



Asclepius of Tralles: Commentary to Nicomachus' Introduction to Arithmetic

Leonardo Tarán

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ASCLEPIUS OF TRALLES
COMMENTARY TO NICOMACHUS' INTRODUCTION
TO ARITHMETIC

Edited with an Introduction and Notes by

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Leonardo Tarán

June 1967

ABBREVIATIONS

AJP. American Journal of Philology.

CAG. Commentaria in Aristotelem Graeca.

R.E.G. Revue des Études Grecques.

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INTRODUCTION

THE NEOPLATONIC COMMENTARIES TO NICOMACHUS' INTRODUCTION TO ARITHMETIC LATER THAN THAT OF IAMBlichUS

Nicomachus' *Introduction to Arithmetic*,¹ despite its poorness from a mathematical point of view,² was the most influential work on arithmetic from the time it was written, sometime between the latter part of the first and the first part of the second centuries A.D.,³ until the sixteenth century.

¹ Cf. *Nicomachi Geraseni Pythagorei Introductionis Arithmeticae Libri II*. Recensuit Ricardus Hoche (Lipsiae, 1866).

² Cf. Heath, *A History of Greek Mathematics*, 1 (Oxford, 1921): pp. 97–99; *Nicomachus of Gerasa. Introduction to Arithmetic*. Translated into English by M. L. D'Ooge, with studies in Greek Arithmetic by F. E. Robbins and L. Ch. Karpinski (New York, 1926), pp. 46ff., pp. 111ff. See also p. 15 below.

³ We do not know the date of Nicomachus' birth or that of his death, but we may assume that he lived around A.D. 100. In his *Enchiridion Harmonicum* Nicomachus mentions Thrasyllus who arranged Plato's dialogues in tetralogies and lived under Tiberius; cf. *Ench. Harmon.*, p. 260, 12–16 (Jahn): καὶ προσεκθισόμεθα τὸν τοῦ Πυθαγορικοῦ λεγομένου κανόνος κατατομὴν ἀκριβῶς καὶ κατὰ τὸ βούλημα τοῦδε τοῦ διδασκάλου συντετελεσμένην, οὐχ ὡς Ἐρατοσθένης παρήκουσεν ἢ Θράσυλλος, ἀλλ' ὡς κτλ.

Apuleius, born about A.D. 125, translated Nicomachus' *Introduction* into Latin (cf. n. 4). On Nicomachus' life see p. iv, note, in Hoche's edition; Heath, *A History of Greek Mathematics* 1: p. 97; and D'Ooge, Robbins and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, pp. 71ff.

The treatise was soon translated into Latin by Apuleius⁴ of Madaura and some centuries later by Boethius⁵ and it is the ultimate source of the arithmetical treatises of Cassiodorus,⁶ Martianus Capella,⁷ and Isidorus⁸ of Seville, among others. In the Greek-speaking part of the world, Iamblichus, Asclepius, and Philoponus⁹ wrote commentaries which are still extant, an otherwise unknown Heronas¹⁰ did the same, and there is an anonymous commentary still unpublished which probably belongs to the Byzantine period,¹¹ from which time date also the numerous scholia in our manuscripts. The in-

⁴ Cf. Cassiodorus, *Institutiones*, p. 140, 15–20 (Mynors): *reliquae vero quae sequuntur, sicut eius iam qualitas virtutis ostendit, ut sint atque subsistent, indigent arithmetica disciplina. quam apud Graecos Nicomachus diligenter exposuit. hunc prius Madaurensis Apuleius, deinde magnificus vir Boethius Latino sermone translatus Romanis contulit lectitandum*. Isidorus, *Etymologiae* III.2.1 (Lindsay): *Numeri disciplinam apud Graecos primum Pythagoram autumant conscripsisse, ac deinde a Nicomacho diffusius esse dispositam; quam apud Latinos primus Apuleius, deinde Boetius transulerunt*. Nothing remains from this translation of Apuleius.

⁵ *Anicii Manlii Torquati Severini Boetii De Institutione Arithmetica libri duo*, e libris manu scriptis edidit Godofredi Friedlein (Lipsiae, 1867). Boethius' treatise is not a mere translation of Nicomachus but an adaptation of it with expansions and suppressions, cf. D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, pp. 132–137.

⁶ *Cassiodori Senatoris Institutiones*. Edited from the manuscripts by R. A. B. Mynors (Oxford, 1937), Liber Secundus, IIII: *De Arithmetica*.

⁷ *Martiani Minnei Felicis Capellae De Nuptiis Philologiae et Mercurii*, recensuit Franciscus Eyssenhardt (Lipsiae, 1866), Liber VII: *De Arithmetica*. Cf. also *Martianus Capella*, edidit Adolfus Dick (Lipsiae, 1925).

⁸ *Isidori Hispalensis Episcopi Etymologiarum sive Originum Libri XX*, recognovit brevique adnotatione critica instruxit W. M. Lindsay (Oxonii, 1911), Liber III *De Mathematica*.

⁹ Cf. below n. 15 and pp. 6ff.

¹⁰ Cf. *Euticii Commentarii in Libros De Sphaera et Cy lindro* (see *Archimedis Opera Omnia cum Commentariis Euticii* 3 (Lipsiae, 1915): p. 120, 20–23 [Heiberg]): ὡς φασιν ἄλλοι τε καὶ Νικόμαχος ἐν τῷ πρώτῳ Περὶ μουσικῆς καὶ Ἡρώνας ἐν τῷ ὑπομνήματι τῷ εἰς τὴν Ἀριθμητικὴν εἰσαγωγὴν, κτλ.

¹¹ Cf. below pp. 7 and 18–20.

fluence of Nicomachus may also be seen in an anonymous *Quadrivium* of the eleventh century¹² and also in that of George Pachymeres.¹³ But the popularity of Nichomachus' treatise should be judged not only by the number of its commentators and of authors who were influenced by it, but also by the number of writers who quote it. In the Arab world Nicomachus was known through the translation of Thābit ibn Qorah.¹⁴

The basis for any further study of the ancient Greek commentaries to Nicomachus' *Introduction*

to *Arithmetic* later than the commentary of Iamblichus¹⁵ is constituted by P. Tannery's article "Rapport sur une mission en Italie."¹⁶ It will be convenient to summarize the conclusions at which Tannery arrived after his study of some manuscripts of Nicomachus and his Neoplatonic commentators. Tannery distinguished four different recensions of these commentaries; of these four recensions I give, following Tannery, the beginning and the end of each of the two books.¹⁷

Recension	I	II	III	IV
Book I	Πλατωνικός ὦν ὁ πατήρ τοῦ βιβλίου κτλ.	Εἰσαγωγή ἐπιγέγραπται . . . Πλατωνικός ὦν ὁ πατήρ τοῦ βιβλίου κτλ.	Πλατωνικός ὦν ὁ πατήρ τοῦ βιβλίου κτλ.	Ἐπεὶ ἡ Ψυχὴ διττὰς ἔχει τὰς ἐνεργείας κτλ.
Beginning	Ἐφ' ὅσον ἂν τις ἐπαρκοίη τοῦτο ποιεῖν.	καὶ οὗτος ὑπὸ τῶν πλευρῶν τῶν τετραγώνων πολλαπλασιαζόμενος ἐπ' ἀλλήλας γίνεται.	καὶ ἐπὶ τῶν ἄλλων ὁμοίως ὥστε εἰκότως τοὺς ἄκρους τετραγώνους ἔχουσιν.	τὸ ἐπιδιμερές τοῦ ἐπιτριμεροῦς καὶ τοῦτο τοῦ τετραμεροῦς.
End				
Book II	Εἴρηται ἡμῖν ἤδη ὅτι τοῦ πρὸς τι ποσοῦ κτλ.	Εἴρηται ἡμῖν ἤδη ὅτι τοῦ πρὸς τι ποσοῦ κτλ.	Εἴρηται ἡμῖν ἤδη ὅτι τοῦ ποσοῦ τὸ πρὸς τι κτλ.	Ἐνταῦθα μέλλει δεῖξαι ὅτι ἡ ἰσότης κτλ.
Beginning	καὶ πάντες οἱ ἁρμονικοὶ ἐνθεωροῦνται λόγοι.	καὶ πάντες οἱ ἐν τῷ τῆς μουσικῆς ὀργάνῳ τῶν συμφωνιῶν λόγοι ἀνελλιπείς.	τοσαῦτα τοίνυν ἀρκείτω πρὸς εἰσαγωγικὴν διδασκαλίαν.	καὶ πάλιν οὗτος λαβὼν τοῦτο ποιεῖ τὴν διαπασῶν καὶ διάπεντε.
End				

What Tannery calls recension I is constituted by a commentary to Nicomachus that our manuscripts ascribe to Philoponus. This commentary was published by R. Hoche.¹⁸ What Tannery calls recension II is constituted by a particular version of recension I which contains variations and additions to some

paragraphs of the latter. This recension is attributed by our manuscripts to Philoponus, Hoche attributed it to one of Philoponus' students,¹⁹ and Tannery thought that recension II should be attributed to Isaac Argyros since his name occurs in the *Vaticanus* 1411

¹² Last edition: J. L. Heiberg, *Anonymi logica et quadrivium cum scholiis antiquis. Historisk-filologiske Meddelelser*, udgivne af det Kgl. Danske Videnskabernes Selskab. 15 (1929), no. 1. Cf. N. Zeegers-Vander Vorst, "L'Arithmétique d'un quadrivium anonyme du XIe siècle," *L'Antiquité Classique* 32 (1963): pp. 129-161. Its first editors attributed this treatise to Psellus.

¹³ P. Tannery, *Quadrivium de Georges Pachymère ou ΣΥΝΤΑΓΜΑ ΤΩΝ ΤΕΣΣΑΡΩΝ ΜΑΘΗΜΑΤΩΝ ἀριθμητικῆς, μουσικῆς, γεωμετρίας καὶ ἀστρονομίας*. Texte revisé et établi par le R. P. E. Stéphanou A. A. (Città del Vaticano, 1940). *Studi e Testi* 94: pp. 5ff.

¹⁴ Thābit B. Qurrah's arabische Übersetzung der Ἀριθμητικῆ Εἰσαγωγῆ des Nikomachos von Wilhelm Kutsch S. J. (Beyrouth, 1959), *Recherches publiées sous la direction de l'Institut de lettres Orientales de Beyrouth*. Tome IX.

¹⁵ Cf. IωANNOY γραμματικοῦ Ἀλεξανδρέως (τοῦ Φιλοπόνου) ἐξήγησις εἰς τὸ πρῶτον τῆς Νικομάχου ἀριθμητικῆς εἰσαγωγῆς. Primum edidit Ricardus Hoche, Part. I (Wesel, 1864). *Ibid.*, Praef. et Part. II (Wesel, 1865). *Ibid.*, εἰς τὸ δεῦτερον τῆς Νικομάχου ἀριθμητικῆς εἰσαγωγῆς (Berolini, 1867).

¹⁶ Cf. Iamblichus *In Nicomachi Arithmetice Introductionem Liber*. Ad Fidem Codicis Florentini Edidit H. Pistelli (Lipsiae, 1894). The anonymous *Prolegomena* to Nicomachus published by Tannery, *Diophanti Opera Omnia* 2 (Lipsiae, 1895): pp. 73-76, and cf. also p. xiii, is not of concern to us here, for it contains nothing important either mathematically or philosophically. There is, moreover, no obvious connection between it and the Neoplatonic commentaries studied here.

¹⁷ Originally published in *Archives et Missions scientifiques et littéraires*, 3e. série, 13 (1888): pp. 409ff., now included in *Mémoires scientifiques* 2 (Toulouse-Paris, 1912): pp. 269ff. The relevant part for us is II: "Les Commentaires sur Nicomaque," *Mémoires scientifiques* 2: pp. 302-310. Also relevant are, in this same volume, pp. 311ff., 110; and in *Mémoires scientifiques* 3 (Toulouse-Paris, 1915): pp. 259-260.

¹⁸ Cf. *Mémoires scientifiques*, 2: p. 303.

¹⁹ Cf. Hoche, *op. cit.*, Praef., et Part. II, p. ii and n. 1. Hoche thought that this recension was probably due to a certain Proclus Procleius mentioned by Suidas as the author of a commentary to Nicomachus (cf. p. 7 below).

and in its copy, the *Parisinus* 2377, in connection with the more important additions to recension I.²⁰ Consequently, according to Tannery's suggestion, this recension would date from the fourteenth century. Of this recension II Hoche published only the variations that correspond to the first book of Philoponus' commentary;²¹ the variations which correspond to the second book were more recently published by A. Delatte,²² who seems to follow Tannery in attributing recension II to Isaac Argyros.²³

Recension III Tannery attributed to Asclepius of Tralles, following the authority of the *Parisinus* 2376, the *Monacensis* 431, and the *Ambrosianus* B 77, which were the only manuscripts known to Tannery to contain recension III. Tannery thought that this recension exists in complete form only in the *Parisinus* 2376, while he considered the *Monacensis* 431 and the *Ambrosianus* B 77 to contain incomplete copies of this same recension.

Finally, recension IV, which is really anonymous, Tannery attributed to Arsenius Olbiodorus on the basis of an epigram which is found at the end of some manuscripts of recension IV. The epigram reads as follows:

Νικομάχοιο Γερασσηνοῦ ὃς ἔην Πυθαγορείων
ἦδ' ἀριθμητικῆς ἐρμηνείῃ μέγ' ἀρίστη·
γράψε δέ μιν πυξίδι μακάρτατος ἀρχιθύτης
Ἀρσένιος θεοειδὴς Ὀλβιόδωρος Περγάμου
ἔρωτ' ἠδὲ πόθῳ σοφίης ὃς καὶ δὴ κάμεν
εὐσεβίης οὐνεκα παθῶν ἄλγεα πολλὰ.

This epigram led Tannery to state, "l'épigramme nous révèle le nom d'Arsenius dans des conditions telles qu'il est difficile d'y voir seulement un copiste, et non le rédacteur du commentaire anonyme."²⁴ So this recension, like recension II, would date only from the fourteenth century.

Tannery also asserted that there are some manuscripts which contain a conflation of recensions I and II and some others that contain a conflation of recensions III and IV. As a matter of fact the name of Asclepius is given as that of the author of recension IV in some manuscripts which contain this version of the commentary or a conflation of it and

recension III. This caused Hardt to think that the work of Asclepius is represented by recension IV, while Philoponus would be the author of recension III.²⁵ But Tannery was right in rejecting this thesis of Hardt, although not entirely for the right reasons. It should be noticed that of the three manuscripts which contain recension III none attributes the work to Philoponus, while the three manuscripts specifically ascribe the work to Asclepius. It is recension I and recension II that are ascribed to Philoponus by our manuscripts. There are, however, many manuscripts which really contain recension IV and which attribute it to Asclepius; consequently Tannery, perhaps because his knowledge of the manuscripts that contain recension IV was limited, was mistaken in asserting that recension IV is never attributed to Asclepius²⁶ as we shall see (*cf.* below p. 18ff.). But this ascription can, nevertheless, be shown to be mistaken.²⁷

Recension I and recension III are so similar that Tannery postulated a common source for both; this source, he thought, must have been a commentary to Nicomachus by Proclus now lost. That Proclus wrote a commentary to Nicomachus' *Introduction to Arithmetic* Tannery deduced from a notice by Marinus, who in his life of Proclus says that in a dream it was revealed to the latter that the soul of Nicomachus was in him,²⁸ and from what Suidas says, *s.n.* Πρόκλος (3), Πρόκλος, ὁ Προκλήϊος χρηματίσας, Θεμεσίωνος, Λαοδικείας τῆς Συρίας, ἱεροφάντης. ἔγραψε Θεολογίαν, Εἰς τὸν παρ' Ἡσιόδῳ τῆς Πανδώρας μῦθον, Εἰς τὰ χρυσᾶ ἔπη, Εἰς τὴν Νικομάχου Εἰσαγωγὴν τὴν ἀριθμητικὴν· καὶ ἄλλα τινὰ γεωμετρικά. This is then followed by the notice on Proclus the Neoplatonic philosopher. Tannery thought that the attribution of these works to Proclus Procleius, a Hierophant of Laodicea, is due to one of the usual and typical confusions to be

²⁵ Consequently Hardt thought that the *Monacensis* 431 which contains recension III and ascribes it to Asclepius is really due to Philoponus. In this he was followed, in part, by Hoche, *op. cit.*, Praef. et Part. II, p. ii, n. 1. *Cf.* p. 19.

²⁶ *Cf.* Tannery, *Mémoires scientifiques* 2: p. 304: "Rien ne prouve donc que l'attribution à Asclépius (*sc.* of recension III) soit fautive, tant que ce nom ne se retrouve pas d'une façon expresse en tête de la recension IV."

