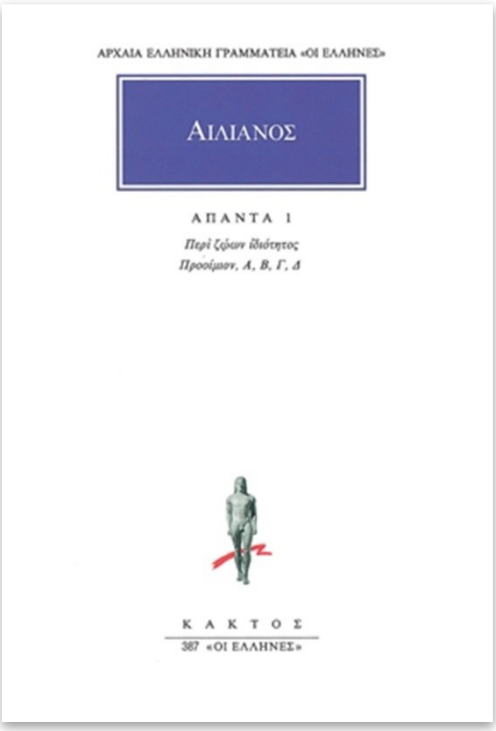
41 VOLUMES

ANCIENT GREEK MATHEMATICIANS COLLECTION

ALL BOOKS

IN ANCIENT GREEK /

MODERN GREEK TRANSLATION



APOLLONIUS OF PERGA

Geometer, 3rd-2nd c. B.C.

Complete Works, 8 Volumes

Volume 1 [serial number 682]

Conics, Book I: The elementary theorems on the creation and basic properties of the three conic sections: the parabola, the hyperbola, and the ellipse. The text also refers to the interpretation of the names of the three conical sections based on their geometric characteristics.

Volume 2 [serial number 683]

Conics, Book II: Properties of the asymptotic lines of the hyperbola, and the tangent. Conjugate diameters of the conical sections.

Conics, Book III: Relations of triangles and quadrilaterals formed by the intersection of the tangents of the conical sections with the diameters at the points of contact.

Rectangles formed by the parts of the strings that intersect with each other within conical sections.

Volume 3 [serial number 684]

Conics, Books IV-V: On the inverse propositions of some of the 3rd book propositions. Proof using the *reductio ad absurdum* methodology. Also discussed are the points where conical sections intersect with each other or with a circle circumference.
The fifth book, which is preserved in Arabic, deals with the subject of "minimums" and "maximums", ie the maximum and minimum lines that can be created to the perimeter of the conical sections from various points either on the axis or between the axis and the section or outside the section.

Volume 4 [serial number 685]

Conics, Books VI-VII: The 6th book of "Conics" discusses the similarity and equality of conical sections and their parts. In the 7th book, the author admirably develops the theory of conjugate diameters of conical sections.
These two books are preserved in Arabic. The current edition of "Conics" is the first complete edition of Apollonius of Perga's work, which includes all the books with the original ancient Greek and Arabic text and the modern Greek translation.

Volume 5 [serial number 686]

De Rationis Sectione Book 1: Work preserved in Arabic. The text deals with the solution of a single problem: Given two straight lines and a point in each, draw through a third given point a straight line cutting the two fixed lines such that the parts intercepted between the given points in them and the points of intersection with this third line may have a given ratio. The problem is open to a large number of solutions. The first 24 cases of the problem are described in the first book.

Volume 6 [serial number 1161]

De Rationis Sectione Book 2: The second volume of *De Rationis Sectione* continues with the remaining 63 solutions to the problem examined in the first volume. One of the few preserved examples of mathematical analysis used in that era, and a model of complete and strictly geometric handling of a problem. This edition is the first presentation of the complete work to the Greek-speaking audience, in both Arabic original and modern Greek translation.

Volume 7 [serial number 1162]

Cutting an Area, On Determinate Section, Tangencies, On Verging Constructions, Plane Loci, On the Cylindrical Helix, A comparison of the dodecahedron and the icosahedron, On Irrational numbers, Quick Delivery, On All Mathematics, Astronomy, Optics.

