Ingoldmells Academy Long-Term Map: Computing Cycle A

Nursery	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Reception Knowledge	**Computer systems and networks – Using a computer**		**Programming – All about computers** **Computer systems and networks – Exploring Hardware**		**Data handling – Introduction to data**	
Vocabulary	Computer Parts		Play Program Buttons Commands			
Year 1/2 Knowledge	**<u>Computer Systems and Networks</u> – Improving mouse skills** Use computers more purposefully Log in and navigate around a computer Drag, drop, click and control a cursor using a mouse Use software tools to create art on the computer	**<u>Programming 1</u>** **Algorithms Unplugged** Explain what an algorithm is. Write clear algorithms. Follow an algorithm. Explain what inputs and outputs are. Create an achievable program. Decompose a design into steps. Identify bugs in an algorithm and how to fix them.	**<u>Skills Showcase</u>** **Rocket to the Moon** **<u>Internet Safety</u> Year 1** Use a computer to make a list. Explain the benefits of making a list on the computer. Use a basic range of tools on graphics editing software to design a rocket. Sequence instructions. Follow instructions to build their model rocket. Input data about their rockets into a table or spreadsheet.		**<u>Computer Systems and Networks 2</u>** **Word Processing** Explain which the home row keys are and how to find them when typing. Use the spacebar and backspace correctly. Type and make simple alterations to text using buttons on a word processor. Search for, import and alter appropriate images for a text document. Modify text in a document. Use copy and paste to copy text from one document to another. Explain what information is safe to be shared online.	**<u>Programming 1</u>** **Algorithms and Debugging** Decompose a game to predict the algorithms. Give a definition for 'decomposition'. Write clear and precise algorithms. Create algorithms to solve problems. Use loops in their algorithms to make their code more efficient. Explain what abstraction is.
Vocabulary	click clipart drag and drop	algorithm artificial intelligence bug	algorithm cells components		backspace bold copy	abstraction algorithm artificial intelligence

	layers log on/off predict resize software tool username	debug directions input order output	data debug evaluate input sequence spreadsheet	cut delete highlight image import italics navigate paste redo search space bar text effects underline undo word-processing software	bug clear correct data debug decompose error loop predict
Year 3/4 Knowledge	**<u>Computer systems and networks 2</u> – Emailing** Log in and out of email. Send a simple email with a subject plus 'To' and 'From' in the body of the text. Edit an email. Type in the email address correctly and send the email. Add an attachment to an email. Write an email using positive language, with an awareness of how it will make the recipient feel.	**<u>Programming</u>** **Scratch** Explain what some of the blocks do in Scratch. Explain what a loop is and include one in their program. Suggest possible additions to an existing program by remixing code. Recognise where something on screen is controlled by code. Use a systematic approach to find bugs. Understand the definitions of decomposition and	**<u>Creating Media</u>** **Video Trailers** **<u>Online Safety</u> Year 3** Describe the purpose of a trailer. Create a storyboard for a book trailer. Consider camera angles when taking photos or videos. Import videos and photos into film editing software. Add text to a video. Incorporate transitions between images. Evaluate their own and others' trailers.	**<u>Creating Media</u>** **Website Design** Create a Sway with a title, image and a completed first header section. Create a clear plan for their web page and beginning to create it. Create a professional-looking web page with useful information and a clear style, which is easy for the user to read and find information from. Create a clear plan by referring back to their checklist to include a range of features. Create a web page with clear sections and with a range of features in.	

	Recognise unkind behaviour online and know how to report it. Offer advice to victims of cyberbullying. Recognise when an email may be fake and explain how they know.	algorithm and how they are used to create accurate code.		
Vocabulary	attachment compose cyberbullying email emoji fake font genuine hacker inbox link password scammer spam email subject bar	algorithm animation code code block debug decompose interface loop predict sprite	camera angle clip cross dissolve edit fade graphics import slide sound effects storyboard time code trailer transition voiceover wipe	content embed evaluate homepage hyperlinks insert published record review style subpage tab
Year 5 Knowledge	**<u>Computer systems and networks</u> – Search Engines** Explain what a search engine is, suggest several search engines to use and explain how to use them to find websites and information. Suggest that things online are not always	**<u>Programming</u>** **Music** Recognise that Scratch is a coding application with music elements. Predict the effects of different code blocks and explain discoveries from tinkering. Code a soundtrack using sound blocks, loops and	**<u>Data Handling</u>** **Mars Rover** **Safer Internet Day** **<u>Online Safety</u> Year 5** Identify some types of data the Mars Rover could collect (for example, photos). Explain how the Mars Rover transmits the data back to Earth and the challenges involved.	**<u>Creating media</u> Stop Motion Animation** Create a toy with simple images and a single movement. Create a short stop motion with small changes between images. Think of a simple story idea for their animation and then decompose it into smaller parts to create a storyboard with simple characters. Make small changes to the models to ensure a smooth animation and delete unnecessary frames. Add effects such as extending parts and titles.

	true and recognise what to check for. Explain why keywords are important and what TASK stands for, using these strategies to search effectively. Recognise the terms 'copyright' and 'fair use' and combine text and images in a poster. Make parallels between book searching and internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank.	nested loops to enhance a scene. Use loops to simplify a program and understand that nested loops can repeat a rhythm or pattern. Decompose a program into smaller parts and remix existing code in new projects. Identify errors in a program, debug them and evaluate the effectiveness of a program.	Read any number in binary, up to eight bits. Identify input, processing and output on the Mars Rovers. Read binary numbers and grasp the concept of binary addition. Relate binary signals (Boolean) to a simple character-based language, ASCII.	Provide helpful feedback to other groups about their animations.
Vocabulary	algorithm copyright credit fake news inaccurate index keywords page rank TASK web crawler	adapt code debug decompose loop output pitch program repeat rhythm tempo timbre tinker	binary code byte CPU hexadecimal input/output Mars Rover RAM	animation animator background character decomposition edit evaluate flipbook frames onion skinning still images thaumatrope zoetrope
Year 6 Knowledge	**<u>Computer Systems and Networks</u>**	**<u>Data Handling</u>** **Big Data 1**	**<u>Computer systems and networks</u> - Exploring AI** **Safer Internet Day – <u>Online Safety</u> Year 6**	**<u>Programming</u>** **Introduction to Python**

Ingoldmells Academy Long-Term Map: Computing Cycle A

	Bletchley Park and the History of Computers 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. Explain the importance of historical figures and their contribution towards computer science. Present information about their historical figures in an interesting and engaging manner. Develop an idea for a computer of the future and create a simple design. Produce a simple audio advert with simple edits, which demonstrate an understanding of how to use the software.	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.	Explain what AI is and its basic functions. Identify real-life applications of AI that are commonly used in everyday life. Identify how AI understands and processes text and image prompts. Generate and refine prompts to achieve the best possible response from AI. Identify how AI generates code and how it can be useful in web design. Identify how AI can be a useful starting point for a project. Explain the key ethical considerations of AI. Debate the potential of AI replacing human roles, presenting well-structured arguments.	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.
Vocabulary	acrostic code audio advert brute force hacking chip and PIN system cipher date shift cipher advancement	algorithm chip commuter data encrypt infrared proximity	AI algorithm applications authenticity code ethical prompt	algorithm code command import indentation patterns random

	trial and error	QR code QR scanner wireless	refine	