²⁷ *Cf.* below, pp. 18ff.

²⁸ *Cf.* Marinus, *Vita Procli* 28 (Boissonade): ὅτι τῆς Ἑρμαϊκῆς εἴη σειρᾶς σαφῶς ἐθεάσατο (*sc.* ὁ Πρόκλος) καὶ ὅτι τὴν Νικομάχου τοῦ Πυθαγορείου ψυχὴν ἔχοι ὄναρ ποτὲ ἐπίστευσεν. This probably implies that Nicomachus also was considered as belonging to the succession of true philosophers or "golden chain" which in Homeric fashion connected men with the divine; *cf.* D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, pp. 77-78.

²⁰ *Cf.* Tannery, *Mémoires scientifiques* 2: pp. 302, 306, and 310ff.

²¹ *Cf.* Hoche, *op. cit.*, Praef. et Part. II (Wesel, 1865), pp. ii-xiv.

²² *Anecdota Atheniensia et Alia. Tome II: Textes Grecs relatifs à l'histoire des sciences.* Édités par A. Delatte. *Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège.* Fasc. LXXXVIII (Paris, 1939), pp. 129-187.

²³ *Cf.* *Anecdota Atheniensia* 2: pp. 129-130.

²⁴ *Cf.* Tannery, *Mémoires scientifiques* 2: p. 310.

found in Suidas and that the works attributed to this Proclus Procleius really belong to the Neoplatonic philosopher. As a matter of fact one manuscript which contains recension II ascribes the commentary to Proclus the Neoplatonic philosopher, not to Proclus Procleius, but this ascription is in any case a mistaken one, as Tannery himself recognized.²⁹

Finally, Tannery indicated the need to publish the commentary of Asclepius and through a comparison of it with the commentary of Philoponus (represented by recension I) to reconstruct the lost commentary to Nicomachus by Proclus. It is, then, Asclepius' commentary to Nicomachus that I am publishing here for the first time. My study of this commentary and of the three other recensions has led me to the following conclusions which in part modify those of Tannery.

In the first place, one cannot be sure that Proclus did in fact write a commentary to Nicomachus which is now lost. No great trustworthiness can be attached to the notice of Marinus and, in any case, even if what Marinus says should be true, it is to go too far to deduce that Proclus wrote a commentary to Nicomachus merely because he thought that the soul of the latter was in him. As to the notice of Suidas, Tannery may be right in thinking that the notice on Proclus Procleius is confused, but if this is so one cannot be sure that the notice of a commentary to Nicomachus is not due to a confusion too. But even if Proclus had written a commentary to Nicomachus we have no evidence that either Asclepius or Philoponus had access to it. For one thing neither of them was a student of Proclus and on the other hand, and even more significant, Proclus is never mentioned in the commentary of Philoponus. He is mentioned once by Asclepius, but in a matter which is really irrelevant to the study of Nicomachus.³⁰

²⁹ That Proclus cannot be the author either of recension I or of recension II is proved by the fact that Ammonius is mentioned in them as "our teacher" (see below pp. 9ff.). The majority of our manuscripts ascribe recensions I and II to Philoponus. The only manuscripts known to me that ascribe the commentary to Proclus are the *Atheniensis* 1238, which dates only from the eighteenth century (cf. Delatte, *Anecdota Atheniensia* 2 p. 130 and n. 1), and the *Parisinus* 2375, in which the ascription to Proclus is recent, the manuscript being really anonymous (cf. Tannery, *Mémoires scientifiques* 2: pp. 260, note 1 and 305).

³⁰ Cf. Asclepius, I. 1a 76–80: ὁ γὰρ ἔφη Πρόκλος· εἰ οὖν δυνατόν τοὺς Λυγέως ὀφθαλμοὺς ἔχοντά τινα βλέπειν διὰ βάθος τοῦ σώματος καὶ ἰδεῖν κόπρον καὶ πᾶσαν ἀκαθαρσίαν, ἐπέισθη ἂν πόσον ἐν ἡμῖν τὸ ἀκαλλές καὶ αἰσχρόν. Proclus is mentioned again in a scholion found at the bottom of one page in the manuscripts that contain the commentary of Asclepius. This scholion was written in connection with Asclepius, II.

Of Asclepius we know very little. His only other extant work is his commentary to Aristotle's *Metaphysics*, which is specifically given as being ἀπὸ φωνῆς Ἀμμωνίου.³¹ This by itself shows that he was a student of Ammonius the son of Hermeias and in the commentary to the *Metaphysics* he specifically states it: ὁ δὲ ἦρως Ἀμμώνιος ὁ Πρόκλου μὲν γεγονώς ἀκροατὴς ἐμοῦ δὲ Ἀσκληπιοῦ διδάσκαλος ἔλεγεν κτλ.,³² and repeatedly calls him ὁ φιλόσοφος or ὁ ἡμέτερος φιλόσοφος.³³ From this commentary to the *Metaphysics* we gather that Asclepius was a philosopher with little of his own to say. He reports what Ammonius must have said and his only contribution was to contaminate the first four books (namely the commentary to A, α, B, and Γ) with extracts from Alexander's commentary.³⁴ We may infer that the part of the commentary that is not contaminated by extracts from Alexander represents the work of Ammonius.³⁵

We also know that Philoponus had some kind of connection with the school of Alexandria, although we do not know exactly what this connection was, and it is even possible that he never belonged formally to the school at all.³⁶ Be that as it may, he certainly published many of Ammonius' courses³⁷

12, and reads as follows: ὁ Πλάτων τὴν περὶ τὴν γεωμετρίαν λεγομένην ἀπαγωγὴν ἐποίησεν. ἀπαγωγή δὲ ἐστίν, ὡς φησιν Πρόκλος ἐν τῷ τρίτῳ λόγῳ τῶν εἰς τὸν πρῶτον Εὐκλείδους στοιχείων, μετάβασις ἀπ' ἄλλου προβλήματος ἢ θεωρήματος ἐπ' ἄλλο, οὗ γνωσθέντος ἢ πορισθέντος καὶ τὸ προκείμενον ἔσται καταφανές. This is a verbatim quotation of Proclus, *In Eucl.*, p. 212.24–p. 213.2 (Friedlein); one cannot be sure, however, that Asclepius himself wrote the scholion. At any rate it appears to be absent from Philoponus, and even if Asclepius himself wrote the scholion this would show only that he knew Proclus' commentary to Euclid not his supposed commentary to Nicomachus.

³¹ Cf. *Asclepii in Aristotelis Metaphysicorum Libros A—Z Commentaria*, edidit M. Hayduck (Berolini, 1888) = CAG VI.2.

³² Asclepius, *In Metaph.*, p. 92.29–30 (Hayduck).

³³ Cf., e.g., Asclepius, *In Metaph.*, p. 5.6, p. 40.16, p. 43.36–37, p. 121.5.

³⁴ Cf. Hayduck's preface, CAG VI.2, pp. v–vi and Westerink, *Anonymous Prolegomena to Platonic Philosophy*. Introduction, text, translation and indices (Amsterdam, 1962), p. xi. I am indebted to the learned pages that Professor Westerink devotes to the Alexandrian school in this book.

³⁵ For what we know about Ammonius' life and work cf. Westerink, *Anonymous Prolegomena*, pp. x–xiii.

³⁶ Cf. Simplicius' attack on Philoponus (*De Caelo*, p. 42.17 [Heiberg]): ὁ δὲ νεαρός ἡμῖν οὗτος κόραξ, μᾶλλον δὲ κολοῖός κτλ., although here it refers to Philoponus' borrowing from Xenarchus. See also Westerink, *R.E.G.* 77 (1964), p. 534.

³⁷ Namely, the commentaries to the *Categories*, *Prior and Posterior Analytics*, *De Anima*, *De Generatione Animalium*, *Physics*, *De Generatione et Corruptione*, and *Meteorologica*.

and must have considered himself as one of the official editors of the work of the latter. This much can be gathered from what the ascriptions of our manuscripts tell us.

Asclepius I. σ: μιμούμενα τὴν τῆς ἐξ ἀρχῆς αἰδίου ὕλης φύσιν. <ἀντὶ τοῦ> τῆς ἀρχούσης ὕλης. λέγει οὖν διὰ τὰ σώματα ταῦτα ὅτι μιμοῦνται τὴν ὕλην. ὁ μέντοι φιλόσοφος Ἀμμώνιος, ὁ ἡμέτερος διδάσκαλος, ἔφη ὅτι οὐ καλῶς εἶπε τὸ μιμεῖσθαι· οὐδενὸς γὰρ παράδειγμά ἐστιν ἡ ὕλη· τίς γὰρ θέλει ὕλη γενέσθαι;

Asclepius I. ζ: ὅλη γὰρ δι' ὅλης ἦν τρεπτὴ καὶ ἀλλοιωτή. κακῶς εἶπε καὶ τοῦτο, ὥς φησιν ὁ θεῖος διδάσκαλος. ἔδει γὰρ εἰπεῖν “τρεπτική καὶ ἀλλοιωτική.” περὶ αὐτὴν γὰρ αἱ τροπαὶ καὶ ἀλλοιώσεις γίνονται, οὐ δήπου γὰρ αὐτὴ τρέπεται ἢ ἀλλοιοῦται. εἰ γὰρ αὐτὴ ἐτρέπετο, ἔδεετο ἐτέρας ὕλης ἐν ἣ ἔμελλεν ἀλλοιοῦσθαι καὶ τρέπεσθαι. ὥστε αὐτὴ μὲν ἄτρεπτος καὶ ἀναλλοίωτος, τὰ δὲ περὶ αὐτὴν εἶδη ἀλλοιοῦνται, λέγω δὴ ποιότητες καὶ ποσότητες καὶ διαθέσεις καὶ ἐνέργειαι καὶ ἰσότητες καὶ πάντα τὰ τοιαῦτα.

Now Ammonius is mentioned by both Asclepius and Philoponus, and they mention him specifically in connection with his interpretations of Nicomachus. I transcribe the texts.³⁸

Philoponus I. ζ: τὴν ἐξ ἀρχῆς. ἀντὶ τοῦ τῆς ἀρχούσης αὐτῶν ὕλης· ἅμα γὰρ τῇ ἀρχῇ καὶ ἡ ὕλη. λέγει οὖν ὅτι τὰ σωματικὰ ταῦτα εἶδη, ἐν διηνεκεῖ ὄντα ῥύσει, μιμοῦνται τῆς ὑλικῆς αὐτῶν ἀρχῆς τὸ ἄστατον· κακείνη γὰρ, δυνάμει πάντα οὔσα τὰ εἶδη, οὐκ ἀνέχεται τὸ αὐτὸ στέγειν εἶδος ἀεί. ὁ μέντοι φιλόσοφος Ἀμμώνιος, ὁ ἡμέτερος διδάσκαλος, ἔφη ὅτι οὐ καλῶς εἶπε τὸ μιμεῖσθαι τὴν ὕλην· οὐδενὸς γὰρ παράδειγμά ἐστιν ἡ ὕλη· τίς γὰρ θέλει ὕλη γενέσθαι; ἀλλ' οὐχὶ τοῦτο οἶμαι τὸν Νικόμαχον δηλοῦν διὰ τοῦ μιμεῖσθαι, ὅτι ὡς πρὸς παράδειγμα ταύτην ἀποβλέποντα μιμεῖται αὐτὴν τὰ εἶδη, ἀλλ' ὡς εἰ ἔλεγεν ὅτι τὰ αἰσθητὰ διὰ τοῦτο ἐν συνεχεῖ ἐστὶ μεταβολῇ, τῇ οἰκείᾳ ἀρχῇ, τῇ ὕλει φησί, συνεξομοιούμενα τῷ μὴ δύνασθαι διὰ τὸ ἄστατον αὐτῆς ἐν αὐτῇ εἶναι ἀεί· ὥσπερ ἂν εἰ καὶ τὸν ἐν πλοίῳ, δινεῖσθαι καὶ αὐτὸν ἰδίᾳ καὶ πάντα νομίζοντα, λέγοι τις τὸ ἄστατον τοῦ πλοίου μιμεῖσθαι.

Philoponus I. η: τρεπτὴ καὶ. κακῶς εἶπε καὶ τοῦτο, ὥς ἔφη ὁ αὐτὸς ἡμῶν διδάσκαλος· ἔδει γὰρ εἰπεῖν “τρεπτική καὶ ἀλλοιωτική.” περὶ αὐτὴν γὰρ αἱ τροπαὶ καὶ αἱ ἀλλοιώσεις γίνονται· οὐ δήπου γὰρ αὐτὴ τρέπεται ἢ ἀλλοιοῦται. εἰ γὰρ αὐτὴ ἐτρέπετο, ἔδεετο ἐτέρας ὕλης ἐν ἣ ἔμελλεν ἀλλοιοῦσθαι ἢ τρέπεσθαι· ὥστε αὐτὴ μὲν ἄτρεπτος καὶ ἀναλλοίωτος, τὰ δὲ περὶ αὐτὴν εἶδη ἀλλοιοῦνται, λέγω δὴ ποσότητες καὶ ποιότητες καὶ διαθέσεις καὶ ἐνέργειαι καὶ πηλικότητες. μᾶλλον δὲ τὸ σύνθετον κατὰ ταῦτα τὴν ἀλλοίωσιν ὑπομένει· τὸ μὲν γὰρ ἀλλοιούμενον ὑπομένειν δεῖ καὶ ὅλως τὸ κινούμενον· ταῦτα δὲ οὐχ ὑπομένει ὅταν κατ' αὐτὰ ἡ ἀλλοίωσις γένηται· τὸ γὰρ ἐκ λευκοῦ γινόμενον μέλαν, οἷον ἄνθρωπος, αὐτὸς μὲν ὑπομένει, ἐξισταμένου δὲ τοῦ λευκοῦ ἀντιλαμβάνει τὸ μέλαν. ἔστι δὲ πάλιν ἀπολογούμενον ὑπὲρ τοῦ Νικομάχου λέγειν ὅτι τὸ ὅλη δι' ὅλης τρέπεται οὐχ ὡς καὶ αὐτῆς καθὸ ὕλη ἐστὶ μεταβαλλούσης καὶ ἐξισταμένης τοῦ εἶναι ὕλη, ἀλλ' ὥσπερ ἂν εἴποιμεν ὅλον δι' ὅλου τὸν χαλκὸν εἰς τὰ ἐν αὐτῷ γινόμενα χαλκευτικά εἶδη τρέπεσθαι, οὐ τῆς οὐσίας τοῦ χαλκοῦ ἐκ τοῦ εἶδους τοῦ ἑαυτῆς ἐξισταμένης, ἀλλ' ὡς πεφυκός αὐτοῦ καθ' ὅλον αὐτόν, τὰ μὲν ἀποπτύειν τῶν εἰδῶν, τὰ δὲ δέχεσθαι, οὕτως καὶ τὴν ὕλην μεταβάλλειν εἴρηκε.

Both the commentary of Philoponus and the one by Asclepius have all the characteristics of being notes of a course, as is the case with most of the Neoplatonic commentaries after Proclus. The characteristic parts of θεωρία and λέξεις are clearly

³⁸ Cf. also Westerink, *R.E.G.* 77 (1964): pp. 528–530. I follow Westerink in preferring the reading of the manuscripts to Hoche's emendations of the text of Philoponus in I ζ and I. η. Westerink's emendations in Asclepius, I. ζ are the readings of the *Monacensis* 431 and the *Ambrosianus* B 77.

present in both texts.³⁹ Consequently the passages quoted above and whatever else we know of Asclepius and Philoponus point to the fact that both commentaries go back to a course on Nicomachus' *Introduction to Arithmetic* given by Ammonius. To be sure, the expression ἀπὸ φωνῆς⁴⁰ 'Ἀμμωνίου is lacking from the manuscripts which contain both commentaries; nevertheless, since, as we just said, both commentaries go back to a course on Nicomachus, and given the evidence of the passages quoted above, our conclusion seems to be a safe one.

A comparison of the commentary of Asclepius with that of Philoponus shows that both texts are very close in content and in language. Philoponus' commentary is longer and seems to be a revised and corrected edition of Asclepius' commentary. It is difficult to decide whether Philoponus based his commentary directly on the text of Asclepius or not.⁴¹ The other possibility would be that he either had his own set of notes of Ammonius' course on Nicomachus or had access to a version different from that of Asclepius.⁴² Be that as it may, there can be no doubt that Asclepius' commentary is closer to the lectures of Ammonius than that of Philoponus is; and the inference to be drawn from a close study of both texts is that Philoponus reworked, corrected, and expanded a set of notes into his own commentary.

