

How Secure is your Door?

Crack the Code

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One of the ways that some locks can be opened is by using a combination code.

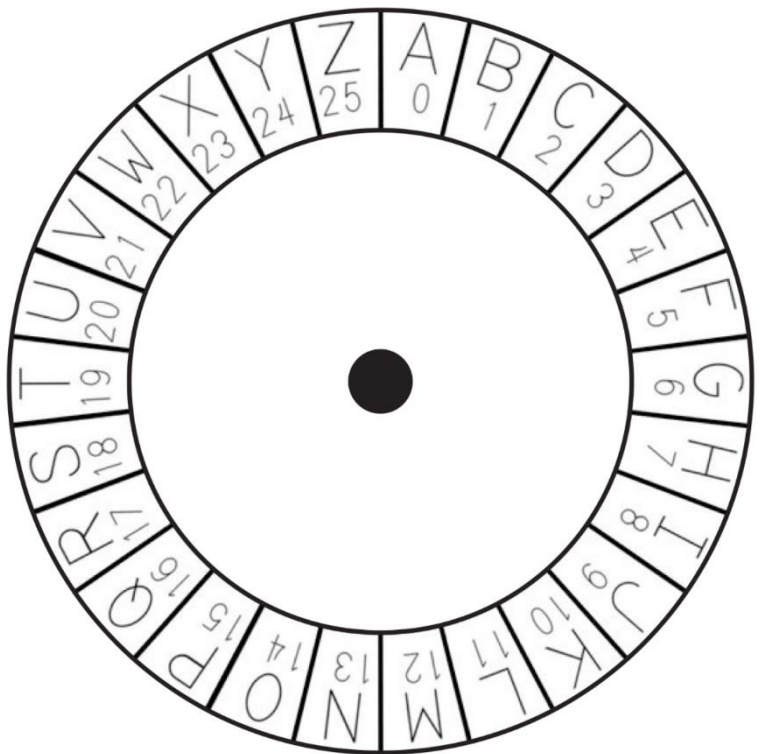
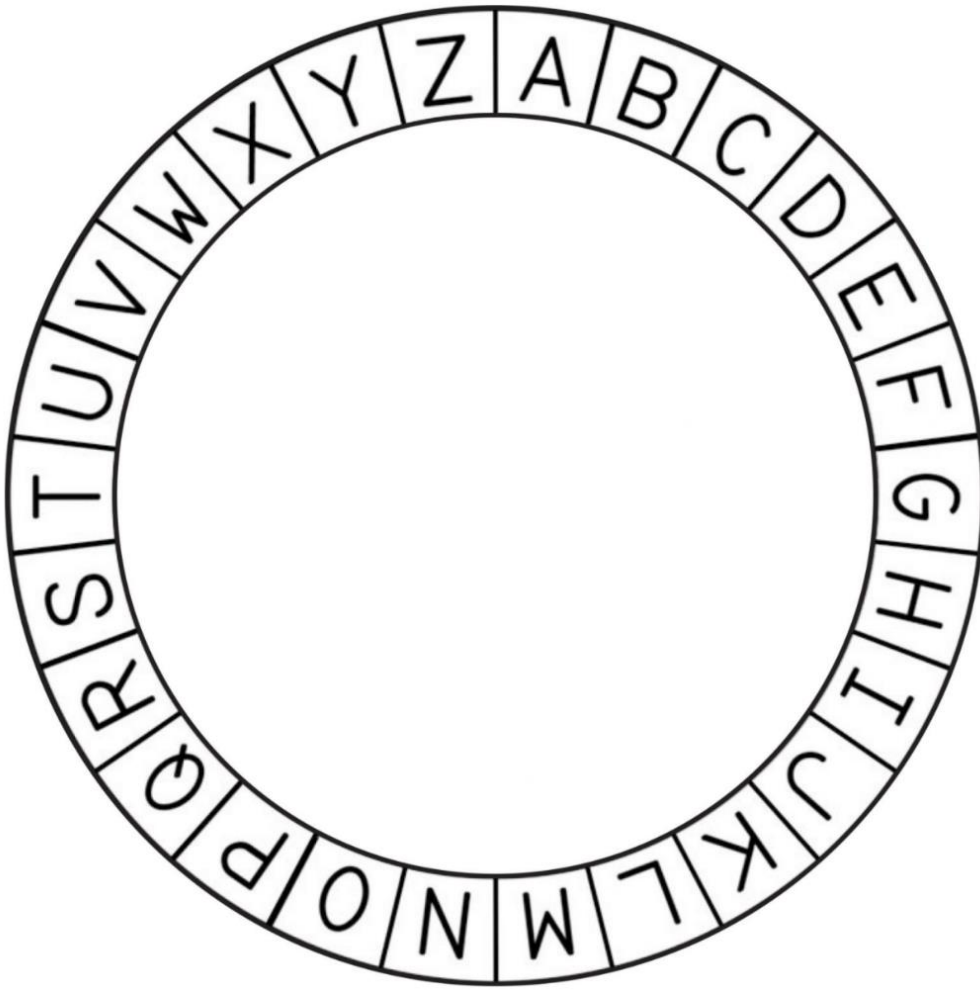


You have a combination lock for your bike, and you need to let a friend know the code, but you don't want to write it down. What could you do? One way is to encrypt the message (or use a secret code).

You are going to use a cipher to create a secret code. The cipher you are going to use is called the Caesar Cipher, named after Roman Emperor Julius Caesar. It was one of the first ciphers to be developed and is a simple 'substitution cipher' where you replace each letter of the alphabet with another letter by shifting the whole alphabet a certain number of letters. To help you do this you can use a cipher wheel.

Make a Cipher Wheel

Cut out the two disks on the next page. Place the small disk on top of the large disk and use a split pin to hold them together. The disks should be able to spin around so you can line up the letters with each other.



Task 1: Encode your school

Write down the name of your school:

Using your cipher wheel, shift the wheel 4 places so the inner "E" now lines up with the outer "A". Encode and write down the name of your school by substituting the letter on the outer wheel with the letter on the inner wheel, e.g. "A" will become "E".

The "key" for your cipher is 4, because you moved the wheel 4 places to the left.

Task 2: Setting a code

Write down a short sentence about your favorite food:

Choose a key and encode your sentence:

Show your coded sentence to a partner (make sure you hide the original sentence!). Tell them the key and ask them to decipher the sentence. Can they work out what you originally wrote?

Task 3: Setting and cracking a code

The combination lock you have on your bike has 5 barrels that need to be moved around to the correct position to open it. Each barrel has letters on it which will spell out a 5-letter word once they are lined up correctly.

Choose a 5-letter word:

Choose a key to set your cipher wheel to:

Encode your word:

Give your 5-letter code to someone else (DON'T tell them the key!). Can they work out what the key is and crack your code?