grok academy | Schools Cyber Security Challenges
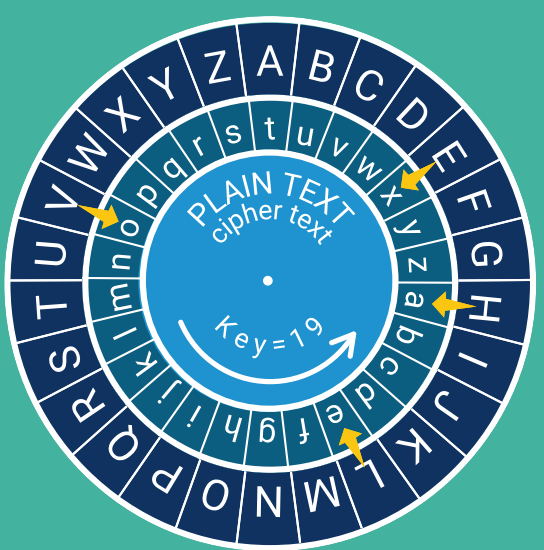
Ways of encrypting data

Encryption keeps data private and safe

Data representation and manipulation
Everything stored in a computer is represented as numbers; text, images, videos... everything! We can use code to perform mathematical operations on this data to hide information and keep secrets.

3 cool ways to encrypt and decrypt data

HELLO
↓ ↓ ↓ ↓ ↓
axeeh

Rotation Ciphers
By shifting letters, we can disguise the original message to look like something else.

brq npb lg **brq rpb**
↓ ↓ ↓ ↓
the ??e ?? the h?t

word	Frequency (rank)
the	1
be	2
to	3
of	4
a	5

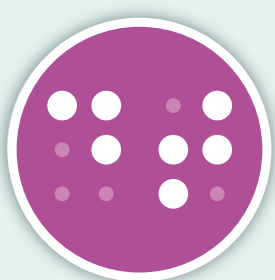### Frequency analysis (distribution of the letters in a text)
If a message is substituted with random letters, frequency analysis (with most common letters and most common words) can be used to decrypt the message.

0101010
1111010
→ 1010000

Encrypting with binary
The individual bits of the message and the key are compared to create the encrypted message. If the bits are the same, the output is 0. If the bits are different, the output is 1.

Data encryption explores **Data representation**, one of the ten key concepts of the **Australian Curriculum: Digital Technologies**. For more information go to **https://aca.edu.au/curriculum/**

Want to access this challenge and other FREE resources?

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