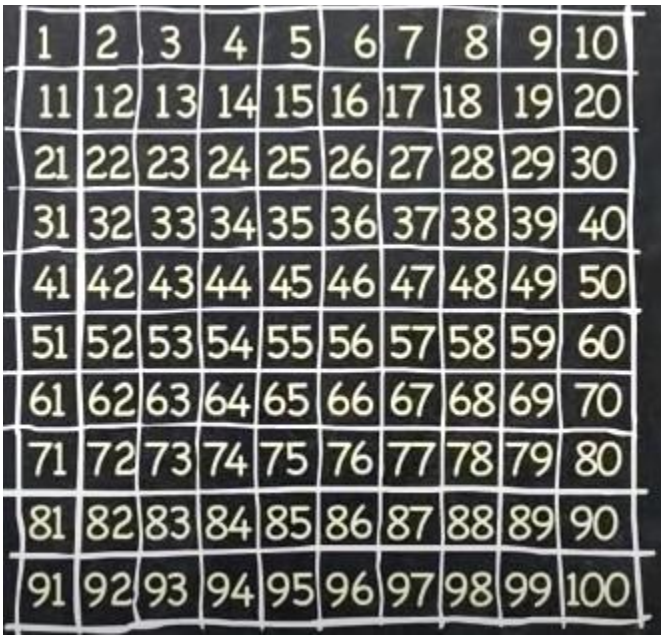
Pronunciation:

In mathematics, the sieve of Eratosthenes is an ancient algorithm for finding all prime numbers up to any given limit.

It does so by iteratively marking as composite (not prime) the multiples of each prime, starting with the first prime number, 2.

Let’s find the prime numbers in a set up to 100:



First, we eliminate the number 1:

… why?... because a prime number must be greater than 1... therefore, 1 is not a prime number.

Next, we add 2 as a prime number, as the only even prime number, because it is bigger than 1 and is only divisible by itself and 1... but we must eliminate all even numbers:

… if a number ends in 2, 4, ,6, 8, or 0, then one of its factors is 2.

Next, we add 3 as a prime number, because it is bigger than 1, and is only divisible by itself and 1:

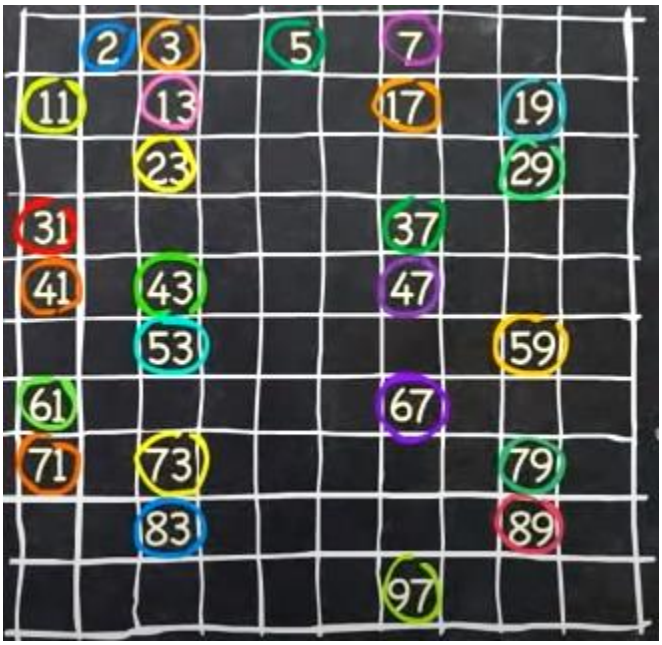
… but we will want to eliminate all multiples of 3:

Next, we repeat the same process for 5:

Then, we repeat the same process for 7:

Finally, we repeat the same process for 9:

Now that we found all the multiples of 2 through 10, all we have left are prime numbers.



Why are they prime numbers? Because they only have factors of 1 and themselves.