Volume 8 [serial number 1163]

Eutocius comment on Conics: An interpretation of Apollonius's Conics written by the mathematician of the 5th-6th c. A.D., in an effort to clarify difficult parts of the work.

ARCHIMEDES

Geometer, 3rd c. B.V.

Complete Worls, 6 Volumes

Volume 1 [serial number 771]

On the Sphere and Cylinder: Theorems on the dimensions of the spheres, cones and cylinders.

Volume 2 [serial number 772]

Measurement of a cycle: Theorems on the geometrical dimensions of the cycle.

On Conoids and Spheroids: 32 propositions trying to measure the surfaces and τhe volume of solids that are produced by the rotation of conic intersections.

On spirals: Propositions on the geometrical qualities of the so-called "spiral of Archimedes", which is created when something movable moves with equal speed on a line that rotates with equal speed round the starting-point of the movable.

Volume 3 [serial number 773]

On Plane Equilibriums: Propositions and postulates on the centers of gravity and their determination.

Psammites (The Sand-reckoner): How many grains of sand are required for completing a spherical volume equal to the universe? The counting system for large numbers.

The Quadrature of the Parabola: Demonstration of the fact that the area of a parabolic plane is equal to the 4/3 of the inscribed triangle that has the same base and equal height.

On Floating Bodies: Basic principles of hydrostatics. The equilibrium and stability of a paraboloid that floats in a fluid.

Volume 4 [serial number 774]

Stomachion: The division of a parallelogram in 14 parts proportional to the initial figure.

Method to Eratosthenes on the Mechanical Theorems: Archimedes explains how he has arrived at many of his significant conclusions through mechanical methods.

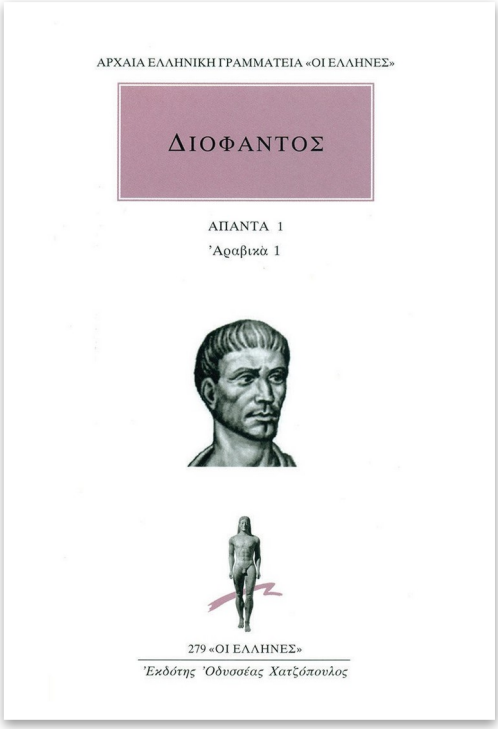
Book of Assumptions: Various propositions, the authorship of which has been disputed.

The Cattle Problem: Reckoning of the Sun's oxen that pasture on the island of

Thrinacia. A work in verse.

Volume 5 [serial number 1204]
Commentaries by Eutocius: Commentaries on the works of Aristotle, written by a 5th c. A.D. scholar.

Volume 6 [serial number 1205]
Testimonia: The influence of the Archimedean works on the posterity, through later testimonies.



DIOPHANTUS
Mathematician, 3rd (?) c. B.C.
Complete Works, 5 Volumes

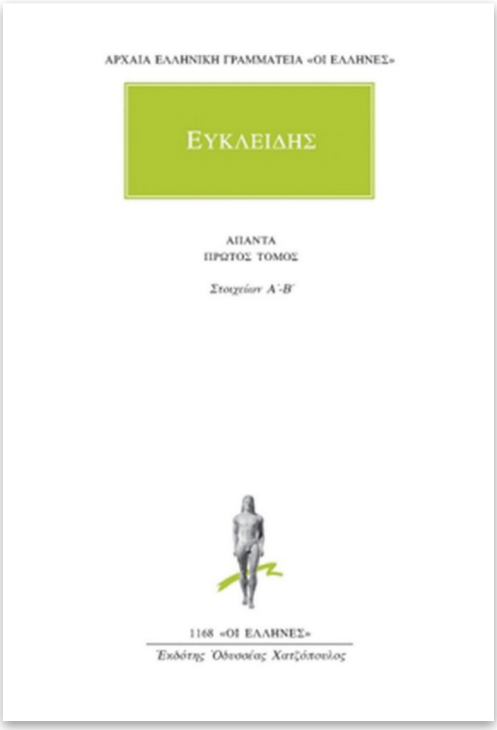
Volume 1 [serial number 279]
Arabic Works 1: original Arabic text and modern Greek translation.

