



# STEAM for good

# Cyber Security

In this activity you're going to be making a Caesar Shift Cipher. These date back to Julius Caesar where he used them to send messages to his military leaders. This is an early example of an algorithm.

The Caesar Shift Cipher works by selecting a SHIFT number and substituting the letter for the letter at the SHIFT position.

For example, let's encrypt the acronym BSW using SHIFT 1 as the key:

1. Move the OUTER circle one place to the right so the letter C is now over the smaller letter b
2. Write down the letters on the OUTER circle that are above each letter of BSW (B becomes C; S becomes T and W becomes X)

So the encrypted message would be CTX SHIFT 1

## More things to explore

Cyber Snakes. Based on the classic Snakes and Ladders, explore how to stay safe online  
[tinyurl.com/3spnaprw](https://tinyurl.com/3spnaprw)

Code breaking challenge  
[tinyurl.com/9fd9w5vk](https://tinyurl.com/9fd9w5vk)

Can you help the residents stay safe as they come under attack from the Phisherman?  
[tinyurl.com/t9e3zzah](https://tinyurl.com/t9e3zzah)

Learn about ciphers in this interactive activity  
[tinyurl.com/7pf4yhm9](https://tinyurl.com/7pf4yhm9)

CyberFirst: a programme for young people that introduces them to the fast paced world of cyber security  
[tinyurl.com/323z3msq](https://tinyurl.com/323z3msq)

Competition for UK secondary school and sixth form students  
[tinyurl.com/11locma3](https://tinyurl.com/11locma3)

## Kit list

- ✓ Printer
- ✓ Thin card (e.g. a cereal box)
- ✓ Pen/pencil
- ✓ Scissors
- ✓ Adhesive
- ✓ Paper fastener

## Some Ciphers to decode

- +2 ygneqog vq dtkvkuj uekgpeg yggm
- 3 qljiv ciltbop abpfdkba xka yrfiq zilpprp
- + 12 oaxaege ime ftq iadxp'e rundef  
bdasdmyymnxq qxqofdazuo oaybgfqd
- 12 qczcggig kog igr hc rsqcrs usfaob  
asggousg wb kk2

## Challenges

- Can you write some secret messages for others to decode?
- How could you make the Caesar Shift Cipher more secure?

## Have a go activities

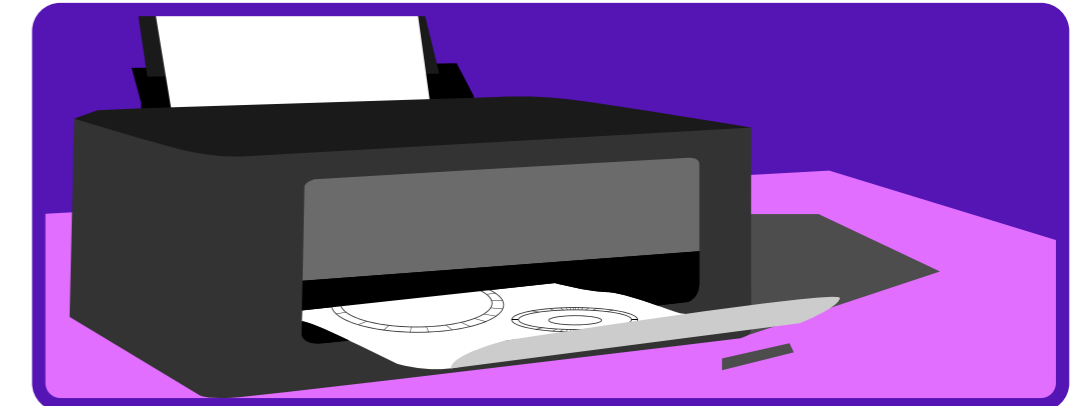
Code your own Caesar Shift Cipher in python:  
[tinyurl.com/3b7z9qs8](https://tinyurl.com/3b7z9qs8)

Create a random password generator in python:  
[tinyurl.com/2dwbj6ew](https://tinyurl.com/2dwbj6ew)

Create a secret agent chat in python:  
[tinyurl.com/rsweh2q8](https://tinyurl.com/rsweh2q8)

