The Story of

Lorenz

Enigma's lesser-known cousin that served Hitler's High Command

Binary codes

Can you solve this grid?

	64	32	16	8	4	2	1
32							
119							
32							
8							
28							
65							
34							
28							

Shade in the squares that indicate which of the numbers **across the top** you need to add together to get each number **down the side**.

How does this relate to binary numbers?

What would "1101101" be as a decimal number?

What is "128" as a binary number?

Think about:

Binary numbers are in "base 2" – there are 2 symbols (0 & 1). What would numbers in "base 3", "base 4", etc look like? What would the column headings be for each of these?

Enigma facts

Make a note of some facts about Enigma so that you can compare it to Lorenz later:

Think about:

What are the main differences between Enigma and Lorenz? What are the similarities?

Vernam ciphers

Do you understand the difference between the "inclusive or" and "exclusive or" operators?

Can you come up with examples to demonstrate the difference?

Think about:

Why might the difference between an *exclusive* and an *inclusive* "or" operator be important?

Vernam ciphers – teleprinter code

Think about:

This type of addition is called “addition modulo 2”, and is an example of “modular arithmetic”. Where else might this be used? There’s an example that you encounter every day.

Lorenz

Make some notes! What do you find interesting? What are the similarities and differences with Enigma?

What does the Lorenz machine actually do?

Draw a diagram of the Lorenz machine:

Think about:

How many settings?

Cam settings:

Wheel start positions:

Think about:

Why did each wheel have a different number of cams? Why were these particular numbers chosen?

Notes and questions:

What else do you want to know? Is there anything you don't understand? Make some notes here to ask at the end of the session, or to research further after you've left.