

The concept of primality probably originated with the ancient Greeks over 2.5 millennia ago. In fact, the very first recorded definition of prime numbers came from Euclid's *Elements* around 300 BCE. Interestingly enough, there is indirect evidence that the concept of primality may have been known earlier to Pythagoras and his followers.

The Greeks called what we know today as number theory arithmetic. The first sieve was proposed by Erasthosthenes (284-204 BCE). The Sieve of Erasthosthenes is the only known algorithm from antiquity for primes that can be called a primality test. Today, however, it is considered a highly inefficient test.

The Arabs preserved much mathematics from antiquity. Ibn al-Banna (ca 1258-1334) appears to be the first to observe that when using the Sieve of Erasthosthenes, one can restrict attention to prime divisors less than  $\sqrt{n}$ .

Leonardo of Pisa, more famously known as Fibonacci (ca 1170-1250), is a good example of the resurrection of mathematical interest in Europe during the 13th century. He was tutored by an Arab scholar while living in North Africa, and later published *Liber Abaci*, or the *Book of Calculation*. In his book, Fibonacci gave an algorithm to determine if  $n$  is prime by dividing  $n$  by natural numbers up to  $\sqrt{n}$ . This is the first recorded instance of a deterministic algorithm, where a deterministic algorithm follows the same sequence of operations when executed with the same input.