In the two passages quoted above we see that Asclepius limits himself to a mere report of the criticism that Ammonius directed against Nicomachus, whereas Philoponus not only reproduces the criticism of Ammonius against Nicomachus, but in both passages has a retort to offer to Ammonius on behalf of Nicomachus. This is exactly what we should expect from Asclepius (since, as we said above, he does not appear to have been very original) and from Philoponus who was a philosopher of some originality. Two of the courses of Ammonius that he published, the one on the *Cate-*

gories and the other on the *First Analytics*⁴³ are also extant in two other versions,⁴⁴ and his version is in each case quite different from the others. This may be due in part, as Westerink points out,⁴⁵ to the fact that they may be based on courses of lectures given at different times; but this difference must also be due, in part, to Philoponus' originality in reworking the notes which either he took himself or which were otherwise available to him.⁴⁶ At any rate his *De Aeternitate Mundi Contra Proclum* shows that he had some talent of his own. Moreover, his attack on Ammonius and his justification of Nicomachus are not unique; we have another such instance in his commentary to Aristotle's *Physics*, where he attacks Ammonius' defense of Aristotle.⁴⁷ Moreover, Philoponus as a Christian must have opposed the pagan Ammonius;⁴⁸ a reflection of this opposition we have in the very commentary on Nicomachus where Philoponus has simply suppressed a text which contains an interpretation of Plato's *Timaeus* in which Ammonius argues for the eternity of the world according to Plato. I transcribe the texts.

³⁹ Cf. CAG XIII.1 and CAG XIII.2.

⁴⁰ Cf. CAG IV.4 and CAG IV.6.

⁴¹ Cf. Westerink, *R.E.G.* 77 (1964): p. 535.

⁴² For Philoponus' independence and originality as an editor of Ammonius' courses, cf. also Évrard, *R.E.G.* 78 (1965): pp. 596–597.

⁴³ Cf. Philoponus, in *Phys.*, pp. 583.13–585.4 (Vitelli). Ammonius is not mentioned but in p. 583.14 ὁ φιλόσοφος most probably refers to him (cf. also p. 584.4: ἡ τοῦ φιλοσόφου ὑπὲρ Ἀριστοτέλους ἀπολογία).

⁴⁴ I am not convinced by Westerink's suggestion (*Anonymous Prolegomena*, pp. xii–xiii) that the concession made by Ammonius in his pact with Athanasius II was a *pro forma* conversion to Christianity. Cf. Évrard, *R.E.G.* 78 (1965): pp. 597–598.

³⁹ Cf. below, pp. 16–17.

⁴⁰ For the meaning of ἀπὸ φωνῆς (= "from the teaching of"), cf. M. Richard, *Byzantion* 20 (1950): pp. 191ff.

⁴¹ That the commentary of Asclepius was really the source of the commentary of Philoponus was suggested by Tannery, *Mémoires scientifiques* 2: p. 110, n. 2.

⁴² These two other possibilities seem to be preferred by Westerink in his article "Deux commentaires sur Nicomaque: Asclépius et Jean Philopon," *R.E.G.* 77 (1964): pp. 526–535, esp. p. 535. This article reached me while I was writing this introduction to my edition of Asclepius' commentary. I am glad to see that Professor Westerink has reached the same conclusion as I did in regard to the ultimate source of these commentaries, namely, that it was a course on Nicomachus given by Ammonius.

Asclepius I. γ 68–79: ἐκ τοίνυν τούτων ἔστιν ἐπιλύσασθαι καὶ τὸ παρὰ Πλάτωνος ἐν Τιμαίῳ εἰρημένον· τί τὸ ὄν μὲν αἰ, γένεσιν δὲ οὐκ ἔχον; καὶ τί τὸ γινόμενον μὲν, ὄν δὲ οὐδέποτε; δῆλον γὰρ ὅτι ὄν μὲν αἰ, γένεσιν δὲ οὐκ ἔχον τὸ νοητὸν πᾶν καὶ αἰδίου καλεῖ· τί δὲ τὸ γινόμενον μὲν, ὄν οὐδέποτε τὰ τῆδε. καὶ προϋπτὸν ἔστιν ὅτι οὐχ, ὥς τινες νομίζουσι, τὸ γενητὸν ἐνταῦθα αὐτὸν βούλεται, τοῦτο δὲ ἔστι γενητὸς ὁ κόσμος· αἰ γὰρ γίνεσθαι αὐτὸν λέγει, ἀλλὰ γενητὸν καλεῖ τὸ μεταβλητὸν καὶ τρεπτὸν ὡς εἰρήκαμεν· ὅθεν καὶ ὄν (ἀντὶ τοῦ κυρίως ὄντος) οὐδέποτε ἔστι· πῶς γὰρ δύναται;

We can see that Philoponus has suppressed Ammonius' specific interpretation of the *Timaeus* as asserting the eternity of the world and his polemic against those who thought that Plato in calling the universe γενητός was postulating an origin for it; Philoponus has replaced this passage with a non-committal γινόμενον δὲ καὶ οὐδέποτε ὄν τὸ τῆδε πᾶν διὰ τὸ συνεχὲς τῆς μεταβολῆς. One must grant to Philoponus the desire to correct Asclepius' Greek, but this still does not justify the suppression of this text. We know that Ammonius believed in the eternity of the cosmos,⁴⁹ a dogma that Philoponus as a Christian did not accept and against which he wrote at length in his *De Aeternitate Mundi*. It should also be noticed that in another place of his commentary to Nicomachus, Philoponus, in connection with this same passage of the *Timaeus* (27 D–28 A), says: ὅτι δὲ καὶ τὰ οὐράνια ἀλλοιοῦνται κατὰ ποιότητα, ἐν ταῖς εἰς τὰ Μετέωρα σχολαῖς ἐδείξαμεν (Philoponus, I. 18, 4–5), whereas there is no such reference and no such notion about τὰ οὐράνια in the commentary of Asclepius. Professor Westerink rightly maintains that Philoponus is referring to his own commentary on Aristotle's *Meteorology*; and he asserts that this part of the commentary to which Philoponus is referring has been lost. According to Évrard, however, the reference is to an extant part of Philoponus' commentary to the *Meteorology*.⁵⁰ In this passage Philoponus argues against Aristotle's notion that the sun is the source of heat because of its motion and concludes that it is the source of heat because it is itself hot, a conclusion which for Philoponus entails that the sun

Philoponus I. γ 54–58: ἐκ τούτων ἔστιν ἐπιλύσασθαι καὶ τὸ παρὰ Πλάτωνος ἐν Τιμαίῳ εἰσηγμένον· τί τὸ ὄν αἰ, γένεσιν δὲ οὐκ ἔχον; τί δὲ τὸ γινόμενον μὲν, ὄν δὲ οὐδέποτε; δῆλον γὰρ ὅτι ὄν μὲν αἰ, γένεσιν δὲ οὐκ ἔχον τὸ νοητὸν πᾶν καὶ αἰδίου καλεῖ διὰ τὸ πάντῃ ἀμετάβλητον εἶναι, γινόμενον δὲ καὶ οὐδέποτε ὄν τὸ τῆδε πᾶν διὰ τὸ συνεχὲς τῆς μεταβολῆς.

must experience also qualitative change, whereas for Aristotle the sun is ἀναλλοίωτον. This is clear from Philoponus' own words (Philoponus, *In Meteor.*, p. 50, 20–28): εἰ μὴ παντελῶς ἀπαθὲς ἔστιν ἐκεῖνο τὸ σῶμα μηδ' ἀναλλοίωτον, ἀλλοίωσις δὲ σώματος οὐδὲν ἕτερόν ἐστιν ἢ μεταβολή κατὰ ποιότητα, πάσης δὲ σωματικῆς ποιότητος αἱ πρῶται δύο τῶν ἀντιθέσεων ἐξάρχουσιν ἢ τοῦ θερμοῦ καὶ τοῦ ψυχροῦ τοῦ ξεροῦ τε καὶ ὑγροῦ, καὶ ἔστιν ἀδύνατον τῶν ἄλλων μετέχειν τινὸς τὸν μὴ τούτων μετέχοντα πρότερον (πάσας γὰρ Ἀριστοτέλης ἔδειξε τὰς ἄλλας ὑπ' ἐκείνας ἀναγνωμένας), εἰ οὖν ἀλλοιοῦνται καὶ πάσχει τὸ θεῖον σῶμα, πάντως ἀνάγκη κατὰ τινὰ τῶν εἰρημένων τεσσάρων ποιότητων προηγουμένως ἀλλοιοῦσθαι, καθὰ δοκεῖ καὶ Πλάτῳ. Perhaps this is not the passage to which Philoponus refers in his commentary to Nicomachus, since it only refers to the sun; but however this may be, there is no question that Évrard is right in considering that the whole passage is connected with Philoponus' polemical attitude towards the dogma of the eternity of the cosmos,⁵¹ and it is important that Philoponus refers to this doctrine of his about τὰ οὐράνια in the commentary to Nicomachus. Asclepius for his part considers that τὰ οὐράνια are intermediate between the intelligible world and the realm of γένεσις and expressly says that they are subject only to change of place, and implicitly denies that they can experience any change of οὐσία. Just before the passage where he argues against those who interpret the *Timaeus* literally he says (Asclepius, I. γ, 55–68): τὰ μέντοι οὐράνια, ὡς μεταξὺ ὄντα, ἐκείνοις μὲν κατὰ τὴν οὐσίαν κοινωνεῖ (καὶ γὰρ αὐτὰ αἰδία καὶ θεῖα), ἡμῖν δὲ κατ' ἐνέργειαν (μεταβλητὰ γὰρ, ἀλλ' οὐχ οὕτως ἡμεῖς). ἀλλὰ τὴν τοπικὴν μόνην μεταβολὴν ὑπομένουσι· καθὼς ἀπὸ ἀνατολῶν ἐπὶ δυσμᾶς κινοῦνται καὶ ἀπὸ δυσμῶν ἐπὶ ἀνατολᾶς. τὸ πλεον οὖν ἐκεῖ-

⁴⁹ In the commentary to the *Metaphysics* Asclepius specifically attributes to Ammonius the belief in the eternity of the cosmos; cf., e.g., p. 89.4–5; p. 90.27–28; p. 171.9–11; p. 186.1–2; p. 194.23–26; p. 226.12–15; quoted by Westerink, *Anonymous Prolegomena*, p. xii, n. 28. On Asclepius I. γ 68–79 cf. n. *ad loc.*

⁵⁰ Cf. CAG XIV, 1, pp. 49.25–52.5. See Évrard, *R.E.G.* 78 (1965): pp. 593–594.

⁵¹ Cf. Évrard, *op. cit.*, and also in *Bulletin de l'Académie Royale de Belgique, Classe des Lettres* 39 (1953): pp. 333–334.

νοις κοινωνεῖ, ὡς πλησιάζοντα τοῖς ἀεὶ καὶ ὡσαύτως οὕσιν· ὅτι γὰρ ἐκείνοις κοινωνεῖ ὁ οὐρανὸς καὶ πρὸς τῷ θεῷ ἐστὶ καὶ καθαρὸς τυγχάνει, δῆλον ἐκ τοῦ νομίζειν ἡμᾶς καὶ τὸν θεὸν ἐκεῖ εἶναι, ὥσπερ γὰρ τὸν ἐγκέφαλον μᾶλλον ἀπολαύειν λέγομεν τῶν τῆς ψυχῆς ἐνεργειῶν, οὕτω καὶ αὐτόν· ὅθεν καὶ τὰς χεῖρας πάντες οἱ ἄνθρωποι εὐχόμενοι εἰς οὐρανὸν ἐντείνουμεν ὡς ἂν ἐκεῖ τοῦ θεοῦ κατοικοῦντος. The fact that Philoponus in the parallel passage to the lines of Asclepius just quoted⁵² has preserved this same notion that τὰ οὐράνια are intermediate and that they only experience change of place, can only be explained as an oversight on his part. At any rate he suppressed the interpretation of the *Timaieus* as upholding the eternity of the world, and he later inserted a reference to his own doctrine that τὰ οὐράνια ἀλλοιοῦνται κατὰ ποιότητα.

It is also noteworthy that Asclepius in I. 5 and Philoponus in I. 7 have ὁ μέντοι φιλόσοφος Ἀμμώνιος, ὁ ἡμέτερος διδάσκαλος, whereas when in I. 7 Asclepius writes ὡς φησὶν ὁ θεὸς διδάσκαλος, Philoponus in I. 7 has ὡς φησὶ ὁ αὐτὸς ἡμῶν διδάσκαλος; it is not surprising that the Christian Philoponus avoids the word θεὸς here.

Of the two commentaries the one by Asclepius is shorter and bears the marks of being much closer to the course given by Ammonius than the commentary of Philoponus (see also below pp. 12f.). The lemmata in Asclepius are longer than those given by Philoponus (if Hoche's edition of Philoponus can be trusted);⁵³ the latter's lemmata are limited to one or two essential words, whereas those given by Asclepius are usually sufficient for the understanding of the commentary. There are many places, however, where Philoponus has given a different word or different words of Nicomachus as

the lemmata of certain paragraphs. I have given at the bottom of each page the numbers of the paragraphs of the commentary of Philoponus that correspond to those of the Asclepius commentary. In the commentary itself there are similarities and differences; but where there are similarities the reader will see that the two texts are so close that the corrections, expansions and suppressions of Philoponus cannot conceal the fact that he used the commentary of Asclepius or another version very close to our Asclepius as the basis of his text. If I am right in thinking that the commentary of Asclepius was left unrevised (see below p. 12f.), then the possibility is that this is what led Philoponus to revise the commentary and publish it under his name.

Philoponus, while correcting the text, has perfected and expanded some of the references to ancient authors quoted or paraphrased by Ammonius, has suppressed some, and has added some new ones. But we should not always assume that the quotation or paraphrase given by Philoponus is better than the one given by Asclepius. For certain texts Philoponus probably did not have anything else to consult but the text of the notes of Ammonius' lectures. That this would not prevent him from expanding can be seen from the report that he gives of the opinion of Ammonius quoted above (cf. Asclepius, I. 7 = Philoponus, I. 7); for the opinions of Ammonius Asclepius must remain our main source. Where Philoponus agrees with him we have a confirmation; where he deviates we must assume that this is not Ammonius. Many times what Asclepius and Philoponus quote or paraphrase from ancient authors is probably based only on the text of Nicomachus that Ammonius must have had in front of him while he lectured.

Granted that the text of Asclepius as preserved in the manuscripts is often corrupt, still there are some mistakes and inaccuracies that go back to the author. Such phenomena point to the conclusion that the text of Asclepius was left unrevised by its author and was probably never meant for publication. If we remember that Asclepius' commentary goes back to a course given by Ammonius most of these inaccuracies can be explained. There are of course some indications that Asclepius revised his original material, as is shown by his calling Ammonius ὁ ἡμέτερος διδάσκαλος, etc. But such revision was not at any rate complete, for the latter part of the commentary, especially in the second book, shows more signs of being an unrevised draft than the first pages would lead us to suppose. The bulk of Asclepius' commentary consists, then, of notes taken from Ammonius' lectures on Nicoma-

⁵² Cf. Philoponus, *In Nicomachi Isagogen* I, γ, 46–54: τὰ μέντοι οὐράνια, ὡς μεταξὺ ἀμφοτέρων ὄντα, ἐκείνοις μὲν κατὰ τὴν οὐσίαν κοινωνεῖ, ὡς ἀμετάβλητα κατ' οὐσίαν, ἡμῖν δὲ κατ' ἐνέργειαν· μεταβλητὰ γὰρ ταῦτα, τὴν τοπικὴν μεταβολὴν ὑπομένοντα· καθὼς ἀπὸ ἀνατολῶν ἐπὶ δυσμὰς κινεῖται καὶ ἀπὸ δυσμῶν ἐπὶ ἀνατολὰς· τὸ πλεῖον οὖν ἐκείνοις κοινωνεῖ, ὡς πλησιάζοντα τοῖς ἀεὶ καὶ ὡσαύτως ἔχουσιν· ὅθεν καὶ πάντες ἐκεῖ τὸν θεὸν ἰδρῦσθαι νομίζουσιν, ὡς μᾶλλον τῶν οὐρανίων τῆς ἐκείνου ἐλλάμψεως μετεχόντων· ὥσπερ γὰρ τὸν ἐγκέφαλον μᾶλλον ἀπολαύειν λέγομεν τῶν τῆς ψυχῆς ἐνεργειῶν, οὕτω καὶ τὸν οὐρανὸν τῆς τοῦ θεοῦ μᾶλλον εἰκὸς μετέχειν ἐλλάμψεως· ὅθεν καὶ τὰς χεῖρας πάντες οἱ ἄνθρωποι εὐχόμενοι ἄνω αἵρουσιν ὡς ἂν ἐκεῖ τοῦ θεοῦ κατοικοῦντος.

