

Plato and math



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There are many notable figures in history that have done considerable work in the area of mathematics. As one of the most known and most influential personalities of all time, although not as well known as a mathematician as he is a philosopher, Plato was a great advocate of the study of mathematics. He founded the Academy in Athens in 389 BC where he espoused the thorough study of mathematics above all other things since it familiarized the mind with relations that can only be apprehended by thought.

He believed that mathematics provided the finest training for the mind. As he was a philosopher, the way Plato discussed his beliefs about mathematics was through the use of his Dialogues. In one of his dialogues entitled “Parmenides”, he explains the Theory of forms. The Theory of Forms talks about objects as we see them as an imperfect imitation of the perfect objects that they represent. To Plato, there is no such thing as a perfect circle as we know through our senses, but only physical forms that resemble a circle.

He speaks about the circleness of an object as an imperfect imitation of the perfect circle which it strives to represent. The physical circle that we see and know is only an approximation of the ideal circle. Plato also founded a geometric approach to mathematics in his dialogue entitled “Timaeus”. Here, he discussed the platonic solids - a mathematical model of matter. Accordingly, platonic solids are mathematical constructions of the elements. The importance of Plato’s study of mathematics does not go unrecognized.

His view on the order and hierarchy of things is something that has been built upon and explored by his students for which we have found infinite use

of today. Both these dialogues have paved the way towards the modernization of mathematics. Plato plays with the emphasis of form over matter. There is a stress on idealization, distinct from the physical objects that we know. According to Plato, everything that appears to us is changeable and deceptive, so we should then base everything on his world of ideas, which accordingly, are both constant and true.

Emphasizing form over matter, we emancipate mathematics from intuition and the senses as there arises a bivalence that establishes a logical basis for mathematical truth. This strict bivalence as presented by Plato makes the study of mathematics too simple and elementary, when in reality; the most elemental forms are of a much complicated nature. There are several more problems that arise in using Plato's studies in mathematics. On the one hand, we must take notice that Plato uses mathematics only as an example.

He uses mathematics as an example of abstract constructs to differentiate between opinion and knowledge. Mathematics to Plato provides a way of reasoning. In fact, he extends his theory beyond the realm of mathematics and applies it in the field of social ethics. His treatise on the " Republic" furthers his Theory on Forms and cascades this into his treatise on the ultimate good, and the World of Light and Shadows. In this way, we are reminded that Plato is not a mathematician, but is in fact a philosopher. He uses abstraction and abstraction alone.

This approach is much too simplistic in the sense that it rejects important intuitive representations. It focuses on the premise of inductive reasoning, and uses inductive reasoning by itself. Another problem is that it focuses on

mathematics as a purely conceptual and logical endeavor. There seems to be no determination of the relationship between mathematical understanding and the “lived experience”. It poses the problem of reconciling the objective validity of logic with the subjectivity of lived experience.