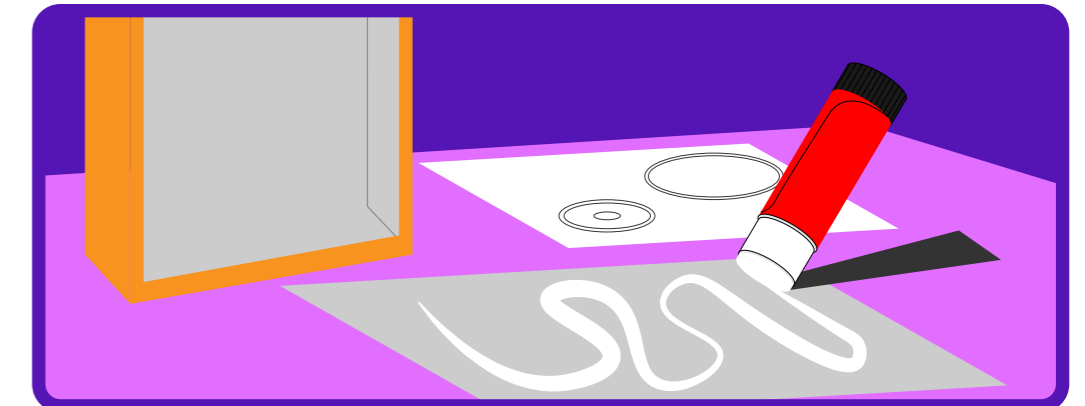
1

Use a printer to print off the Caesar Shift Cipher



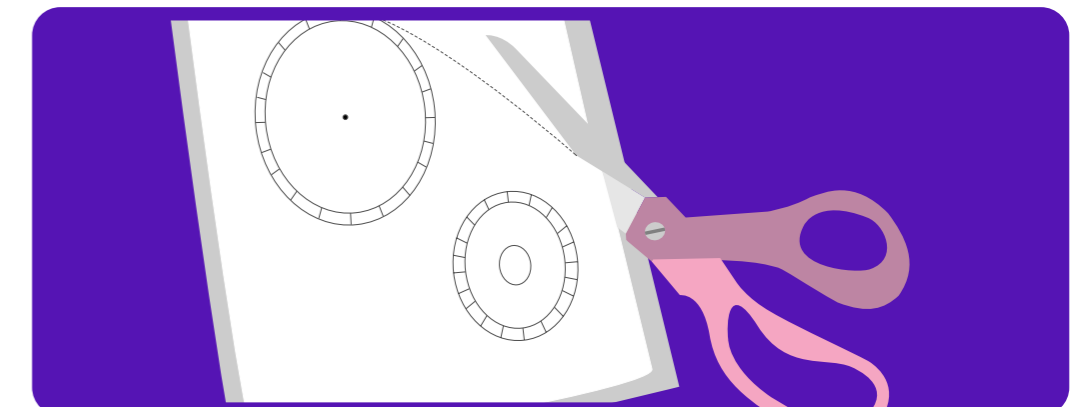
2

Take the printout and stick it to the card using the adhesive



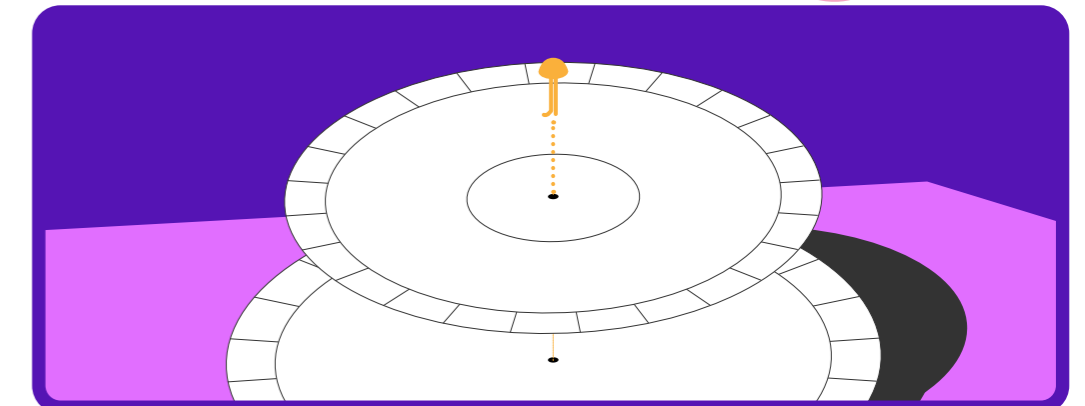
3

Carefully cut out both of the circles



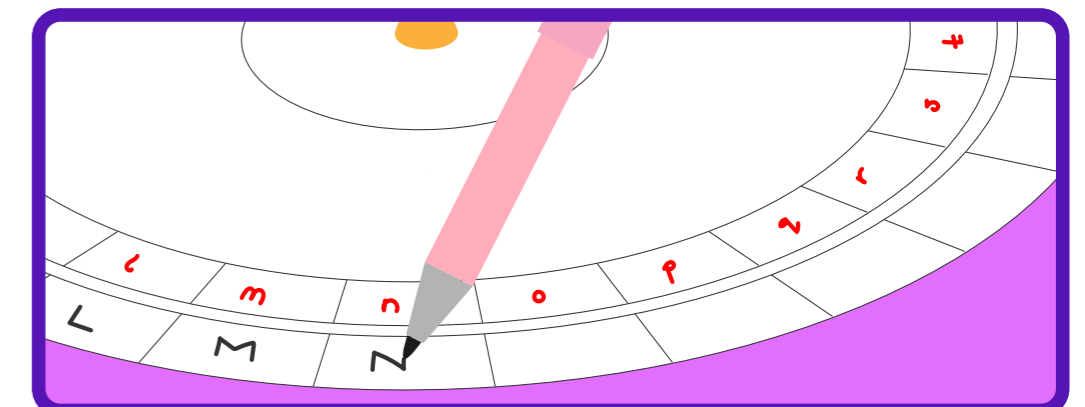
4

With the paper fastener, attach the small circle to the big one, using the centre line to help with alignment



5

Write the letters in red lowercase on inside and black uppercase on the outside in alphabetical order



# Caesar wheel

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