⁵³ I mention this in view of the fact that Hoche used only a few of the extant manuscripts of recensions I and II. Thanks to the courtesy of Professor David Pingree of the University of Chicago, who lent me a microfilm of cod. Gayri islâmi Eserler, Poz Topkapi Sarayı in Istanbul which contains recension II, I have been able to see that the lemmata in recension II are longer and sometimes different from those of the commentary by Philoponus as published by Hoche.

chus. Similar characteristics in the *Anonymous Prolegomena to Platonic Philosophy* led Professor Westerink to the same conclusion.⁵⁴ Philoponus has corrected this kind of inaccuracy, which shows that he reworked his set of notes of the course given by Ammonius. The following additional evidence seems to support our conclusion: Asclepius has a wrong reference to Aristotle's *De Anima*⁵⁵ which Philoponus has omitted. A wrong reference can easily happen in a lecture where the lecturer may probably be quoting or paraphrasing from memory; but a wrong reference would be more difficult to explain if a person revised a text with a view to publication. In the commentary of Asclepius we find mistakes, inaccuracies, and unnecessary repetitions of examples which cannot in all instances be ascribed to scribes' mistakes.⁵⁶ In the corresponding passages of the commentary of Philoponus we find the necessary corrections. Philoponus also offers us more accurate and grammatical Greek, although we cannot always assume that he intended to correct Asclepius or his immediate source, since in other places he uses the same constructions⁵⁷ that we find in Asclepius.

Now the fact that Philoponus revised either the commentary of Asclepius or another version close

to it does not entitle us to the conclusion that in all instances the commentary of Philoponus is the more correct one. Some examples will suffice to make this clear. If Hoche's edition of Philoponus' commentary can be trusted, in the first book, paragraphs I. ιζ and I. ιη, which are comments to Nicomachus I.2.4, are really in the reverse order, whereas the corresponding passages in the version of Asclepius, I. ιγ (= Philoponus, I. ιη) and I. ιδ (= Philoponus, I. ιζ) are in the correct order.⁵⁸ Sometimes the paragraphing of Asclepius is better than that of Philoponus; for example, Asclepius, I. ιθ = Philoponus I. κα; but whereas Philoponus has this paragraph as part of his commentary to Nicomachus I.2.5, Asclepius includes his comments in the paragraph devoted to Nicomachus I.3.3, which is more correct.⁵⁹ There are in Asclepius some references to ancient authors which have been suppressed by Philoponus. He has done so with the quotation or paraphrase from Proclus⁶⁰ and with the story about Plato and the duplication of the cube.⁶¹ The story that Asclepius narrates mentioning the name of Ammonius, Philoponus modifies to show his special relationship with the latter.

Asclepius I. κθ 8–15: ὅτι δὲ χαίρουσιν αἱ ψυχαὶ ἐπὶ τῇ εὐρέσει τῶν δογμάτων, δῆλον ἐκ τοῦ ἡδεσθαι ἡμᾶς εὐρίσκοντάς τι, καὶ οὕτως ἡδεσθαι ὥς καὶ δάκρυον προχεῖσθαι. ἀμέλει καὶ ὁ φιλόσοφος Ἀμμώνιος ἔλεγεν ὅτι “ἐπραττόν τινα ἀνδρὶ γραμμάς, καὶ ἦδετο πάνυ λέγοντός μου τὸ θεώρημα. ὅθεν παυσανένου μου ἔφη ‘λυποῦμαι ὅτι νῦν ἐπλήρωσας, ἤθελον γὰρ ἀκοῦναι τῆς ἀποδείξεως’.”

Philoponus I. κθ 6–11: ὅτι δὲ χαίρουσιν αἱ ψυχαὶ ἐπὶ τῇ εὐρέσει τῶν δογμάτων, δῆλον ἐκ τοῦ ἡδεσθαι ἡμᾶς εὐρίσκοντάς τι, καὶ οὕτως ἡδεσθαι ὥς ὑφ’ ἡδονῆς καὶ δάκρυον πολλάκις προχεῖσθαι. ποτὲ γοῦν τις ἐμοὶ συνήθης ἀπόδειξιν γεωμετρικοῦ τινὸς θεωρήματος ὑπὸ τοῦ διδασκάλου παραλαβὼν καὶ τῇ κατασκευῇ λίαν ἐφηδόμενος, ἐπειδὴ πρὸς τῷ συμπεράσματι γέγονεν, ἀνίσθαι ἔφη τοῦ λόγου πέρας εἰληφότος, ὥσπερ εἴ τις ὄψω λίαν ἡδοντὶ ἢ ποτὶ τινί, ἐπειδὴ δαπανηθεῖη, λυπούμενος.

Just immediately before this passage there is a quotation of Hesiod, *Opera et Dies*, from which Philoponus has suppressed half a line.⁶²

Nevertheless, the language, the unnecessary repetitions, and the mistakes which are present in the text of Asclepius make it plausible that his version is very close to the lectures given by Ammonius and that Philoponus reworked this text of Asclepius or another set of notes close to our Asclepius

into his own commentary. Philoponus has also expanded the original commentary adding examples and quotations,⁶³ tightening some explanations⁶⁴ and including some philosophical digressions.⁶⁵

We have said that both the commentary of Asclepius and that of Philoponus go back to a course on Nicomachus given by Ammonius; this is based

⁵⁴ Cf. Westerink, *Anonymous Prolegomena*, pp. ix–x and n. 4.

⁵⁵ Cf. Asclepius, II. λη 5–6 and n. *ad loc.*

⁵⁶ Cf., e.g., notes to I. υς, υθ, ξς, ρια, ρκε, etc.

⁵⁷ Cf. below p. 22f.

⁵⁸ Cf. n. to I. κθ.

⁵⁸ Cf. also note to I. ιγ–ιδ

⁵⁹ On the problem of paragraphing, cf. p. 22.

⁶⁰ Cf. Asclepius I. ια 76–80 and n. *ad loc.*

⁶¹ Cf. Asclepius II. ιζ 8–17 and n. *ad loc.*

⁶² Cf. e.g. Philoponus I. κζ 2–3 and note to I. α, Philoponus I. λα 5 and n. to I. λα

⁶³ Cf. Asclepius I. υς = Philoponus I. ξα and n. to I. υς Asclepius I. υθ = Philoponus I. ξς and n. to I. υθ etc.

⁶⁴ Cf., e.g., Philoponus I. ροη and n. to I. ρνβ.

on the following facts: (a) that both commentaries still preserve the divisions into θεωρία and λέξις,⁶⁶ (b) that both commentaries quote Ammonius in connection with his interpretations of Nicomachus, (c) other evidence concerning Ammonius' activities in the school of Alexandria. We may now add the following considerations. We know that Ammonius was not inclined to publish the lectures he gave and that he left the publication of them to his students. All the works that we possess by him, except his commentary to the *De Interpretatione*, are said in one form or another to be ἀπὸ φωνῆς Ἀμμωνίου.⁶⁷ We also know that his fame rested not only in his ability as an Aristotelian commentator, but also in his competence as a mathematician and astronomer. This is shown by two extracts from Damascius' *Life of Isidorus* preserved by Photius, *cod.* 181, 127 A 5–10 (Bekker = p. 192, Henry): καὶ Ἀμμώνιος ἐν Ἀλεξανδρείᾳ ὁ Ἑρμεῖου, ὃν οὐ μικρῶν μέτρῳ τῶν καθ' ἑαυτὸν ἐπὶ φιλοσοφίᾳ φησὶ (sc. ὁ Δαμάσκιος) διαφέρειν, καὶ μάλιστα τοῖς μαθήμασι. τοῦτον καὶ τῶν Πλατωνικῶν ἐξηγητὴν αὐτῶν γεγενῆσθαι Δαμάσκιος ἀναγράφει, καὶ τῆς συντάξεως τῶν ἀστρονομικῶν Πτολεμαίου βιβλίων. *cod.* 242, 341 B 22–28 (Bekker): ὅτι ὁ Ἀμμώνιος φιλοπονώτατος γέγονε, καὶ πλείστους ὠφέλησε τῶν πώποτε γεγεννημένων ἐξηγητῶν· μᾶλλον δὲ τὰ Ἀριστοτέλους ἐξήσκητο. ἔτι δὲ διήνεγκεν οὐ τῶν καθ' ἑαυτὸν μόνον ἀλλὰ καὶ τῶν πρεσβυτέρων τοῦ Πρόκλου ἐταίρων, ὀλίγου δὲ ἀποδέω καὶ τῶν πώποτε γεγεννημένων εἰπεῖν, τὰ ἀμφὶ γεωμετρίαν τε καὶ ἀστρονομίαν. See also what Photius says in his own name, whether he derived it from Damascius or not, speaking *à propos* of the obscurity of Nicomachus' *Theologumena*, *cod.* 187, 145 A 35–40 (Bekker = p. 48, Henry): ἐπεὶ νῦν τὰ τε γεωμετρικὰ καὶ ἀριθμητικὰ καὶ τᾶλλα τῶν μαθημάτων, ὡς καὶ σὺ συνεπίστασαι, πολλοὶ τῶν ἡμᾶς ἐγνωκότων οὐκ ἔλαττον, οἶμαι, τοῦ παιδὸς Ἑρμεῖου (οἶδας πάντως τὴν περὶ ταῦτα δεξιότητα τοῦ Ἀμμωνίου) διακριβοῦσι, καὶ οὐδὲν αὐτοὺς λάθοι ἂν τῶν θεωρημάτων, ἃ συνεπεισκυκεῖ Νικόμαχος τῶν περὶ ἀριθμῶν πόνων.⁶⁸ So, although we are not expressly told that Asclepius' and Philoponus' commentaries to Nicomachus are ἀπὸ φωνῆς Ἀμμωνίου in all probability they are.⁶⁹

This conclusion is strengthened by the occurrence in both commentaries of doctrines that are typical of Ammonius. We have already referred to his interpretation of the *Timaeus* as upholding the eternity of the world and to the fact that the eter-

nity of the world was a belief of Ammonius. Other examples of doctrines that either originated with Ammonius or were held by him are his derivation of σοφία from σαφία (Asclepius I. α 6 ff. = Philoponus, I. α 7 ff.) which he somehow read into Aristotle, *Metaphysics* 993 B 7–11 (see Asclepius, I. α 8–10 = Philoponus, I. α 10–13 and Asclepius, I. γ 36 ff. = Philoponus, I. γ 33 ff.). These texts should be compared with Asclepius, in *Metaph.*, p. 3.30–34 (Hayduck), *ibid.*, p. 4.30–35, *ibid.*, p. 14.32–p. 15.2, *ibid.*, p. 19.33–34, *ibid.*, p. 114.1–10 and 29 ff., *ibid.*, p. 117.24–32; Philoponus, *Anal. Post.*, p. 332.5–24 (Wallies), Philoponus, *De Anima*, p. 23.26–p. 24.3 (Hayduck).⁷⁰ It was a characteristic in the school that references and quotations from ancient authors became stereotyped. See, for example, the connection of Pythagoras and of the definition φιλοσοφία ἐστὶ φιλία σοφίας with the quotation of Homer, *Iliad* XV.412 and the particular quotation of *Iliad* XXIII.712 as ἐπεὶ σοφὸς ἦραρε τέκτων (Asclepius, I. α 34 ff. = Philoponus, I. α 32 ff.) and compare with Ammonius, *In Porphyrii Isagogen*, p. 9.7–15 (Busse). Also remarkable is the quotation of *Iliad* XX.216–217 (which is expanded by Philoponus: he quotes lines 215–218) in connection with humanity's loss and recovery of knowledge and which is reproduced in the same connection in Asclepius, *In Metaph.*, p. 10.30–p. 11.5 (Hayduck).⁷¹

In the second book of Asclepius' commentary a passage occurs which reads as follows (Asclepius II. ια 37–38): ἐστὶ δὲ καὶ ἄλλη μέθοδος τετραγώνων, ἥτις ὀνομάζεται δίαυλος, εἴρηται δὲ καὶ ἐν ταῖς Φυσικαῖς (*sic*). Since there is a similar passage in the commentary of Philoponus (II. λα 19–20): ἐστὶ δὲ καὶ ἄλλη μέθοδος τετραγώνων, ἥτις ὀνομάζεται δίαυλος, εἴρηται δὲ ἡμῖν ἐν τοῖς Φυσικοῖς περὶ αὐτοῦ, and in the latter it refers to Philoponus' commentary to Aristotle's *Physics*,⁷² it may be thought at first that the commentary of Asclepius cannot go back to Ammonius. But this supposed difficulty disappears

⁶⁶ Cf. below pp. 16f.
⁶⁷ Cf. Richard, *Byzantion* 20 (1950): pp. 192ff., and Westerink, *Anonymous Prolegomena*, p. xi.
⁶⁸ Cf. also Simplicius, *In Phys.*, p. 59, 23–30.
⁶⁹ Cf. also Westerink, *R.E.G.* 77 (1964): pp. 533–534.
⁷⁰ Philoponus I. α 8–42 (= Περὶ Φιλοσοφίας, fr. 8 [Ross]) was taken by Bywater, *Journal of Philology* 7 (1877): pp. 64–75, who was followed by many critics, as a fragment from Aristotle's *De Philosophia*. But the quotation or paraphrase from Aristotle comes from *Metaphysics* α minor (993 B 7–11), as is said both by Asclepius (I. γ, 36ff.) and Philoponus (I. γ, 33ff.); cf. also the passage from Philoponus' *De Anima* mentioned above in the text. This was first seen by Cherniss, *Gnomon* 31 (1959): p. 38 and n. 4 and 5. See also my review of Untersteiner, *Aristotele. Della Filosofia* (Roma, 1963), in *AJP* 87 (1966): esp. pp. 467–468, and notes to I. α and I. γ. Cf. also W. Haase, "Ein vermeintliches Aristoteles-Fragment bei Johannes Philoponos," *Synusia. Festgabe für Wolfgang Schadewaldt* (1965), pp. 323–354.

⁷¹ Cf. n. to I. α.

⁷² Cf. Philoponus, *In Phys.*, p. 393, 15–27 (Vitelli).

once we recall that Philoponus' commentary to Aristotle's *Physics* is said to be based on a course given by Ammonius, so that in the commentary of Asclepius Ammonius himself is referring to his own lectures on Aristotle's *Physics*. Moreover, in his commentary to the *Metaphysics*, Asclepius also refers to the commentary on the *Physics*.⁷³

The method to find square numbers called δίσυλος is not original with Ammonius, since it was known to Iamblichus,⁷⁴ and from the way in which the latter refers to it⁷⁵ we may infer that he was not its inventor either. The δίσυλος is based on the principle that the sum of two consecutive triangular numbers is a square, a principle which is stated by Nicomachus himself.⁷⁶

It will be well now to compare briefly the commentary of Iamblichus with those of Asclepius and Philoponus. It is necessary to give first a short characterization of Nicomachus' treatise.⁷⁷ Whereas Euclid represents numbers by straight lines to which letters are attached, a system which allows him to work with numbers in general without having to attach specific values to them, Nicomachus represents numbers with letters having specific values, a system which forces him to give examples with concrete numbers after a general principle has been stated. This way of representing numbers is, however, not the cause, but rather the consequence of the fact that in Nicomachus we do not find real

mathematical proofs. At times Nicomachus simply enunciates a general proposition and proceeds to give concrete examples of it, while on other occasions he leaves the general proposition to be inferred from the particular examples given. This method leads him on one occasion to a serious mistake when he infers a characteristic of the subcontrary proportion from what is true only of the particular example of subcontrary, namely, 3, 5, 6, which he has chosen to illustrate this proportion.⁷⁸ These characteristics of Nicomachus' treatise are probably due, as Heath maintains,⁷⁹ to the fact that Nicomachus was not really a mathematician and intended his treatise to be a popular treatment of arithmetic designed to acquaint the beginner with the most important discoveries in the field up to the time of its composition.

Iamblichus' *Commentary to the Introductio Arithmetica* of Nicomachus is, strictly speaking, a different treatise on the same subject. Iamblichus does not comment on the text of Nicomachus, but proceeds to develop his subject, basing his treatment of arithmetic on Nicomachus' *Introductio Arithmetica*.⁸⁰ By and large he follows the order and the contents as given by Nicomachus.⁸¹ At times he omits something,⁸² but for the most part he has added new material. The most important additions of Iamblichus to the Nicomachean original are: (a) new examples and observations based on the material already given by Nicomachus,⁸³ (b) historical notes on some propositions and theorems,⁸⁴ (c) discussions on the virtues of numbers according

⁷³ Cf. Asclepius, *Metaph.*, p. 236, 11-12: διὰ τοῦτο ἐλέγομεν ἐν τῇ Φυσικῇ ἀκροάσει ὅτι ταῦτά λέγει εἶναι στοιχεῖον καὶ ἀρχήν.

