Year / Topic	Term	National Curriculum Links	Length of Topic
5.3 Cryptography	Spring 1	DL2.1, DL2.3, CS2.3, CS2.4	6 Weeks

Resources Semaphore Flag template Morse code reference sheet Scratch	**Key Classroom ICT Activity**
Target Skills Encryption Decryption Password security	In this unit students will learn more about communicating information securely thorough an introduction to cryptography (the science of keeping communication and information secret). They will investigate early methods of communicating over distances, learn about two early ciphers, and consider what makes a password secure. By the end of the topic students will be able to: - Be familiar with semaphore and Morse code. - Understand the need for private information to be encrypted. - Encrypt and decrypt messages in simple ciphers. - Appreciate the need to use complex passwords and keep them secure. - Have an understanding of how encryption works on the web.
Curriculum Links History – *Cryptography through history.* Maths – *Encryption & decryption use mathematical functions.* SMSC – *Privacy, safety and identity.*	**Assessment - Progression Pathways** All children should – *Understands opportunities for communication.* *Understands networks and the opportunities they offer for communication. Uses technology safely and responsibly.* Most children should – *Decrypt messages using Caesar cipher and with an unknown key. Understand how to check if a webpage is encrypted.* Some children should - *Understand what constitutes a complex password and how to check the security certificates for a webpage. Explain the algorithm for the Caesar cipher. Decrypt messages using a general substitution cipher with an unknown key using frequency analysis.*
E-Safety Coverage Students learn how information can be communicated in secret over open channels, including the internet, using cryptography. They learn about the public key system used to sign and encrypt content on the web.	

Assessment Criteria	5.3 Cryptography
Emerging	✓ I can send and receive messages using Morse code and Semaphore. ✓ I can encrypt and decrypt messages using the Caesar and substitution methods.
Developing	✓ I can recognise the importance of keeping passwords entirely secret. ✓ I can recognise the need for encryption when using the web.
Secure	✓ I can send and receive messages using Morse and Semaphore beyond line-of sight. ✓ I can decrypt messages using the Caesar cipher with an unknown key. ✓ I can recognise the importance of using complex passwords. ✓ I can understand how to check if a webpage is encrypted.
Mastered	✓ I compare and contrast Morse and semaphore with the internet. ✓ I can explain the algorithm for the Caesar cipher. ✓ I can decrypt messages using a general substitution cipher with an unknown key using frequency analysis. ✓ I can understand how to check the security certificates for a webpage.