Bletchley ark and the History of Computers

Year Six Knowledge

To know the importance of having a secure password and what brute force hacking is.

To know the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2.

To know about some of the historical figures that contributed to technological advances in computing.

To know what techniques are required to create a presentation using appropriate software.

To know sound clips can be recorded using sound recording software.

To know sound clips can be edited and trimmed.

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ 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.

Key vocabulary

acrostic code	audio advert	brute force hacking
Caesar cipher	chip and PIN system	cipher
combination	date shift cipher	discovery
invention	Nth letter cipher	password
pigpen cipher	scrambled	script
secret	secure	technological advancement
trial and error		

Bletchley ark and the History of Computers

Year Six Skills

- Learning about the history of computers and how they have evolved over time.
- Using past experiences to help solve new problems.
- Writing increasingly complex algorithms for a purpose.
- Debugging quickly and effectively to make a program more efficient.
- Remixing existing code to explore a problem.
- Changing a program to personalise it.
- Evaluating code to understand its purpose.
- Predicting code and adapting it to a chosen purpose.
- Using search and word processing skills to create a presentation.
- Understanding how search engines work.
- Using search engines safely and effectively.
- Understanding the importance of secure passwords and how to create them.

Exploring AI

Year Six Knowledge

Coming soon

Coming soon

Coming soon

Coming soon

Exploring AI

Year Six Skills

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon

Coming soon.

Big Data 1

Year Six Knowledge

To know data contained within barcodes and QR codes can be used by computers.

To know infrared waves are a way of transmitting data.

To know radio Frequency Identification (RFID) is a more private way of transmitting data.

To know data is often encrypted so that even if it is stolen it is not useful to the thief.

Key vocabulary

algorithm	barcode	boolean
brand	chip	commuter
contactless	data	encrypt
infrared	proximity	QR code
QR scanner	radio waves	RFID
signal	spreadsheet	systems analyst
transmission	wireless	

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ 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.

Big Data 1

Year Six Skills

- Understanding and identifying barcodes, QR codes and RFID.
- Identifying devices and applications that can scan or read barcodes, QR codes and RFID.
- Understanding how barcodes, QR codes and RFID work.
- Gathering and analysing data in real time.
- Creating formulas and sorting data within spreadsheets.
- Learning how 'big data' can be used to solve a problem or improve efficiency.

Intro to Python

Year Six Knowledge

To know that there are text-based programming languages such as Logo and Python.

To know that nested loops are loops inside of loops.

To understand the use of random numbers and remix Python code.

Key vocabulary

Algorithm	Code	Command
Design	Import	Indentation
Input	Instructions	Loop
Output	Patterns	Random
Remix	Repeat	Shape

Unit outcomes

Pupils who are **secure** will be able to:

- 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.

Intro to Python

Year Six Skills

- Decomposing a program into an algorithm.
- Writing increasingly complex algorithms for a purpose.
- Debugging quickly and effectively to make a program more efficient.
- Remixing existing code to explore a problem.
- Using and adapting nested loops.
- Programming using the language Python.
- Changing a program to personalise it.
- Evaluating code to understand its purpose.
- Using logical thinking to explore software independently, iterating ideas and testing continuously.

Big Data 2

Year Six Knowledge

To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'.

To know that devices or that are not updated are most vulnerable to hackers.

To know the difference between mobile data and WiFi.

Key vocabulary

Big Data	Bluetooth	Corrupted
Data	Energy	GPS
Improve	Infrared	Internet of Things
Personal	Privacy	QR codes
Revolution	RFID	SIM
Simulation	Smart city	Smart school
Stop motion	Threat	WiFi
Wireless		

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ 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.

Big Data 2

Year Six Skills

- Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files).
- Understanding that computer networks provide multiple services.
- Using search and word processing skills to create a presentation.
- Creating formulas and sorting data within spreadsheets.
- 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.

Inventing a Product

Year Six Knowledge

To know what designing an electronic product involves.

To know which programming software/language is best to achieve a purpose.

To know the building blocks of computational thinking, for example, sequence, selection, repetition, variables and inputs and outputs.

Key vocabulary

adapt	advert	algorithm
bugs	coding	debugging
design	edit	electronic
evaluate	facts	image rights
images	influence	information
inputs	loops	manipulation
opinions	output	photos
product	program	repetition
screenshot	search engine	selection

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ 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.

Inventing a Product

Year Six Skills

Flourish at Hatfeild
A Place to Grow

- Using past experiences to help solve new problems.
- Writing increasingly complex algorithms for a purpose.
- Debugging quickly and effectively to make a program more efficient.
- Remixing existing code to explore a problem.
- Changing a program to personalise it.
- Evaluating code to understand its purpose.
- Predicting code and adapting it to a chosen purpose.
- Using logical thinking to explore software independently, iterating ideas and testing continuously.
- Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions.
- Using design software Tinkercad to design a product.
- Creating a website with embedded links and multiple pages.
- Understanding how search engines work.

Online Safety

Year Six Knowledge

To know a digital footprint means the information that exists on the internet as a result of a person's online activity.

To know what steps are required to capture bullying content as evidence.

To know it is important to manage personal passwords effectively.

To know what it means to have a positive online reputation.

To know one common online scams.

Unit outcomes

Pupils who are **secure** will be able to:

- Discuss various issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help.
- Explain how sharing online can have both positive and negative impacts.
- Be aware of how to seek consent from others before sharing material online and describe how content can still be shared online even if it is set to private.
- Explain what a digital reputation is and what it can consist of.
- Understand the importance of capturing evidence of online bullying and demonstrate some of these methods on the devices used at school.
- Describe ways to manage passwords and strategies to add extra security, such as two-factor authentication.
- Explain what to do if passwords are shared, lost or stolen.
- Describe strategies to identify scams.
- Explain ways to increase their privacy settings and understand why it is important to keep their software updated.

Key vocabulary

anonymity	antivirus	biometrics
block	consent	digital footprint
digital personality	financial information	hacking
inappropriate	malware	online bullying
online reputation	password	personal information
phishing	privacy settings	private
reliable source	report	respect
scammers	screen grab	screenshot
secure	selfie	software updates

Online Safety

Year Six Skills

- Learning about the positive and negative impacts of sharing online.
- Learning strategies to create a positive online reputation.
- Understanding the importance of secure passwords and how to make them.
- Learning strategies to capture evidence of online bullying to seek help.
- Recognising that updated software can help to prevent data corruption and hacking.