

Euclid

Euclid was a Greek mathematician who was also known as Euclid of Alexandria. He was born sometime around 365 BCE in Alexandria, Egypt and died around 300 BCE. Not much about Euclid's life has survived. However, it is known that he lived during the reign of Ptolemy I, which was 323 BCE-283 BCE and that he taught mathematics in Alexandria. It is also said that he founded a mathematics school there. It is highly probable that he studied in Athens under one of Plato's students.

Euclid wrote many books; at least five of them have survived to this day. His most famous book is called the *Elements*. It was translated from Arabic into Latin and was published in Venice around 1482. Until the 19th century, when people referred to geometry, they meant Euclidian geometry, as it became the foundation on which all geometry rested. All the textbooks and work done in geometry until that date was based on the Euclidian geometry discussed in the *Elements*. It was only after the 19th century that non-Euclidian geometry started.

Like many other Greek philosophers and thinkers of the time, Euclid wanted to prove that things were true by using logic and reason. In the *Elements*, Euclid relied on logic and reason to discuss a number of theories at the time. To prove the theory or concept, he made very few assumptions, which are called postulates and used them to prove the theorem. The book starts out by giving definitions of some geometry concepts, such as what a point is or what a line is, and then uses them to prove other geometrical concepts, such as all right angles are equal or that if one thing is equal to a second thing and a third thing is equal to the second thing, then that means the first and third things are also equal.

The *Elements* has thirteen volumes. The first six volumes focus on geometry; volumes seven, eight, and nine examine number theory; volume ten is on irrational numbers, and the last three volumes deal with solid geometry. Though not all the work and theorems belong to Euclid and many rely on the work of others before him such as Exodux, Pythagoras, Hippocrates, and Thales; however, Euclid made a few discoveries in the number theory. In addition, the main unique contribution of Euclid was that he was able to gather all these theories and arrange them in a very easy and simple way to make the theories and text more understandable.

One of Euclid's major ideas in number theory is that there is an infinite number of prime numbers. A Prime number is a number that can only be divided by the number one or by itself. Examples of prime numbers are: 1, 2, 3, 5, 7, etc.

Other works by Euclid, some of which still survive till this day are: *Data*, *On Divisions of Figures*, *Optics*, *Conics*, and *Book of Fallacies*.

There are many applications to Euclidian geometry. Examples of these applications are: surveying, architecture, art, measurements, and even efficient packing, etc.

Name _____

Date _____

Worksheet

Multiple Choice:

1. Euclid was a:

- a. Mathematician
- b. Historian
- c. Explorer
- d. Geographer

2. A Prime number is a number that:

- a. Can only be divided by the number one
- b. Can only be divided by the number one or by the number two
- c. Can only be divided by the number one or by itself
- d. Can only be divided by itself

Fill In:

3. Euclid's most famous book is called _____.

4. Euclid's most famous work was translated from _____ into Latin and was published in Venice around 1482.

5. Like many other Greek philosophers and thinkers at the time, Euclid wanted to prove that things were true by using _____ and reason.

6. One of Euclid's major ideas in number theory is that there is a _____ number of prime numbers.

List three works written by Euclid:

7. _____

8. _____

9. _____

True or False:

____ 10. The book called the *Elements* has thirteen volumes.

____ 11. Until the 19th century, when people referred to geometry, they meant Euclidian geometry.

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