Philoponus I. 18 4-5 has also a reference to his own commentary to Aristotle's *Meteorology*: ὅτι δὲ καὶ τὰ οὐράνια ἀλλοιοῦται κατὰ ποιότητα, ἐν ταῖς εἰς τὰ Μετέωρα σχολαῖς ἐδείξαμεν. Cf. above pp. 11-12. Philoponus I. 18 7ff., εἴρηται δὲ ἐν ταῖς κατηγορίαις ὅτι τῶν πρὸς τι τὰ μὲν πρὸς ὁμωνυμίαν λέγεται, ὡς ὁ φίλος φίλου φίλος . . . τὰ δὲ πρὸς ἐτερόνυμα, ὡς δεσπότης πρὸς δοῦλον κτλ., contains a reference not to Aristotle's *Categories* but to Philoponus' *Commentary* (cf. *CAG* XIII, 1: p. 105, 1ff.). Neither of these two references is to be found in Asclepius' *Commentary*.

⁷⁴ Cf. Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 75, 25ff. (Pistelli).

⁷⁵ Cf. Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 75, 25-26 (Pistelli): ἐν τε τῇ κατὰ τὸν λεγόμενον δίσυλον; *ibid.*, p. 80, 11: καὶ κατὰ τὸν εἰρημένον δίσυλον; *ibid.*, p. 80, 20-22: περὶ δὲ τῆς κατὰ τὸν λεγόμενον δίσυλον αὐτῶν γενέσεως μικρῶ πρόσθεν εἴρηται; *ibid.*, p. 88, 16-17: ἡ κατὰ τὸν εἰρημένον δίσυλον τῶν τετραγώνων γένεσις. For the δίσυλος in Iamblichus, cf. Heath, *A History of Greek Mathematics* 1: pp. 113-114.

⁷⁶ Nicomachus, *Introduction to Arithmetic* II. 12.1-2. Cf. D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 128, n. 2 and the references there given.

⁷⁷ Cf. Heath, *A History of Greek Mathematics* 1: pp. 97-99.

⁷⁸ Cf. Nicomachus, *Introduction to Arithmetic* II. 28.3; see note to II. 11 and the references there given.

⁷⁹ Cf. Heath, *A History of Greek Mathematics* 1: p. 98.

⁸⁰ Cf. Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 4, 12-p. 5, 25 (Pistelli), especially p. 4, 12-14: εὐρίσκομεν δὲ πάντα κατὰ γνώμην τῷ Πυθαγόρᾳ τὸν Νικόμαχον περὶ αὐτῆς ἀποδεδωκότα ἐν τῇ Ἀριθμητικῇ τέχνῃ.

⁸¹ For a comparison of the contents of Iamblichus' *Commentary* with those of Nicomachus' *Introduction*, cf. D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, pp. 127-131.

⁸² For example Iamblichus omits I.6 and II.5 of Nicomachus' *Introductio Arithmetica*.

⁸³ Cf., e.g., Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 88, 15-p. 91, 3 (Pistelli), where he expands what Nicomachus says about square and heteromec numbers, basing his observations on the same table given by Nicomachus.

⁸⁴ Cf., e.g., Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 10, 8-24 (Pistelli): definitions of number according to Thales, Pythagoras, Eudoxus, Hippasus, and Philolaus; *ibid.*, p. 11, 1-26: discussion of the monad (see especially lines 7-9: συγκεχυμένως δὲ οἱ Χρυσίππειοι λέγοντες "μόνός ἐστι πλῆθος ἐν").

to the Pythagoreans;⁸⁵ (d) criticisms of Euclid;⁸⁶ (e) the “epanthema” of Thymaridas;⁸⁷ (f) the δῖανλος theorem.⁸⁸

The essential difference between the *In Nicomachi Arithmeticae Introductionem Liber* of Iamblichus and the commentaries by Asclepius and Philoponus is that the latter are in the form of *scholia* to the text of Nicomachus, whereas the work of Iamblichus is really a treatise on arithmetic based on Nicomachus’ *Introductio Arithmetica*. Moreover, the commentaries of Asclepius and Philoponus were not meant to explain the text of Nicomachus as, say, Alexander’s *Commentary* to Aristotle’s *Metaphysics* was meant to explain the content of the Aristotelian

treatise; they are based, as we said,⁸⁹ on a course on Nicomachus given by Ammonius and they preserve the divisions into θεωρία and λέξις which are characteristic of the commentaries ἀπὸ φωνῆς of the school of Alexandria from Ammonius’ time on. The θεωρία is a more or less mechanical division of the text in which the commentator explains the general purpose and gives an interpretation of a part of the text which is being studied; then in the λέξις he discusses details of the text whenever this is considered necessary.⁹⁰ I give below a selection of passages from the first book of Asclepius and Philoponus which refer to these divisions.

Asclepius I. α 62–64: οὗτος τοίνυν ὁ σκοπὸς τοῦ συγγράμματος. φέρε δὲ λοιπὸν τὴν λέξιν ἐξηγησώμεθα.

Asclepius I. ια 80–81: ταῦτά ἐστιν ἃ βούλεται διὰ τούτων διδάξαι.

Asclepius I. κδ 9–10: ταῦτα οὖν ἐστιν ἃ προήρηται διὰ τούτων εἰπεῖν.

Asclepius I. λγ 83–84: ταῦτα οὖν βούλεται ἡμῖν ἢ παρούσα θεωρία διηγῆσασθαι.

Asclepius I. μα 40–41: ταῦτα διὰ τῆς παρούσης θεωρίας μαθησόμεθα.

Asclepius I. νη 49–50: ταῦτά ἐστιν ἃ βούλεται διὰ τούτων διδάξαι.

Asclepius I. ξς 33–34: ταῦτά ἐστιν ἃ βούλεται διὰ τούτων εἰπεῖν.

Asclepius I. οβ 99–101: θᾶπτον οὖν ἀναγνῶμεν τὴν λέξιν, πάντα γὰρ τὰ μέλλοντα λέγεσθαι σαφῶς τεθεώρηται.

Asclepius I. οη 35–37: εἰ δὲ καὶ ἄλλο παρακολουθεῖ αὐτῷ, ἀναγνῶμεν τὴν λέξιν καὶ εὐρήσομεν.

Philoponus I. α 75 ... φέρε δὴ τὴν λέξιν αὐτὴν ἐξετάσωμεν.

Philoponus I. λδ 51–52: τὰ μὲν οὖν λεγόμενα παρὰ τοῦ Νικομάχου τοιαῦτα ἴδωμεν δὲ καὶ κατὰ λέξιν.

Philoponus I. μβ 24–25: ταῦτα διὰ τῆς παρούσης θεωρίας μαθησόμεθα.

Philoponus I. ξδ 15: τέως δὲ νῦν λοιπὸν τὴν λέξιν ἐπέλωμεν.

Philoponus I. οθ 65: θᾶπτον οὖν ἀναγνῶμεν τὴν λέξιν, πάντα γὰρ τὰ μέλλοντα λέγεσθαι σαφῶς τεθεώρηται.

Philoponus I. πζ 3 ὡς ἐν τῇ θεωρίᾳ προείρηται.

Philoponus I. πθ 45–46: ἔτι δὲ παρακολουθεῖ αὐτῷ καὶ ἄλλα τινά, ἅπερ τὴν λέξιν ἀναγινώσκοντες εὐρήσομεν.

⁸⁵ Cf. Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 16, 11–p. 20, 6 (Pistelli): discussion of the number 5 as justice; *ibid.*, p. 34, 20–p. 35, 10: virtues of the number 6 according to the Pythagoreans.

⁸⁶ Cf., e.g., Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 20, 7–p. 21, 4 (Pistelli): criticism of Euclid’s definition of the “even-times even,” a criticism which we find also in Asclepius (I. ξα) and in Philoponus (I. ξη); see note to I. ξα; *ibid.*, p. 30, 27–p. 31, 21: criticism of Euclid because Euclid considers 2 a prime number; Iamblichus follows Nicomachus in considering that prime number is a subdivision of odd number, not of number in general (cf. note to I. πγ).

⁸⁷ Cf. Iamblichus, *In Nicom. Arith. Introd. Liber*, pp. 62, 18–68, 26; see Heath, *A History of Greek Mathematics* 1: pp. 94–96.

⁸⁸ Cf. above, n. 74.

⁸⁹ Cf. above pp. 9ff.

⁹⁰ Cf. Richard’s article quoted above in n. 40; A.-J. Festugière, “Modes de composition des Commentaires de Proclus” *Museum Helveticum* 20 (1963): pp. 77–100; Westerink, *Damascius, Lectures on the Philebus Wrongly Attributed to Olympiodorus* (Amsterdam, 1959), p. ix; Westerink, *R.E.G.* 77 (1964): p. 528 and n. 8.

In the commentary of Asclepius these divisions are more numerous than in the commentary of Philoponus. That the expression ταῦτά ἐστιν ἃ βούλεται διὰ τούτων διδάξαι (or εἰπεῖν) refers to the

end of a θεωρία is shown by the parallelism of Asclepius I. νη 49–50 and Philoponus I. ξδ 15 transcribed above and also by the following texts, among others.

Asclepius I. ρς 103–105: ταῦτά ἐστιν ἃ βούλεται διὰ τούτων εἰπεῖν· παρέλθωμεν οὖν θᾶπτον τὴν λέξιν, σαφὴς γὰρ πᾶσα τυγχάνει.

Philoponus I. ριε 35–36 ταῦτά ἐστιν ἃ βούλεται διὰ τούτων διδάξαι· παρέλθωμεν οὖν θᾶπτον τὴν λέξιν, σαφὴς γὰρ πᾶσι τυγχάνει.

The subject of βούλεται is sometimes ἡ παρούσα θεωρία (see Asclepius I. λγ 83–84), sometimes Nicomachus, as Asclepius I. ρκζ 1–4 shows: πρὸς δὲ τὸν <ἐφ'> ἐκότερα δεύτερον στίχον. περὶ τῶν αὐτῶν βούλεται διαλεχθῆναι περὶ ὧν ἤδη ἡμεῖς προφθάσαντες ἐθεωρήσαμεν. ἀναγινωσκέσθω οὖν ἡ λέξις, καὶ εἴ τι ἀσαφὲς ἔχει, ἀξιούσθω ἐξηγήσεως; sometimes perhaps Ammonius is the subject, although I have found no convincing evidence of this.

In general the commentaries of Asclepius and Philoponus differ more widely in the second book than they do in the first; this would explain why in the second book of Philoponus' *Commentary* there are very few explicit references to the divisions between θεωρία and λέξις;⁹¹ though there are few references, they have their parallel passages in the text of Asclepius.

Asclepius II. ιβ 61–63: σαφὴς οὖν αὕτη πᾶσα ἡ θεωρία ἐστὶν ἐκ τῶν εἰρημένων· πάντα γὰρ παραδίδωσιν ἀκριβῶς ὁ Νικόμαχος.

Philoponus II. μβ 25–26 ἐκ τούτων οὖν σαφὴ γέγονε πάντα τὰ λεχθησόμενα· εἰ δὲ τί που δυσχερὲς εἴη, τοῦτο ζητήσομεν.

Asclepius II. κα 98–99: πάντα τοίνυν σαφὴ ἐστί, μηδεμιᾶς ἐξηγήσεως δεόμενα.

Philoponus II. ο 23–24: τούτων δὲ προειρημένων τὴν λέξιν ἐπέλθωμεν.

Asclepius II. λα 51–52: τούτων οὕτω τεθεωρημένων πᾶσα ἡ λέξις σαφὴς τυγχάνει, μηδεμιᾶς δεομένη ἐξηγήσεως.

Philoponus II. πθ 20: τούτων οὕτως τεθεωρημένων πᾶσα ἡ λέξις σαφὴς τυγχάνει, μηδεμιᾶς ἐξηγήσεως δεομένη.

As it was true in the first book, so also in the second book the explicit references to the divisions between θεωρία and λέξις are more numerous in the text of Asclepius than in the text of Philoponus.⁹² These parallel passages and others show that, despite the differences in the second book, both commentaries ultimately go back to the same source.

The text of Philoponus is a better commentary on the mathematical parts of Nicomachus than that of Asclepius. Both commentaries follow closely the text of Nicomachus and do not add much mathematical material. There are a few exceptions as, for example, their criticism of Euclid,⁹³ the δίαυλος,⁹⁴ and the interpretation of δύναιμις.⁹⁵ On the philosophical side they add a few important

things: (a) the first paragraph of both commentaries with the quotations or paraphrases from Aristotle and Aristocles;⁹⁶ (b) Ammonius' criticism of Nicomachus;⁹⁷ (c) Asclepius' statement on the interpretation of γενητός in Plato's *Timaeus*;⁹⁸ (d) Neoplatonic developments of Nicomachus;⁹⁹ (e) quotations from ancient authors as, for example, the important passage on Amelius.¹⁰⁰ Asclepius and Philoponus do not add much to what Nicomachus says on the history of definitions and theorems, as Iamblichus did. In fact there is no evidence that either Ammonius, Asclepius, or Philoponus used Iamblichus' treatise at all.

⁹² Cf., in addition to the passages quoted above, Asclepius II. ε 93–95; ια 68–70; ιγ 43–45; ιη 58–60; ιθ 56–57; κ 71–73; λθ 24–26.

⁹³ Cf. note to I. εα

⁹⁴ Cf. note to II. ια and above p. 15.

⁹⁵ Cf. notes to I. νθ and I. ξβ.

⁹¹ Haase, *op. cit.* (see n. 70), p. 347, n. 21, is mistaken when he says that these divisions are not to be found in book II. Philoponus *refers* to them; that he considers it unnecessary to explain the details is another matter.

⁹⁶ Cf. especially notes to I. α and I. γ.

⁹⁷ Cf. above pp. 9–10.

⁹⁸ Cf. above p. 11 and note to I. γ.

⁹⁹ Cf., e.g., notes to I. ιγ and I. λγ

¹⁰⁰ Cf. Asclepius I. μδ and note *ad loc.*

RECENSIONS II AND IV

So far we have dealt with recensions I and III. As for recension II, I am inclined to doubt that Tannery was right in ascribing this recension to Isaac Argyros. For one thing this recension is attributed in our manuscripts to Philoponus. It is true that in some additions to the text of recension I the name of Isaac Argyros occurs; but the conclusion to be drawn from this is that, at best, only these additions represent the work of Isaac Argyros. At any rate, a truly critical edition of recensions I and II would be needed before one could reach more definite conclusions. The occurrence in recension II of the reference to Philoponus' commentary

Philoponus II. λα 19–24: ἔστι δὲ καὶ ἄλλη μέθοδος τετραγώνων, ἣτις ὀνομάζεται διάυλος, εἴρηται δὲ ἡμῖν ἐν τοῖς φυσικοῖς περὶ αὐτοῦ· ἄρξαι ἀπὸ μονάδος καὶ λήξον, ὅπου θέλεις, καὶ εἰς ὃ ἂν λήξης ἐκεῖνο γενήσεται πάντως τοῦ μέλλοντος γίνεσθαι τετραγώνου πλευρά. μετὰ δὲ τὸ λήξαι πάλιν ὑπόστρεψον ἄχρι μονάδος καὶ γενήσεται τετράγωνος. οἷον ἄρχομαι ἀπὸ μονάδος, λήγω εἰς δυάδα· ποιῶ οὖν α β, γίνονται γ· πάλιν ὑποστρέφω εἰς μονάδα, γίνονται δ· ἰδοὺ ὁ δ τετράγωνος. ἦν δὲ λήξας εἰς δυάδα, αὐτὴ ἄρα πλευρὰ τοῦ δ· δις γὰρ β δ. ὡσαύτως προκόπτω ἄχρι τριάδος· κτλ.

Neither do I find convincing Tannery's argument, based on the epigram transcribed above (p. 7), that Arsenius should be considered the author of recension IV. To reach such a conclusion we would need to have first a critical edition of this commentary. But even in itself the epigram is not reason enough to consider that Arsenius is the author of the commentary and, moreover, Arsenius' epigram does not even appear in all the manuscripts that contain recension IV. The manuscripts which contain recension IV do not ascribe it to any author, so that this commentary is really anonymous. This may appear to contradict what I stated above against Tannery, namely, that some manuscripts of recension IV attribute this version of the commentary to Asclepius. But what has really happened is the following. Recension IV truly starts in the following way: ἀρχὴ τῆς ἐξηγήσεως τοῦ τῶν εἰς δύο πρώτου βιβλίου Νικομάχου ἀριθμητικῆς εἰσαγωγῆς. ἐπεὶ ἡ ψυχὴ διττὰς ἔχει τὰς ἐνεργείας, τὰς μὲν ζωτικὰς καὶ ὁρεκτικὰς τὰς δὲ νοεράς, τέλος δὲ ἐστὶ τῆς νοερᾶς δυνάμεως τῆς ψυχῆς ἡ ἐπιστήμη καὶ γνῶσις τῶν

to Aristotle's *Physics* mentioned above,¹⁰¹ which is included in one of the passages that present variations from the text of recension I, proves that the whole of recension II cannot be the work of Isaac Argyros. The likely explanation is that we have here one more example of variations within an ancient text. The variations may represent the work of Philoponus himself or of another member of the school of Alexandria.

