

Spies and Espionage

Caesar Cipher Code Wheel

In the world of espionage, keeping information a secret is vital. Messages can be encrypted – made secret and decrypted – turned into plain text. One of the simplest ways to encrypt information is by using a Caesar Cipher. Named after the Roman Emperor Julius Caesar because he used it to communicate with his generals, this method involves ‘shifting’ the alphabet forwards so that each letter matches up to a different letter. In the table below, the alphabet has been shifted 4 places forwards. The number of places the alphabet is moved forwards is called the ‘key’ so the code set out below is a **Caesar Cipher with a key of 4**.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d

We can then use this code to either encrypt or decrypt messages.

e.g. ESPIONAGE would become **iwtmsreki** in code.

1. Can you decode this message using the same key?

aipp hsri kssh wxevx = _ _ _ _ _

You can make the encryption and decryption process easier by using a cipher wheel to represent the shifts in the alphabet. If you are sending a message to someone else then you only need to provide them with the **key**.

2. Cut out the two wheels on the last page (printing or sticking them on to card would work even better) and fit them together one on top of the other, using a paper fastener pushed through the point which marks the centre of each wheel. Turn the paper fastener round one complete turn to ensure the wheel can rotate smoothly.
3. Line up the wheels so that both A's are matching. Imagine that you have been given a Caesar Cipher key of 6 – turn the inner wheel 6 spaces to the left in the direction indicated by the arrow. Your wheel is now set up to encrypt and decrypt using a key of 6. Use a paper clip if you want to hold the wheels in place to ensure your accuracy.

If you are *encrypting* use the letter on the inside in your code.

If you are *decrypting*, your message will come from the plain text letters on the outside.

4. Using the key of 6 can you decode this message?

XOMNZ GMGOT _ _ _ _ _



5. Well done – now choose your own key ____ and encrypt the following message:

You cant read this now _ _ _ _ _

Fantastic! You have completed your basic training in Caesar Cipher Code!

6. Now you are ready to add the code wheel to your project. Stick the bigger disc down in your chosen place with the lower case letter 'a' facing 12 o'clock. Check that the inside disc can circulate freely.

Did you know? Some messages from spies have been found in hollowed out coins – almost impossible to spot in a pocket full of change!

7. Cut out the coins below and their bases. Stick the bases on to your project and stick the top part of the coin so the flap can be used to open and close the front of the coin.

8. Write a message to be decoded using the cipher wheel on the inside of each of the hollow coins. The value of the coin could be used as the 'key' for the code or you could find another ingenious way to indicate the key – e.g. a maths sum could reveal the answer!