Volume 2 [serial number 280]
Arabic Works 2: original Arabic text and modern Greek translation.

Volume 3 [serial number 281]
Greek Works 1, The Arithmetica I, II: 74 algebraic problems.

Volume 4 [serial number 282]
Greek Works 2, The Arithmetica III, IV: 61 algebraic problems.

Volume 5 [serial number 283]
Greek Works 3, The Arithmetica V, VI: 54 algebraic problems.



EUCLID

Geometer, 3rd c. B.C.

Complete Works, 14 Volumes

Volume 1 [serial number 1168]
Elements, Books I-II: Examination of triangles' equality without using parallel lines. Equality of areas. Areas of rectangles and squares.

Volume 2 [serial number 1169]
Elements, Books III-IV: The properties of the cycle. Angles that have their apex on the centre or on the circumference of a cycle. Construction of triangles inscribed or circumscribed on a cycle. Cycles inscribed or circumscribed on triangles and polygons.

Volume 3 [serial number 1170]
Elements, Books V-VII: The theory of ratios and analogies. Consideration of similar figures.

Volume 4 [serial number 1171]
Elements, Books VIII-IX: The arithmetic books.

Volume 5 [serial number 1172]
Elements, Book X: The doctrine of irregular sizes.

Volume 6 [serial number 1173]
Elements, Book X (cont.): The doctrine of irregular sizes.

Volume 7 [serial number 1174]
Elements, Book XI: Solid geometry: Definition of the perpendicularity and the inclination of lines and planes. Solid angles.

Volume 8 [serial number 1175]
Elements, Books XII-XIII: Solid geometry: Pyramid, prism, cylinder, cone, sphere. The five regular polyhedra. How the polyhedra are inscribed in a given sphere and how the length of their edges is determined.

Volume 9 [serial number 1176]
Data: When the geometric subjects are considered to be *data*, i.e. known. A work of plane geometry, connected with the first six books of the *Elements.*

Volume 10 [serial number 1177]
Optics: A treatise on perspective, probably a reference book for students of astronomy.

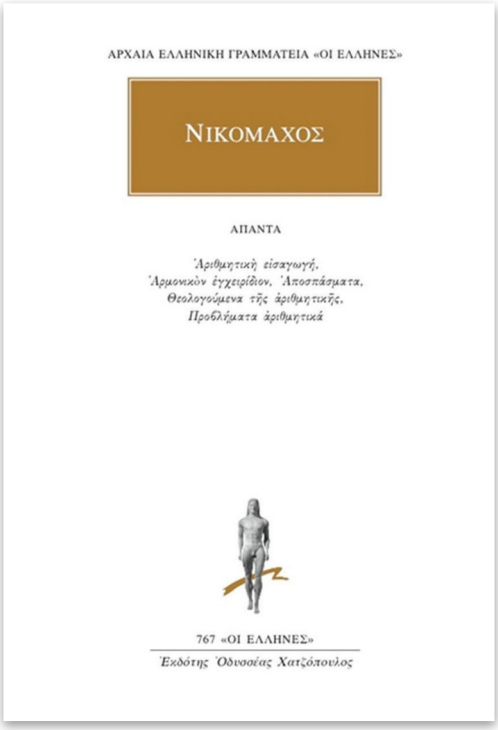
Volume 11 [serial number 1178]
Optics (adapted by Theon): Euclid's optical theory through his work "Optics", as adapted by Theon, the mathematician of the 4th c. A.D., father of Hypatia, in order to make it more comprehensible to his students. The volume includes the ancient commentaries and their translation, which clarify difficult points of the Euclidean text.

