TOP SECRET

Cryptography is the use of codes and ciphers to keep secrets, or send secret messages.

Codes are a system for changing entire words or phrases into something else.

Ciphers are a method for converting one set of symbols into another.

But the words code and cipher are often interchanged.

Morse code, for example, is actually a cipher.

It converts letters and numbers into a series of dots and dashes.

Cryptography has been around for a very long time, thousands of years in fact.

For much of that time, the process of "encryption" involved pen and paper, or simple machines.

That changed with the invention of electromechanical machines in the early 1900s.

The introduction of electronics and computing led to the very complex encryption systems we have today.

Modern cryptography uses mathematical equations and secret keys to make information and communications safe.

An example would be the information people store on their home computers, which is why it is important to have a good password.

But the older, simpler methods of encryption can still be a lot of fun to create and use.

There are many, but the one we have chosen is the Caesar cipher.

It was named after Julius Caesar, as he used this cipher to encrypt messages.

The Caesar cipher is basically two (or more) wheels, and each wheel displays the alphabet; although numbers or some other form of symbols can be used.

The inside wheel turns, so any of its letters can line up with any letters of the outside wheel.

Of course the cipher itself won't help you to encrypt (write) or decrypt (decode) the message.

First you have to select the key, which in the case of a Caesar cipher is the number of shifts or rotations of the inside wheel.

A shift of one means that **A** becomes **B**, **B** becomes **C**, and so on.

A shift of 13 would mean **A** becomes **N**.

Caesar is believed to have used a shift of three, so **A** became **D** when encrypting, and **D** became **A** when decrypting.

Your challenge is to make your own Caesar cipher.

You will need some thick card paper, or you could use recycled cardboard, scissors, a pencil, a marker pen, and a split pin.

You will need to cut out two circles, write the alphabet clockwise around the outside of the circles, poke a hole through the centre of both circles, and insert the split pin through the holes to create a spinning wheel.

Children's University Tasmania members can earn stamps in their passports for this challenge, at the discretion of their school coordinator.

There are printable Caesar wheel templates you can access on line: bletchleypark.org.uk/blog/how-to-make-and-use-a-caesar-wheel

Of course, to exchange secret messages you will need a friend who also has a Caesar cipher.

Then it's just a matter of sharing the key with your friend, and encrypting and decrypting each other's messages.

Using a cipher shift of 3, decrypt this word: k-h-o-o-r