I give the first few lines of both passages to show that the variations between recension I and recension II are of a similar kind to those between the texts of Asclepius and Philoponus.¹⁰²

Delatte, *Anec. Athen.* p. 145, 19–146,5: ἔστι δὲ καὶ ἄλλη μέθοδος γενέσεως τετραγώνων ἣτις ὀνομάζεται διάυλος, περὶ ἧς ἡμῖν εἴρηται καὶ ἐν τοῖς Φυσικοῖς. ἔστι δὲ αὕτη. ἄρξαι ἀπὸ μονάδος καὶ συντίθει τοὺς ἐφεξῆς ἀριθμούς ἕως οὗ βούλει καὶ εἰς ὃν ἂν λήξης ἀριθμόν, ἐκεῖνος ἔσται τοῦ μέλλοντος γίνεσθαι τετραγώνου πλευρά. μετὰ δὲ τὸ λήξαι πάλιν ὑπόστρεψον ἄχρι τῆς μονάδος συντιθεῖς πάντας τοῖς προτέροις πλὴν τοῦ τελευταίου· καὶ ὁ ἐκ τῆς συνθέσεως πάντων ἔσται σοι τετράγωνος. οἷον ἄρχομαι ἀπὸ μονάδος καὶ λήγω εἰς δυάδα· α γοῦν καὶ β γίνονται γ. πάλιν ὑποστρέφων συντίθημι καὶ αὐθις τὴν μονάδα τοῖς γ καὶ γίνεται ὁ δ τετράγωνος. ἔστι δὲ καὶ ὁ β εἰς ὃν κατέληξα συντιθεῖς πλευρὰ τοῦ γεγονότος τετραγώνου τοῦ δ. ὡσαύτως ποιῶ καὶ εἰ βούλομαι προελθεῖν ἄχρι τριάδος. κτλ.

ὄντων καὶ θείων καὶ ἀπλῶς τῶν ὄντων τῶν αἰ καὶ ὡσαύτως ἐχόντων, οὐ δύναται [δυνατὸν codd.] δὲ ἡ ψυχὴ ἀμέσως ταῦτα γινῶναι διὰ τὸ παρεμποδίζεσθαι τῷ σώματι, σκοπὸν ἔχει ὁ Νικόμαχος παραδοῦναι ἡμῖν μέθοδον δι' ἧς δυνηθῶμεν ταῦτα τὰ νοητὰ νοῆσαι· τὰ γὰρ μαθηματικά εἰσιν, οἷον ἀστρονομία, γεωμετρία, μουσική, ἀριθμητική, δι' ὧν ποδηγούμεθα πρὸς τὸ νοῆσαι τὰ νοητὰ κτλ. We see that the content roughly corresponds to Asclepius, I. α, that is, it expresses the belief that mathematics is intermediate and is a necessary step for the knowledge of true being. Somebody, at some time, thought that this beginning of recension IV was not the most appropriate one and prefaced it with Asclepius, I. α, which at the end says: εἴρηται ἄρα τίς τε ἡ ὁδὸς καὶ τί τὸ τέλος. οὗτος τοίνυν ὁ σκοπὸς τοῦ συγγράμματος. φέρε δὲ λοιπὸν τὴν λέξιν ἐξηγησώμεθα. Whoever he was who prefaced recension IV with Ascle-

¹⁰¹ Cf. Philoponus II. λα 19ff. (see above p. 14) and Delatte, *Anecdota Atheniensia* 2: p. 145, 19–20.

¹⁰² For the whole passage in recension II, cf. Delatte, *Anecdota Atheniensia* 2: p. 145, 19–p. 146, 20.

pius, I. α, did so without removing the name of Asclepius and left the beginning of recension IV anonymous. Of manuscripts that contain recension IV and attribute it to Asclepius I have examined in the *Bibliotheca Laurentiana* in Florence, *Cod. Plut.* LVIII, 29, ff. 94v.-196, and from the Escorial, through photostats, I have studied *Cod. Scor.* Y-I-12, ff. 81-170. They both begin like Asclepius, I. α; at the end of this addition we find: εἴρηται ἄρα τίς τε ὁδὸς καὶ τί τὸ τέλος. ὁ σκοπὸς τοίνυν τοῦ συγγράμματος ἐξηγήσεως τῆς προσηκούσης ἀξιωθήσεται (compare with the end of Asclepius, I. α), and then go on as at the beginning of recension IV: ἀρχὴ τῆς ἐξηγήσεως τοῦ τῶν εἰς δύο πρώτου βιβλίου Νικομάχου ἀριθμητικῆς εἰσαγωγῆς. ἐπεὶ ἡ ψυχὴ κτλ. This is doubtless the reason why some catalogs list recension IV as the work of Asclepius even though he is not even mentioned as the author in the manuscripts of recension IV which are prefaced by Asclepius, I. α, since, as we saw, they also preserve the anonymous beginning of recension IV.

In fact it is possible, I think, to determine how it came about that so many catalogs list manuscripts as containing Asclepius' *Commentary to Nicomachus* when they really contain recension IV, either by itself or preceded by Asclepius, I. α. When Bandini cataloged the Greek manuscripts of the Laurentiana in Florence he found a manuscript that contained recension IV preceded by Asclepius, I. α (*cf.* above p. 18f.) and it was only natural that he should have considered that this was indeed Asclepius' *Commentary to Nicomachus*. Bandini also transcribed the anonymous beginning of recension IV. When Hardt cataloged the Greek manuscripts of the Bayerische Staatsbibliothek in Munich he found himself confronted with *Cod.* 76, which contains recension IV preceded by Asclepius, I. α, and in the same codex with another commentary attributed to Philoponus and which seems to be recension II; with *Cod.* 431, which contains recension III; and with *Cod.* 482, which contains recension I. Because of Bandini's catalog and also because of the similarities of recensions I and III, Hardt concluded that recension IV contains the work of Asclepius (Hardt also knew of other manuscripts which contain only recension IV, like the Vindobonensis, *Phil. gr.* 35, and considered that this recension contains the work of Asclepius); and he attributed recensions I and III to Philoponus.¹⁰³ It is clear, however, after what we have said that recension IV

is anonymous;¹⁰⁴ that in our manuscripts recension III is attributed to Asclepius, and that recension I is attributed to Philoponus; and finally that recensions I and III are two different commentaries that go back to a course on Nicomachus given by Ammonius. But later catalogers, starting from Bandini's or Hardt's or Morelli's catalogs of the Laurentiana, Bayerische Staatsbibliothek, or Marciana, respectively, or from later catalogs which took their information from one of these three, went on attributing recension IV to Asclepius even in the cases where recension IV did not even begin with Asclepius I. α.

I give below a list of manuscripts known to me to contain recension IV:

- Bologna, Univ., No. 2734 (Olim 182): contains recension IV (*cf.* V. Puntoni, *Indicis Codicum Graecorum Bononiensium ab Al. Oliverio compositi. Supplementum* [*Studi Italiani di Filol. Class.* 4: 1896, p. 376]).
- Escorial, Bibl. Monast., No. 145 (T II 6): contains recension IV (*cf.* P. A. Revilla, *Catálogo de los Códigos Griegos de la biblioteca de El Escorial* [Madrid, 1936], p. 470).
- Escorial, Y I 12: contains recension IV preceded by Asclepius I. α (*cf.* above p. 18f.).
- Firenze, Bibl. Laurentiana, *Plut.* LVIII, 29: contains recension IV preceded by Asclepius, I. α (*cf.* above p. 18f.).
- Madrid, Bibl. Nacional, No. 4707 (Olim O 28): contains recension IV preceded by Asclepius, I. α (I have examined this manuscript in microfilm).
- Madrid, Bibl. Nacional, No. 4746 (Olim O 15): contains recension IV preceded by Asclepius, I. α (I have examined this manuscript in microfilm).
- Milano, Bibl. Ambrosiana, B 77 sup., first part (Gr. 105): contains recension IV (*cf.* Tannery, *Mémoires scientifiques*, 2: p. 307).
- Milano, Bibl. Ambrosiana, H 58 sup. (Gr. 438): contains recension IV (*cf.* Tannery, *op. cit.*, p. 308).
- Milano, Bibl. Ambrosiana, J 83 inf. (Gr. 1050): contains recension IV (*cf.* Tannery, *op. cit.*, pp. 308 and 309).
- Modena, Bibl. Estense, No. 245 (III G 12): contains recension IV (*cf.* V. Puntoni, *Indice dei codici greci della biblioteca Estense di Modena* [*Studi Italiani di Filol. Class.* 4, (1896): p. 522]).

¹⁰³ *Cf.* I. Hardt, *Electoralis Bibliothecae Monacensis Codices Graeci Msc.*, in I. Ch. F. von Aretin, *Beyträge zur Geschichte und Literatur* 2 (München, 1804), dritte Stückes, pp. 41-2, and *ibid.* 8 (München, 1807): pp. 360-361 and 525-529.

¹⁰⁴ This is of course decisive against Hardt's attribution of recension IV to Asclepius; moreover, the name of Ammonius is omitted from two places in recension IV where one would expect it to occur (*cf.* below p. 20).

München, Bayer. Staatsbibl., No. 76: contains recension IV preceded by Asclepius, I. α (cf. above p. 19 and note 103).

Napoli, Bibl. Naz., III C 7: contains recension IV (cf. Tannery, *op. cit.*, p. 308).

Napoli, Bibl. Naz., III C 9: contains recension IV (cf. Tannery, *op. cit.*, p. 308).

Oxford, Bodleian Library, Barocci 113: contains recension IV (I have examined this manuscript in Oxford).

Torino, B VI 29: contains recension IV (cf. C. O. Zuretti, *Indice dei MSS Greci Torinesi non contenuti nel catalogo del Pasini* [Studi Italiani di Filol. Class. 4 (1896): pp. 205–206]). This manuscript was destroyed by fire in 1904.

Torino C VI 16 (Pasini No. 160): contains recension IV (cf. Tannery, *op. cit.*, p. 308).

Vaticano, Reg. graec. 119: contains recension IV (cf. H. Stevenson, *Codices Manuscripti Graeci Reginae Suecorum et Pii PP. II Bibliothecae Vaticanae* [Romae, 1888], p. 86).

Vaticanus Graecus 256: seems to contain scholia from recension IV and recension I (cf. Mercati et De' Cavalieri, *Codices Vaticani Graeci*, Tomus I [Romae, 1923], pp. 335–336).

Venezia, Bibl. Marciana, cod. Graec. 397: contains recension IV preceded by Asclepius, I. α (cf. Jacopo Morelli, *Bibliothecae Regiae Divi Marci Venetiarum* [Bassani, 1802], p. 263).

Wien, Österreich. Nationalbibliothek, Cod. Phil. gr. 35: contains recension IV (cf. H. Hunger, *Katalog der griechischen Handschriften der Österreichischen Nationalbibliothek*, Teil 1 [Wien, 1961], p. 161).

For our present purpose the addition of this part (I. α) of the Asclepius commentary to recension IV is important, for it contains a more correct version of it in that some mistakes present in the manuscripts which contain recension III are absent from the same passage in recension IV (see below p. 21).

Some of the manuscripts which contain recension IV have the commentary written around the text of Nicomachus; this would help us explain why in other manuscripts which contain only the commentary there are properly no lemmata. It is desirable that this commentary be edited and published.

It is not possible for us to determine who is the author of recension IV or whether it belongs to the school of Alexandria. We do know that in the school courses on certain authors were repeatedly given and re-elaborated. Stephanus of Alexandria in his commentary to the third book of Aristotle's *De*

Anima cites a work of his on arithmetic;¹⁰⁵ since at that time it is unlikely that anybody would write a new work on arithmetic, and in view of the popularity of Nicomachus' *Introductio Arithmetica* both in the school of Alexandria and in late Antiquity in general, it is likely that the treatise referred to by Stephanus was a commentary on Nicomachus. But we cannot infer that Stephanus was the author of recension IV. For one thing recension IV does not appear to have any traces of the division into θεωρία and λέξις. Moreover, in the passages which would correspond to those where Asclepius and Philoponus quote the opinions of Ammonius this name is omitted, although, to judge from some verbal similarities it seems that the author of recension IV must have been acquainted with one or the other commentary. See, e.g., *Cod. Scor.* Y–I–12, f. 83: ... καὶ ὁ τέκτων σοφός, ὡς καὶ Ὀμηρος φησὶ “σοφὸς ἦραρε τέκτων” ... f. 84 v: ἡ γὰρ ὕλη ὅλη ἐστὶ τρεπτή καὶ ἀλλοιωτή, οὐχ ὅτι αὐτὴ τρέπεται· εἰ γὰρ ἐτρέπετο αὐτή, ἐδέετο ἑτέρας ὕλης ὅφ' ἥς ἐμελλε τραπῆναι, κάκεῖνη ἑτέρας καὶ τοῦτο ἐπ' ἀπειρον. οὐχ ὅτι περὶ αὐτὴν γίνονται αἱ τροπαὶ καὶ αἱ ἀλλοιώσεις κτλ. (Compare the second passage with Asclepius I. ζ and Philoponus I. η). It is likely, then, that Tannery was after all right when he considered that recension IV dates from the Byzantine period, although the ascription to Arsenius Olbiodorus must be rejected on the ground of insufficient evidence.

THIS EDITION

The only manuscripts known to me to contain recension III are the same ones that were known to Tannery,^{105a} namely, the *Monacensis* 431, the *Am-*

¹⁰⁵ Cf. [Philoponus], *In De Anima*, p. 457, 24–25 (Hayduck). The third book of Philoponus' commentary to the *De Anima*, where this passage occurs, is really by Stephanus; cf. Hayduck, *CAG* XV: p. v and R. Vancourt, *Les derniers commentateurs alexandrins d'Aristote* (Lille, 1941), pp. 43ff.

^{105a} *Cod. Parisinus Suppl. Graec.* 292, which according to Omont (*Inventaire sommaire des Manuscrits Grecs de la Bibliothèque Nationale. Troisième Partie... Inventaire sommaire des Manuscrits du supplément grec de la Bibliothèque Nationale* [Paris, 1888]) contains in ff. 346–357 the first book of Asclepius' commentary, really contains Asclepius I. α followed by a brief selection of texts taken from both book I and book II. These notes occupy only ff. 346–349. This manuscript was written in the seventeenth century and is described as *Ismaëlis Bullialdi collectanea*. In I. α, 21 it has the same mistaken reading as A, M, and P, πάντων δὲ καὶ τὰ κρανία; this shows that the manuscript from which these excerpts were copied belonged to the same family as the three manuscripts of Asclepius used to establish this edition.

brosonianus B 77 and the *Parisinus* 2376. Tannery thought that of these three manuscripts the only one that contains recension III complete is the *Parisinus* 2376 and he asserted that the archetype of the *Parisinus* is still to be discovered. But here Tannery, perhaps misled by a catalog, since he does not appear to have examined the *Monacensis* 431, was mistaken; the *Monacensis* does indeed contain the whole of Asclepius' commentary to Nicomachus. This manuscript was written by a careful scribe who appears to be the one who supplied the few omissions which we find in the *Monacensis* and who corrected a few mistakes. I have designated these corrections as M². It should be noticed that there is one page of this manuscript which was wrongly numbered and bound: what is now 110 should really be p. 102.

