

FRAGMENTS OF THE BOOKS ON ARITHMETIC.

Anatolius of Alexandria

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FRAGMENTS OF THE BOOKS ON ARITHMETIC.(1)

What is mathematics?

Aristotle thinks that all philosophy consisted of theory and practice,(2) and divides the practical into ethical and political, and the theoretic again into the theological, the physical, and the mathematical. And thus very clearly and skilfully he shows that mathematics is (a branch of) philosophy.

The Chaldaeans were the originators of astronomy, and the Egyptians of geometry and arithmetic....

And whence did mathematics derive its name? Those of the Peripatetic school affirmed that in rhetoric and poetry, and in the popular music, any one may be an adept though he has gone through no process of study; but that in those pursuits properly called studies,(3) none can have any real knowledge unless he has first become a student of them. Hence they supposed that the theory of these things was called Mathematics, from *mathma*, study, science. And the followers of Pythagoras are said to have given this more distinctive name of mathematics to geometry, and arithmetic alone. For of old these had each its own separate name; and they had up till then no name common to both. And he (Archytas) gave them this name, because he found science in them, and that in a manner suitable to man's study.(5) For they (the Pythagoreans) perceived that these studies dealt with things eternal and immutable and perfect,(6) in which things alone they considered that science consisted. But the more recent philosophers have given a more extensive application to this name, so that, in their opinion, the mathematician deals not only with substances(7) incorporeal, and falling simply within the province of the understanding,(8) but also with that which touches upon corporeal and sensible matter. For he ought to be cognisant of(9) the course of the stars, and their velocity, and their magnitudes, and forms, and distances. And, besides, he ought to investigate their dispositions to vision, examining into the causes, why they are not seen as of the same form and of the same size from every distance, retaining, indeed, as we know them to do, their dispositions relative to each other,(10) but producing, at the same time, deceptive appearances, both in respect of order and position. And these are so, either as determined by the state of the heavens and the air, or as seen in reflecting and all polished surfaces and in transparent bodies, and in all similar kinds. In addition to this, they thought that the man ought to be versed in mechanics and geometry and dialectics. And still further, that he should engage himself with the causes of the harmonious combination of sounds, and with the composition of music; which things are bodies,(11) or at least are to be ultimately referred to sensible matter.

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