

## Binary Activity:

Create and Name your own Base 2 positional number system.

- 1) Create your own symbols (one for the unit and one to represent a lack of the unit) and what they represent in our own Hindu-Arabic Number system.
- 2) Create the rules for how you want your system to work, and what the place values are. Provide at least 3 examples that help illustrate how your rules work.
- 3) Provide at least 3 example problems converting from your number system to the Hindu-Arabic number system. (label and write the solutions on the back of this page)
- 4) Provide at least 3 example problems converting from to the Hindu-Arabic number system to your number system. (label and write the solutions on the back of this page)
- 5) Answer the following questions about this number system:
  - A) Can this number system represent every counting number or are there missing numbers? If so which ones can you find missing?
  - B) Are there any numbers that you can represent two different ways? Which ones?

This is the \_\_\_\_\_ number system. It is base \_\_\_\_\_ and is a \_\_\_\_\_ system

## Code Breaker Activity!

You have been given an assignment.

A secret assassination attempt has been uncovered by Her Majesty's Secret Service, MI6, on a day coming in the following month from now. The undercover operative who discovered the plot had transmitted the details except for the day. The operative discovered they were being monitored and managed to send the photograph below.



We believe the photo somehow communicates the day of the assassination attempt through some sort of use of positive/negative spacing of the books. The operative has disappeared and stopped all communications one week ago today, however yesterday a package arrived at their current residence in Bletchly Park, UK. Inside the package is a device and this second photograph pictured below. From an earlier transmission we received the following link:

[DO or DO NOT, there is no try](#) (please do not change the code or our team will no longer have access)

The link appears to route to an operational computer design identical to the device found at the residence in Bletchly Park. We believe that it holds the answer on how to decode the communication on the day of the assassination attempt from their original photograph.



It is imperative that you discover the meaning of this and the day of the plot. Please include a detailed explanation of your solution and clearly state the date of the attempt.

God Save the Queen.