This manuscript is the best of the three and is directly or indirectly the archetype of the *Parisinus* 2376. That both the *Monacensis* and the *Parisinus* belong to the same family is proved by mistakes common to both manuscripts which are absent from the *Ambrosianus*. For example I. α 5: φιλία σοφίας instead of φιλοσοφία ἐστὶ φιλία σοφίας (the *Ambrosianus* has a different mistake here, cf. below, p. 21); I. α 39: ἔννοια instead of ἐπίνοια; II. λβ 60 where both the *Monacensis* and the *Parisinus* have the unnecessary ζητεῖ διὰ τί δύο μέσα ὁ τε ἄλλος καὶ τὸ ὕδωρ; II. λλ 2: δι instead of διὰ. On the other hand, there are cases where the *Ambrosianus* and the *Monacensis* are right against the *Parisinus* (e.g., I. ια 3: φιλία σοφίας AM: φιλοσοφίας P); this is probably due to mistakes by the scribe of the *Parisinus* or of his immediate source. There are many examples of negligence on the part of the scribe who wrote the *Parisinus* as is shown by the numerous omissions, the confusion of ε and η, ο and ω, etc. The *Parisinus* with two unimportant exceptions reproduces all the mistakes that are present in the *Monacensis* and, since it contains no good readings of its own, it is most probably a direct or indirect copy of the *Monacensis* and as such is worthless for the establishment of the text. The two instances in which mistakes in the *Monacensis* are absent from the *Parisinus* are: I. πς 2 λοιπὸν AP: λοιπονῶν M, and II. μ 76 τρεῖς P: τρίς M; these are probably corrections by the scribe of the *Parisinus* or its immediate source. The other instance of agreement of P with A is a mistaken reading: I. πβ 11 τῆς A² et M: τοῖς AP. A second hand in the *Parisinus*, which I designate P², has corrected some orthographical mistakes. By the same hand we have some corrections in the margin which appear to be only conjectures (cf., e.g., I. ι 1: κακῶς AM: καλῶς P: οὐ καλῶς P²) and do not seem to be based on read-

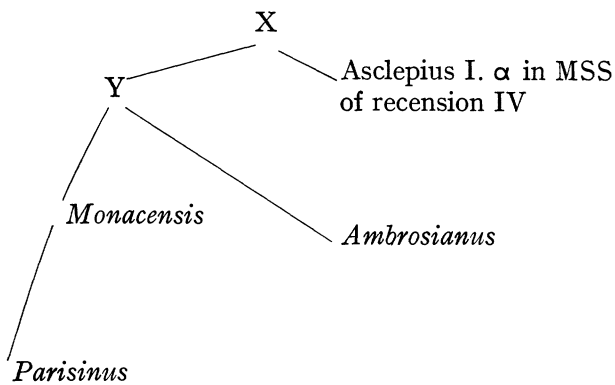
ings taken from a different manuscript. These corrections of P² I have reported in my apparatus. The *Parisinus* as such is worthless for the establishment of the text; I have included in the critical apparatus a few of its readings when it was necessary to make intelligible the conjecture by P², and also in II. μ 76 (see above).

The *Ambrosianus* B 77, although incomplete (it ends at II. μ 50: τοσαῦτα μὲν περὶ τούτων μεσο¹⁰⁶) is a good manuscript which has been useful for the establishment of the text. It is independent of the *Monacensis* and sometimes contains better readings than the latter; but it has a certain number of omissions, a thing that happens rarely in the *Monacensis*. Some mistakes which are common to both the *Ambrosianus* and the *Monacensis* show that ultimately they go back to the same source (e.g. I. ια 69: ἀνάγεσθαι (Philop.)] γίνεσθαι AMP; I. λγ 9: μετρητικός (Philop. and cf. crit. app. ad loc.)] μετρικός AMP). The same may be inferred from a notorious confusion in the text (cf. the critical apparatus to I. γ 47-51; see also below on I. α 5). This manuscript has been damaged apparently by water and as a consequence of this I have been unable to read, in a few instances, the three or four first lines of some pages. Perhaps it is still possible to read these few passages if one consults the manuscript itself, but I have had access to it only through a microfilm and photostats. At any rate no important readings are involved and, moreover, the *Monacensis* is by far our best source for the text of Asclepius.

Some mistakes of the *Ambrosianus* and the *Monacensis* in I. α, the paragraph for which we also have the evidence of some manuscripts which contain recension IV (see above pp. 18-20), show that these manuscripts (sc. *Ambrosianus* and *Monacensis*) ultimately derive from a manuscript that had abbreviations, which abbreviations were misinterpreted either by the scribes who wrote both manuscripts, or by a scribe who wrote an intermediate manuscript (cf., e.g., I. α 5: φιλοσοφία ἐστὶ φιλία σοφίας Cod. Scor. Y-I-12: φιλία σοφίας MP: φιλοσοφίας A). At any rate the archetype of the manuscripts that contain recension IV for Asclepius I. α seems to have been a better manuscript than the immediate archetype of the *Ambrosianus* and the *Monacensis* (see especially the readings in I. α 21 and 51: γάρ).

¹⁰⁶ It ends at the bottom of f. 149 v. Cf. also Tannery, *Mémoires scientifiques* 2: p. 307: "le manuscrit contient encore deux cahiers blancs; deux ou trois feuillets auraient suffi pour achever la copie."

To simplify I offer the following diagram.



In general I have followed the paragraphs indicated by the manuscripts; in a few cases paragraphs are indicated by one manuscript only, either the *Monacensis* or the *Ambrosianus*, but even then I have generally indicated a new paragraph. In some instances I have preferred to disregard the indications of the manuscripts, as for example in I. κα, where the quotations from Archytas are indicated in the manuscripts as new lemmata. When paragraphing is important for the understanding of the text I have provided in the notes to the text the necessary information concerning the readings of the manuscripts. It must also be noticed that in some cases the manuscripts are mistaken in indicating new paragraphs. I have also indicated most of the cases where in the middle of a paragraph there is a shift to another part of the text of Nicomachus. Such shifts occur also in the commentary of Philoponus and are quite natural if one takes into consideration the nature of these Neoplatonic commentaries. As for the text of the lemmata, I have followed the manuscripts of Asclepius, except in cases where it appeared to me that there is a scribal mistake. At any rate, since we do not have as yet a truly critical edition of Nicomachus' *Introductio Arithmetica*, it is difficult to reach an objective decision in some cases. It remains for a future editor of Nicomachus to decide what value must be attached to the text of Nicomachus used by Ammonius, Asclepius, and Philoponus. For this purpose he will have to study not only the lemmata given by Asclepius and Philoponus, but their commentaries as well.

There are certain characteristics in the language of Asclepius that should be noticed, for passages which have such characteristics should not be emended. Among others the following should be taken into consideration here. εἰ with subjunctive; cf., e.g., Asclepius I. λγ 68–69: εἰ μὲν γὰρ λάβῃς τὴν ἀκίνητον σφαῖραν; I. πα 16–17: εἰ ἀναμνησθῶμεν τῆς

γενέσεως τοῦ περισσάρτιου; 57–58: εἰ δὲ ἀρτίως ἐκθέσεις λάβῃς, etc. In some instances in the corresponding passages of the commentary by Philoponus we find εἰ with the optative or ἐάν with the subjunctive; but one should not infer, as Professor Westerink apparently does,¹⁰⁷ that this was part of Philoponus' corrections of his original set of notes (whether this set was our Asclepius, Philoponus' own notes, or a third set of notes close to our Asclepius), for there are instances when Philoponus himself uses εἰ with the subjunctive when Asclepius has the more normal εἰ with the optative; cf., e.g., Philoponus II. κ 13: εἰ τύχῃ = Asclepius II. ζ 40: εἰ τύχοι; Philoponus II. κς 6: εἰ λάβῃ = Asclepius II. η 2: εἰ . . . λάβοις; etc. Other grammatical characteristics are: aorist subjunctive passive used as future (Asclepius I. πς 26), neuter subject with plural verb (Asclepius I. ριγ 5; II. ιγ 14–15), δύο used undeclinably (Asclepius I. νη 28; πς 18 and 19). I have not corrected the manuscripts in Asclepius I. ρκθ 7ff.: δευτερωδουμένη, τριωδουμένη, etc. (cf. Iamblichus, *In Nicom. Arith. Introd. Liber*, p. 88, 24ff., who has the same spelling). In these and in many other instances Asclepius' Greek is not normal if judged by the standards of fifth- or fourth-century B.C. Attic Greek; but such characteristics as those mentioned above and many others were common in writers who lived during the fifth and sixth centuries A.D. and who belonged to the Alexandrian school. For further information on this subject, cf. *Ioannes Philoponus De Aeternitate Mundi Contra Proclum*, edidit Hugo Rabe (Lipsiae, 1899), pp. 697–699; Westerink, *Olympiodorus, Commentary on the First Alcibiades of Plato* (Amsterdam, 1956), pp. xiii–xiv; Westerink, *Anonymous Prolegomena to Platonic Philosophy*, p. 69; Westerink, *R.E.G.* 77 (1964): pp. 530–531.

πρῶτος = πρότερος occurs often and should not be emended; cf. Alexander, *In Metaph.*, p. 105, 8 (Hayduck), *De Mixtione*, p. 226, 9–10 (Bruns), Philoponus, *In Nicom. Isagogen*, I. ρση 3, etc. I have made uniform the spelling of ἐστίν and οὕτως, writing always ἐστί and οὕτω before a consonant. I have written λαβέ and ἐκθοῦ where the manuscripts invariably have λάβε and ἐκθου. Similarly, I have written ἐκθῇ instead of ἐκθη, ἀποθῇ instead of ἀπόθη, etc. (In general the manuscripts do not write iota subscript.) I have followed either A or M in writing γίνεται or γίνονται when the other manuscript has an abbreviation which could stand for either of the two forms; in general I have followed the manuscript that gives a letter instead of writing the whole number. And I have not emended in cases

¹⁰⁷ Cf. Westerink, *R.E.G.* 77 (1964): pp. 530–531.

when a letter stands for the adverb or for the ordinal adjective. But for the most part I do not report in the critical apparatus these and other unimportant matters, as for example faulty accents, wrong separation of words, etc. Neither have I reported all instances of minor variations in the word order between the manuscripts. In Asclepius I. 123 I have retained the manuscripts' ὕγεια which is apparently also the reading in Philoponus.

SIGLA

M = *Cod. Monacensis* 431 (fol. 98–114), fourteenth–fifteenth centuries

M² = Indicates corrections and supplements in the margin or in the text by the same (or a contemporary) hand

A = *Cod. Ambrosianus* B 77 sup., 2nd. part (fol. 102–149), fifteenth century

A² = Indicates corrections and supplements in the margin or in the text by the same (or a contemporary) hand

P = *Cod. Parisinus Graecus* 2376 (fol. 1–57), sixteenth century. Of this manuscript I report only a few of its readings (*cf.* p. 21)

P² = Indicates corrections and supplements in the margin by a different hand

Cod. Scor. Y–I–12 = *Cod. Scorialensis* Y–I–12 (fol. 81ff.), sixteenth century

Nicom. = *Nicomachi Geraseni Pythagorei Introductionis Arithmeticae Libri II*. Recensuit Ricardus Hoche (Lipsiae, 1866). The manuscripts of Nicomachus are cited from this edition.

Philop. = I. Philoponus, *In Nic. Isagogen* (the text of Philoponus is cited from Hoche's edition; *cf.* Introduction, note 18)

[] = Indicates a word or words written in the manuscripts which I do not consider to have been written by Asclepius

< > = Indicates a word or words missing in the manuscripts which I consider to have been written by Asclepius

(Philop.)] = In the critical apparatus, this indicates my emendation or supplement based on Philoponus, *In Nic. Isagogen*.

ΑΣΚΛΗΠΙΟΥ ΦΙΛΟΣΟΦΟΥ ΤΡΑΛΛΙΑΝΟΥ ΕΙΣ ΤΟ ΠΡΩΤΟΝ ΒΙΒΛΙΟΝ ΤΗΣ ΝΙΚΟΜΑΧΟΥ
ΑΡΙΘΜΗΤΙΚΗΣ ΕΙΣΑΓΩΓΗΣ ΣΧΟΛΙΑ

α. Οἱ παλαιοὶ καὶ πρῶτοι. Πλατωνικὸς ὢν ὁ πατήρ
τοῦ βιβλίου τούτου κατὰ τὸν Πλατωνικὸν σκοπὸν
ζητεῖ τό τε τέλος τῆς ὄντως φιλοσοφίας καὶ τὴν ὁδὸν
τὴν ἄγουσαν ἐπὶ ταύτην. ὅτι μὲν οὖν, ὥς καὶ Νικό-
5 μαχος ὀρίζεται, φιλοσοφία ἐστὶ φιλία σοφίας παντὶ
προϋπτὸν ἐστίν. ἄρα δὲ τί ἐστὶ σοφία; φαμέν ὅτι
σαφία τις οὕσα ὥς σαφηνίζουσα τὰ πάντα. ἄρα δὲ
πόθεν αὐτὸ τοῦτο σαφία ἐλέχθη; λέγομεν ὅτι παρὰ
τὸ φῶς ὅθεν καὶ Ἀριστοτέλης τὰ θ' ὅσα φανότατα
10 ταῦτα πεφωτισμένα καὶ καθαρὰ καλεῖ. ἐπεὶ οὖν τὸ
σαφὲς εἶωθε τὰ κεκρυμμένα ὥς ἐν σκότῳ τῇ ἀγνοίᾳ
εἰς φῶς καὶ γνῶσιν ἐπιφέρειν, διὰ τοῦτο ἐκλήθη οὕτως.
ἐπεὶ δὲ ὅλως καὶ σοφίαν καὶ σοφὸν ὀνομάζομεν, ἄρα
τί ἐστὶ τὸ σοφὸν τοῦτο; ἰστέον τοίνυν ὅτι ὁμῶνυμόν
15 ἐστὶ τὸ σοφόν· εἰληπταὶ γὰρ κατὰ πέντε τρόπους
οὓς μέλλω λέγειν ὥς φησιν Ἀριστοκλῆς ἐν τοῖς Περὶ
Φιλοσοφίας δέκα βιβλίοις. χρή εἰδέναι ὅτι φθείρονται
οἱ ἄνθρωποι διαφόρως· καὶ γὰρ ὑπὸ λοιμῶν καὶ νό-
σων ποικίλων καὶ ὑφ' ἑτέρων θνήσκουσι, μάλιστα δὲ
20 ὑπὸ κατακλυσμῶν ὥσπερ καὶ ἐπὶ τῶν Δευκαλίωνος
χρόνων· πάντων δὲ οὐ κατεκράτησε, ἀλλ' οἱ μὲν ἐν
τοῖς ὅρεσι διασώζονται, τὰ δὲ πεδία κατακλύζονται
καὶ ἀφανίζονται. ἐπεὶ δὲ περὶ τὰ ὅρη διαμένουσιν τινες
ἀκατάκλυστοι διὰ τοῦτο εἰσὶν ἐκεῖ χωρία καὶ οἰκή-

α = Philop. α.

α, ι = Nicom. I, I, ι

Tit. τραλλιανοῦ Cod. Scor. Y-I-12: τραιανοῦ AM || τῆς Cod.
Scor. Y-I-12: τοῦ AM

1 οἱ παλαιοὶ καὶ πρῶτοι AM: om. Cod. Scor. Y-I-12

4 ὥς καὶ AM: ὥς Cod. Scor. Y-I-12

5 φιλοσοφία ἐστὶ φιλία σοφίας Cod. Scor. Y-I-12: φιλία σοφίας
M: φιλοσοφίας A

7 ὥς M et Cod. Scor. Y-I-12: om. A || τὰ M et Cod. Scor.
Y-I-12: om. A

8 ἐλέχθη M et Cod. Scor. Y-I-12: ἐκλήθη A: ἐλλέχθη (λλέχ
supra κλη) A²

8-9 ὅτι παρὰ τὸ φῶς AM: ἀπὸ τοῦ φωτός Cod. Scor. Y-I-12

9 τὰ θ' AM: πάνθ' Cod. Scor. Y-I-12

11 ὥς AM: om. Cod. Scor. Y-I-12 || τῇ Cod. Scor. Y-I-12:
om. AM

12 εἰς Cod. Scor. Y-I-12: καὶ AM

13 ὅλως M et Cod. Scor. Y-I-12: ὄντως A || pr. καὶ AM: om.
Cod. Scor. Y-I-12

16 οὓς μέλλω λέγειν M et Cod. Scor. Y-I-12: om. A

17 βιβλίοις AM: βίβλοις Cod. Scor. Y-I-12

18 καὶ γὰρ AM: γὰρ καὶ Cod. Scor. Y-I-12

21 χρόνων AM: om. Cod. Scor. Y-I-12 || πάντων δὲ οὐ κατε-
κράτησε (ut vid.), ἀλλ' οἱ μὲν Cod. Scor. Y-I-12: πάντων
δὲ καὶ τὰ κρανία AM

23 ἐπεὶ δὲ AM: καὶ ἐπεὶ Cod. Scor. Y-I-12

σεις. καὶ οἱ περιλειφθέντες λοιπὸν ἐργάζονται, ὥς 25
δηλοῖ καὶ ὁ ποιητής·

“κτίσε δὲ Δαρδανίην· ἐπεὶ οὕτω Ἴλιος ἱρή

ἐν πεδίῳ πεπτόλιστο, πόλις μερόπων ἀνθρώπων”.

