose• Learning about the history of computers and how they have evolved over time• Using the understanding of historic computers to design a computer of the future | **Big Data 1**Barcodes, QR codes and RFID• Learning how barcodes, QR codes and RFID work• Understanding how barcodes, QR codes and RFID work• Creating formulas and sorting data within spreadsheets• Gathering and analysing data in real time**Big Data 2**Data usage and smart schools• Recognising that updated software can help to prevent data corruption and hacking• Learning about some of the methods which cause data corruption• Understanding that computer networks provide multiple services• Learning about the Internet of Things and how it has led to ‘big data’.• Learning how ’big data’ can be used to solve a problem or improve efficiency• Using search and word processing skills to create a presentation | **Intro to Python**Using the programming language• Programming using the language Python• Using logical thinking to explore software independently, iterating ideas and testing continuously• Using past experiences to help solve new problems• Using and adapting nested loops• Decomposing a program into an algorithm• Writing increasingly complex algorithms for a purpose• Remixing existing code to explore a problem• Changing a program to personalise it**Skills Showcase**Designing and promoting a new product• Evaluating code to understand its purpose• Predicting code and adapting it to a chosen purpose• Debugging quickly and effectively to make a program more efficient• Using design software TinkerCAD to design a product• Creating a website with embedded links and multiple pages• Altering a website’s code to create changes• Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions to create a video advert |

**Suggested work cycle for mixed year group structure**

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|  | **Year group work** |
| **Class** | **Cycle A** | **Cycle B** |
| Ash (EYFS) | EYFS | EYFS |
| Birch (Yr1) | Yr1 | Yr1 |
| Hazel (Yr2) | Yr2 | Yr2 |
| Hawthorn (Yr3/4) | Yr3 | Yr4 |
| Oak (Yr4/5) | Yr4 | Yr5 |
| Beech (Yr5/6) | Yr5 | Yr6 |