

You don't always need specialist knowledge to break codes but you do need a certain set of skills including:

Problem solving

Imagination

Logic skills

Critical Thinking

Perserverance

Language skills

Mathematical skills

Resilience

Patience

Planning skills

The good news is that you can develop these skills with practice.

Try some or all of these cryptography challenges to prepare for your visit to Bletchley Park. You could also use them after your visit to develop your skills further or as a fun challenge even if you are not visiting Bletchley Park.

Of course, not every codebreaker has all of these skills. That is why cooperation and team working skills are also vitally important.



CAN YOU BREAK THE CODE?

· - - · · - · - / - · - - - · · / · - · - - · - / - · · · - · - · ·
 · - · · · · · · - · - / - · · · · · · / - · · · · · · - · - ·
 / - · - - - · - / · · · · · - · / - · - - · · / · - / - ·
 - - - - · - / · · - · - · - -

Write the deciphered letters above the code as you work through the message.

- 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 - - · ·

THINK ABOUT...

How long did it take you to break the code?

What steps did you take to try and break it?

What difficulties did you face when attempting to complete the code? A Bletchley Park employee may have had to overcome the same ones.

Did you have to decode each letter or could you guess some based on letters you had already found?

What would you do differently next time to break the code faster? The Codebreakers at Bletchley Park had to work out their codes very quickly.

WRITE YOUR OWN MESSAGE

Write each letter of your message in one of the white boxes.
Use / to show a space between words.

- | | |
|--------|--------|
| A ●— | N —● |
| B —●●● | O ——— |
| C —●—● | P ●——● |
| D —●● | Q ——●— |
| E ● | R ●—● |
| F ●●—● | S ●●● |
| G ——● | T — |
| H ●●●● | U ●●— |
| I ●● | V ●●●— |
| J ●——— | W ●—— |
| K —●— | X —●●— |
| L ●—●● | Y —●—— |
| M —— | Z ——●● |

Pass your message to somebody else.
Can they decipher it?

They should write the deciphered letters
in the shaded boxes.

ALPHABET TALLY

Pick a paragraph of a book - any book, as long as it is in English!

Count how often each letter appears.

Use the boxes below to create a tally (e.g. IIII) to keep track.

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	

Which letter appeared the most frequently?

Which letter appeared the least frequently?

How might this information help you when trying to crack a code?

A ●—	N —●
B —●●●	O ———
C —●—●	P ●—●—
D —●●	Q ——●—
E ●	R ●—●
F ●●—●	S ●●●
G ——●	T —
H ●●●●	U ●●—
I ●●	V ●●●—
J ●———	W ●—
K —●—	X —●●—
L ●—●●	Y —●—
M ——	Z ——●●

Compare the Morse code alphabet to your alphabet tally. Can you work out why the shortest signs e.g. · / - / ·· / ·- are assigned to the letters e, t i and a?

CREATE YOUR OWN CIPHER

A		1	
B		2	
C		3	
D		4	
E		5	
F		6	
G		7	
H		8	
I		9	
J		0	
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			
W			
X			
Y			
Z			

YOU COULD...

- Switch letters of the alphabet around either randomly or with some sort of pattern. e.g. A = Z
- Use numbers instead of letters, again either randomly or with some sort of pattern. e.g. A = 1
- Use symbols, emojis, patterns etc. e.g. A = 😊

Now write a message in your cipher and give it to someone else to decipher.

You have a choice:

either give them the message key (your cipher) as well as the message.

or just give them the message.

Which would you prefer if you were the codebreaker? Why?

What are the advantages and disadvantages of:

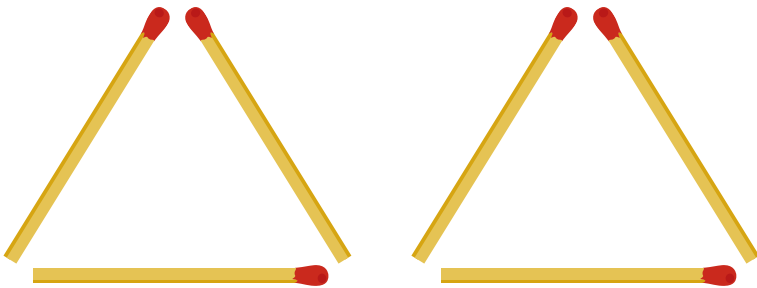
- random ciphers?
- ciphers that have a pattern?

RESEARCH TIP: for more information and cipher ideas look up terms such as mono-alphabetic substitution cipher, keyword cipher, Atbash cipher, Caesar cipher, numeric cipher, Babington plot.

MATCHSTICK CHALLENGE - PART 1

Figuring out puzzles under time pressure was part of what it meant to be a codebreaker at Bletchley Park. See how you get on with the matchstick challenge.

1 Set out your matchsticks like this:



2 Move the matchsticks to create four triangles.
You can only move two matchsticks. They are allowed to overlap.



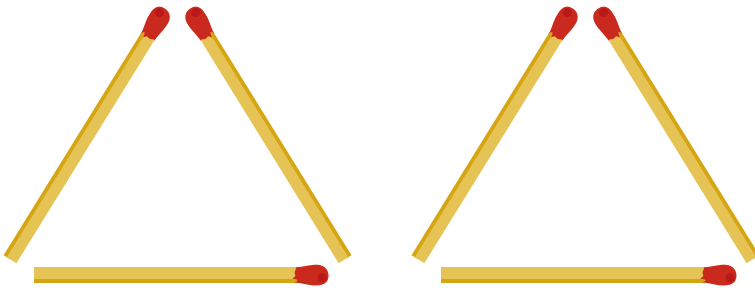
MATCHSTICK CHALLENGE - PART 2



The rules have changed!

1

Set out your matchsticks like this:



2

Move the matchsticks to create four triangles.

You can move three matchsticks this time **but this time they are NOT allowed to overlap.**



MATCHSTICK CHALLENGE - REVIEW



How did you go about solving the problem?

Did you try lots of different solutions until you found the one that worked?
(this is called trial and error)

What was difficult?

How did you feel when you were attempting the problem? Why?



How did you feel when the rules changed?

The workers at Bletchley Park would have felt exactly as you did! They had to solve difficult problems under lots of pressure without a lot of time. They often had to use “trial and error”, meaning they had to test lots of different methods and different possibilities until they found the ones that worked.

The rules changed a lot for them as well. The Enigma machine settings changed every day at midnight Berlin time. The Naval Enigma machine went from 3 rotors to 4 rotors. The Lorenz cipher was introduced and all the code books, settings sheets and cipher machines were being constantly updated.



Do you think you have what it would have taken to be a codebreaker?