

# TRY THIS OUT!



## POLYBIUS SQUARE

Time: 10 Minutes  
Difficulty: easy

Use technology that's over 2,000 years old to send a message that even a spy will have trouble reading! In this activity, transform your message into a code which can only be decoded by someone else with the same Polybius square grid.

### WHAT YOU NEED

- A friend
- Two copies of the [Polybius square template](#)
- Paper
- Pencil

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

### MAKE IT

1. Print or draw two copies of the Polybius square template for you and a friend.
2. Write out the letters A-Z and the numbers 0-9 randomly within the square. Make sure to only put one letter or number in each cell.
3. Write down your message on your piece of paper. Don't say it out loud!
4. To encrypt your message, find the first letter of your message on the square (example: N).

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





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### MAKE IT

- On a separate piece of paper, write the number at the beginning of the row that your letter is in (example: for N, the first number is 2).
- Write the number that is at the top of the column that your letter is in (example: for N, the first number is 1).
- Each letter is represented by two numbers: the first is the number found in step 4 and the second is the one found in step 5 (example: N would be 21).
- Leave a space, then proceed to the next letter in the word. Leave two spaces at the end of each word.

### TEST IT

Swap your piece of paper with the encrypted message on it with your friend's paper and decrypt their message using the Polybius square.

Example:

16      42 51 53 13      22 44 26 13 44 22 26!

Answer:

I love museums!

### EXPLAIN IT

You can keep messages secret by coming up with a code where you replace words or groups of words with groups of letters or numbers, like the Polybius square does. You can also rearrange letters or use substitutes to disguise the message, which is called a cipher. So, you are using a cipher if you come up with code names for people and places that only you and your friend know about. Creating a code or cipher is called *encryption*.

### OBSERVE IT

Alan Turing was a mathematician who was a huge contributor towards allied victory during the Second World War. The German armed forces used a machine called the Enigma to send coded messages. Turing and another code breaker eventually invented the Bombe, a device used by code breakers to read coded messages from the enemy.

### GO FURTHER

You can even further encrypt your message, in case your Polybius square is intercepted. Try adding a rule, like writing down the two-digit code for the letter directly under the letter you mean to write. If you're at the bottom row, it would be the code for the very top row in the same column. Make up your own rules and see if your friend can still decode your message!