Volume 12 [serial number 1179]
Catoptrics: Euclid's "Catoptrics", which is the oldest surviving text on the reflection of light, including ancient commentaries, which clarify all the difficult points of the ancient text, and their translation.
Division of the Scale: This work is related to music theory and aims to divide the string of a single string instrument into such parts, so that their ratio gives the notes

of the full musical scale.

Volume 13 [serial number 1180]
Phenomena: Euclid's astronomical work, which proves geometrically the relationship between the motion times of some arcs of the zodiac in the visible aboveground and in the invisible underground hemisphere of the sky, allows a comparative calculation of the duration of day and night at different times of the year. The volume includes the two complementary adaptations of the work, along with the explanatory ancient commentaries and their translation.

Volume 14 [serial number 1181]
This volume includes the surviving parts of the lost works of Euclid, as delivered from indirect (ancient Greek, Latin, and Arabic) sources.
Divisions: Examining the division of geometric shapes into different parts with different proportions.
Fragments: Fragments from lost works. Related theorems (entries) clarifying the lost works of Euclid, which are preserved in the works of mathematician Pappus.
On Mechanics (fragments): fragments from Euclid's lost mechanical works, which deal with the issues of weight and balance of bodies and the question of the principles governing the operation of the scales.

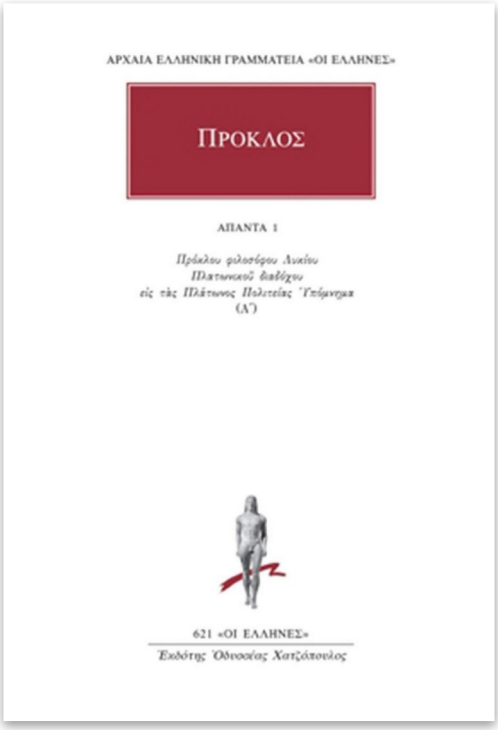


NICOMACHUS

Mathematician, 2nd c. A.D.

Complete Works, 1 Volume [serial number 767]

The works of one of the most famous mathematicians of antiquity. Nicomachus' *Introduction to Arithmetic* summarizes the knowledge that Pythagoreanism had acquired in the field of arithmetic. The *Manual of Harmonics* is an introduction to the theory of music. The *Theology of Arithmetic* discusses the mystical properties of numbers.



PROCLUS

Philosopher, 5th c. A.D.

Volume 31 [serial number 651]

Commentary on the First Book of Euclid's Elements *(Introduction):* A general introduction to mathematics and geometry.

Volume 32 [serial number 652]

Commentary on the First Book of Euclid's Elements *(Definitions-Postulates-Common Notions):* An explanation of Euclid's definitions, postulates and common notions (axioms).

Volume 33 [serial number 653]

Commentary on the First Book of Euclid's Elements *(Questions I):* The explanation of the 26 first questions or theorems of the First Book of Euclid's *Elements.* These theorems concern triangles.

Volume 34 [serial number 654]

Commentary on the First Book of Euclid's Elements *(Questions II):* The last 22 theorems of the First Book of Euclid's *Elements.* These theorems concern quadrangles.

Volume 40 [serial number 660]

Commentary on the Introduction to Arithmetic of Nicomachus: This work has also been ascribed to John Philoponus. Mathematics as intermediary between the material and immaterial worlds and as starting point of all higher knowledge. Arithmetic as the first step towards the immaterial world.