οὗτοι οὖν οἱ περιλειπόμενοι μὴ ἔχοντες ὅθεν τραφῶσιν
ἐπινοοῦσι τὰ πρὸς τὴν χρεῖαν ἐπὶ τῷ ἀλήθειν μύλοις 30
σίτον ἢ ἐπὶ τῷ σπείρειν ἢ τι τοιοῦτον· καὶ λέγεται ἡ
τοιαύτη ἐπίνοια σοφία κατὰ τὸ ἀναγκαῖον λαμβανο-
μένη. πάλιν δὲ ἐπινοοῦσι τέχνας, ὥς φησιν ὁ ποιητής
“ὑποθημοσύνησιν Ἀθῆνης” καὶ πάλιν “ἐπεὶ σοφὸς
ἦραρε τέκτων”· ἡ οὖν τεκτονικὴ ἢ οἰκοδομικὴ ἢ 35
τινα τέχνην ἑτέραν ἐπινοοῦσι καὶ λέγεται σοφία περὶ
τέχνας. πάλιν ἀπέβλεψαν περὶ τὰ πολιτικὰ πράγματα
καὶ ἐποίησαν νόμους καὶ πάντα τὰ σώζοντα τὰς πό-
λεις καὶ λέγεται αὕτη ἡ ἐπίνοια σοφία περὶ τὰ πολι-
τικά εὐρημένη. μετὰ ταῦτα καὶ ἐπὶ αὐτὰ τὰ σώματα 40
ἐχώρησαν καὶ φύσιν εὔρον τούτων μελετήσαντες τὴν
φυσικὴν θεωρίαν. πέμπτον ἐπ' αὐτὰ τὰ θεῖα καὶ αἰδία
ἀνέδραμον, ἐπ' αὐτὰ τὰ αἰεὶ καὶ ὡσαύτως ἔχοντα.
γινώσκειν οὖν χρή ὅτι οἱ πρὸ Πυθαγόρου πάντες
συγκεχυμένως κατὰ τῶν πέντε τούτων τὸ τῆς σοφίας 45
ὄνομα ἔφερον, οἱ δὲ μετὰ Πυθαγόραν συνέστειλαν τὸ
ὄνομα καὶ ἐπὶ τοῦ πέμπτου τρόπου τῆς σοφίας μόνου
ἦγαγον αὐτό, φιλοσοφίαν καλοῦντες τὴν τῶν αἰεὶ καὶ
ὡσαύτως ἔχόντων γνῶσιν. τοῦτο οὖν τὸ τέλος. τίνα
δὲ ἄρα τὰ ἔχοντα ἐπὶ ταύτην; ἰστέον ὅτι, ὥς φησι 50
καὶ Πλωτῖνος καὶ Πλάτων, τὰ μαθήματα· ἐπεὶ γὰρ ἐν
φθορᾷ καὶ ὕλῃ ἔσμεν ἡτὶς νόθῳ λογισμῷ ληπτὴ ἐστίν,
ὥς φησι Πλάτων, οὐ δυνάμεθα ἀμέσως ἐπὶ τὰ αὔλα

25 καὶ οἱ περ. λοιπὸν AM: καὶ λοιπὸν οἱ περ. Cod. Scor. Y-I-12

29 οὗτοι (Philop.)] ὅτε AM et Cod. Scor. Y-I-12

30 χρεῖαν AM: ὑγίειαν Cod. Scor. Y-I-12 || μύλοις Cod. Scor.
Y-I-12 et (ut vid.) M: μύλους A

31 pr. ἡ Cod. Scor. Y-I-12: om. AM || τῷ AM: τὸ Cod. Scor.
Y-I-12

33 ὁ ποιητής Cod. Scor. Y-I-12: ἡ ποιητικὴ AM

37 ἀπέβλεψαν AM: προσέβλεψαν Cod. Scor. Y-I-12 || πρά-
γματα M et Cod. Scor. Y-I-12: om. A

39 αὕτη M et Cod. Scor. Y-I-12: ἡ αὕτη A || ἐπίνοια A et
Cod. Scor. Y-I-12: ἐννοια M

40 εὐρημένη Cod. Scor. Y-I-12: εἰρημένη AM

41 μελετήσαντες A et Cod. Scor. Y-I-12: μελετήσαντας M ||
τὴν Cod. Scor. Y-I-12: om. AM

42 πέμπτον AM: πέμπτον δὲ Cod. Scor. Y-I-12 || ἐπ' αὐτὰ τὰ
θεῖα Cod. Scor. Y-I-12: ἐπὶ αὐτὰ θεῖα M: ἐπὶ τὰ θεῖα A

43 ἐπ' αὐτὰ τὰ αἰεὶ Cod. Scor. Y-I-12: ἐπὶ τὰ αὐτὰ αἰεὶ AM

44 πάντες Cod. Scor. Y-I-12: om. AM

45 σοφίας Cod. Scor. Y-I-12: φιλοσοφίας AM

51 καὶ Πλωτῖνος καὶ Πλάτων AM: Πλωτῖνος Cod. Scor. Y-I-12 ||
γὰρ Cod. Scor. Y-I-12: τὰ AM

53 οὐ δυνάμεθα AM: ἀδύνατον ἦν Cod. Scor. Y-I-12

χωρεῖν, ἐπειδὴ μέλλομεν πάσχειν ἃ πάσχουσιν οἱ ἐκ
55 σκοτεινοῦ οἴκου ἀμέσως ἐπὶ φωτεινὸν ἐρχόμενοι· ἔδει
γὰρ κατὰ βραχὺ προῖέναι πρότερον ἐπὶ σύμμετρον
καὶ οὕτως ἐπὶ τὸν φωτεινότερον οὕτω κάνταυθα,
ἐπειδὴ τὰ μαθήματα μέσα ἐστί· καὶ γὰρ χωριστὰ εἰσι
καὶ ἀχώριστα καὶ ὑποβάθρας χώραν παρέχουσι. δεῖ
60 διὰ τούτων ἀνελθεῖν ἡμᾶς ἐπὶ τὰ αἰ καὶ ὡσαύτως
ἔχοντα, μάλιστα δὲ ἐρχόμεθα διὰ τῆς ἀριθμητικῆς.
εἴρηται ἄρα τίς τε ἡ ὁδὸς καὶ τί τὸ τέλος. οὗτος τοίνυν
ὁ σκοπὸς τοῦ συγγράμματος. φέρε δὲ λοιπὸν τὴν
λέξιν ἐξηγησώμεθα.

β. ἡ δημιουργίας. καλῶς ἐπήγαγε τὸ δημιουργίας,
ἐπεὶ οὐ πᾶσα τέχνη καὶ δημιουργικὴ ἐστίν· ἰδοὺ γὰρ
ἡ τῶν ἡνίοχων μελέτη τέχνη μὲν ἐστίν, οὐδὲν δὲ δη-
μιουργεῖ· ὅτι δὲ τέχνη ἐστί, σημαίνει καὶ ὁ ποιητῆς
5 λέγων·

“μήτι τοι ἡνίοχος περιγίνεται ἡνίοχοιο.”

γ. ἐπὶ τὴν τοῦ ὄντος ἐπιστήμην. ὄντα καλοῦμεν τὰ
ὄντως ὄντα, τὰ αἰ καὶ ὡσαύτως ἔχοντα καὶ αἰδία, τὰ
ἀμετάβλητα, τὰ ἀτρεπτα, ἐξ ὧν παράγονται τὰ ἐν-
ταῦθα ὅτινα κυρίως ὄντα οὐκ εἰσίν, ἐπειδὴ τοῖς <μῇ>
5 οὐσι παράκεινται. ἰστέον οὖν ὅτι τὰ ἐνταῦθα ἀλλοιω-
τὰ καὶ μεταβλητὰ εἰσι, κἄν νομίζονται ἀμετάβλητα·
οὕτω γοῦν Σωκράτης καὶ οἱ κατὰ μέρος ἄνθρωποι,
εἰ καὶ ἀμετάβλητοι δοκοῦμεν εἶναι, ὅμως ἐφ’ ἐκάστης
ἡμέρας ἀλλοιούμεθα. ἀμέλει μετὰ χρόνον πολλακίς
10 τόνδε τινὰ ἑωρακότες, φαμέν ὅτι “ἄρα οὗτος ἐστὶν
ὁδε;” ὡς ἀμειφθέντος αὐτοῦ καὶ διὰ τοῦτο ἡμῶν ἐπ’
αὐτῷ ξενιζομένων. οὐκ εἰσι τοίνυν τὰ ἐνταῦθα κυρίως
ὄντα ἀλλὰ πῃ ὄντα, ἐπειδὴ τῷ μὴ ὄντι πλησιάζουσι·
τὰ δὲ πρὸς τοῖς μὴ οὐσι σχεδὸν καὶ αὐτὰ οὐκ ὄντα

β = Philop. β

γ = Philop. γ

β, ι = Nicom. I, ι.

γ, ι = Nicom. I, ι.

54 ἐπειδὴ M: ἐπεὶ δὲ A: ἐπεὶ Cod. Scor. Y-I-12

55 ἔδει AM: ἔχει Cod. Scor. Y-I-12

56 πρότερον M et Cod. Scor. Y-I-12: πρότερον καὶ A

58 εἰσι M: ἐστί A et Cod. Scor. Y-I-12

59-60 δεῖ διὰ τούτων ἀνελθεῖν ἡμᾶς AM: διὰ τούτων δεῖ μὲν ἡμᾶς
ἀνελθεῖν Cod. Scor. Y-I-12

61 ἐρχόμεθα AM: ἀνερχόμεθα Cod. Scor. Y-I-12

62 ἡ AM: om. Cod. Scor. Y-I-12

62-64 οὗτος... ἐξηγησώμεθα AM: ὁ σκοπὸς τοίνυν τοῦ συγ-
γράμματος ἐξηγήσεως τῆς προσηκούσης ἀξιωθήσεται Cod.
Scor. Y-I-12

β. ι ἡ δημιουργίας M: δημιουργίας A

2 γὰρ (Philop.) τὰ AM

3-4 δὲ δημιουργεῖ M: δὲ μιουργεῖ A

6 περιγίνεται AM: περιγίνεται Homerus

γ. ι ἐπὶ τὴν τοῦ ὄντος ἐπιστήμην M: om. A

4 μῇ (Philop.) om. AM

10 ἐστὶν AM: οὐκ (sc. ἐστὶν) i. m. P²

εἰσί. πῶς δὲ τοῖς μὴ οὐσι γειννιάζουσι; πρῶτον μὲν, 15
ἐπειδὴ ἐνταῦθα τὸ παρελθὸν καὶ τὸ μέλλον· ταῦτα δὲ
μὴ ὄντα· τὸ μὲν γὰρ ἠφάνισται, τὸ δὲ οὐπω ἔστι.
δεύτερον δὲ ὅτι τῆς ὕλης ἐστίν, ἥτις οὐδὲν ἐστίν· εἶδος
γὰρ οὐκ ἐστὶν ἀλλ’ ἀνείδεος· εἰ γὰρ εἶχεν ὠρισμένον
τι εἶδος, οὐδενὸς δεκτικὴ ἐγίνετο. ἐκεῖνα τοίνυν τὰ 20
νοητὰ αἰδία εἰσι καὶ ἀμετάβλητα εἶδη καθαρὰ καὶ ἐξ
ἐκείνων παράγονται τὰ ἐνταῦθα εἶδη· ἐκεῖνα γὰρ
καθαρὰ καὶ θεῖα τὰ εἶδη· οὔτε γὰρ ἐκ τῆς ὕλης γίνον-
ται τὰ <ἐνταῦθα εἶδη, οὔτε> ἐξ ἑαυτῶν· ἐκ μὲν τῆς
ὕλης οὐ γίνονται, ἐπειδὴ οὐ δυνατόν τὰ κρείττονα 25
ἀπὸ τῶν χειρόνων παράγεσθαι· ἀλλ’ οὐδ’ ἑαυτὰ τὰ
εἶδη παράγουσι· τὸ γὰρ εἶδος χρήζει τῆς ὕλης εἰς τὸ
ὑποστῆναι. οὐκοῦν καὶ ἡ οὐσία αὐτοῦ ἐν αὐτῷ ἐστίν·
ὅπου δὲ ἡ οὐσία ἐκεῖ καὶ ἡ ἐνέργεια, ὡς δέδεικται παρὰ
Ἀριστοτέλους· τὸ δὲ ἐν ἄλλῳ ἔχον οὐσίαν καὶ ἐνέρ- 30
γειαν ἐν ἄλλῳ, σῶμά ἐστι καὶ παράγειν ἑαυτὸ οὐ
δύναται· ἐκεῖθεν οὖν ἐκ τῶν ἀτρεπτῶν τὰ ἐνταῦθα
παράγονται· ἐκεῖνα δὲ ἀτρεπτά εἰσι, τὰ ἄχρονα· ὅθεν
οὐδ’ ἐστὶ χρόνος ἐκεῖ· οὐδὲ γὰρ μὴ ὄν ἐκεῖ, ἀλλὰ πάντα
αἰ ὄντα· οὐκ ἐστὶν οὖν παρεληλυθὸς καὶ μέλλον· οὐ 35
ῥάδιον οὖν ἐκεῖνα νοῆσαι, ὅθεν καὶ ὁ Ἀριστοτέλης
εἶπε περὶ αὐτῶν ἐν τῷ Μετὰ τὰ Φυσικὰ ἐλάττωι ἄλφα
στοιχεῖω ὅτι τῇ μὲν καθαρὰ καὶ φωτιστικά, τῇ δὲ
χαλεπὰ εἰσι· φωτιστικά μὲν καὶ καθαρὰ πρὸς τὴν
οἰκείαν φύσιν, ἐπειδὴ αἰ ἐλλάμπουσι τὰ ἐνταῦθα· 40
χαλεπὰ δὲ ὅτι ἀσκαρδαμυκτὶ οὐ δυνάμεθα γινῶναι
διὰ τὴν ἡμετέραν ἀσθένειαν, ὥσπερ οὐδὲ ἀκτίνας
ἡλίου δυνάμεθα ἰδεῖν διὰ τὸ τῶν ὀμμάτων ἀσθενές·
ὁ γὰρ πάσχει ἡ νυκτερὶς διὰ τὸ τῶν ὀμμάτων ἀσθε-
νές ἐν τῇ ἡμέρᾳ, τοῦτο ἡμεῖς ἐπὶ τούτων. ἄλλως τε 45
καὶ ὡς εἴρηται ἐν τῷ Φαίδωνι· δύσκολον ἡμᾶς θεωρή-
σαι τὰ νοητὰ, πρῶτον μὲν διὰ τὸ ἐμποδίζειν τὸ σῶμα
νόσοις καὶ συμφοραῖς μυρίαὶς ὀχλούμενον καὶ διὰ ταῦ-
τα σκοτίζον τὸν νοῦν, δεύτερον δὲ ὅτι εἰ καὶ τοῦ σώ-
ματος καταφρονήσομεν ἢ φαντασία προτρέχουσα 50
οὐκ ἔξ ἀκίβδηλόν τι θεωρήσαι, ἀλλ’ εὐθέως ὄγκους
παρέχει καὶ ἄλλα τοιαῦτα πρὸς ἐμποδισμόν τῶν ἀσω-
μάτων. οὐκοῦν διὰ πάντων δέδεικται ὅτι ἐκεῖνα μὲν
αὔλα ἀτρεπτα θεῖα αἰ καὶ ὡσαύτως ὄντα, ταῦτα δὲ
τρεπτά· τὰ μέντοι οὐράνια, ὡς μεταξὺ ὄντα, ἐκείνοις 55
μὲν κατὰ τὴν οὐσίαν κοινωνεῖ (καὶ γὰρ αὐτὰ αἰδία

16 ἐπειδὴ M: ἐπεὶ δὲ A

22 παράγονται (Philop.) παράγοντα AM (ut vid.)

23 οὔτε (Philop.) οὐδὲ AM

24 ἐνταῦθα εἶδη, οὔτε (Philop.) om. AM || ἑαυτῶν (Philop.)
αὐτῶν AM

25 ἐπειδὴ M: ἐπεὶ δὲ A

26 οὐδ’ ἑαυτὰ (Philop.) οὐδὲ αὐτὰ AM

28 αὐτῷ scripsi: αὐτῷ AM: αὐτῇ Philop.

36 ὁ M: om. A

47-51 corr. ex Philop.: AM hab. πρῶτον νοῦν· δεύτερον δὲ
ὅτι εἰ καὶ τοῦ σώματος καταφρονήσομεν ἢ φαντασία οὐκ ἀπο-
τρέχουσα· πρῶτον μὲν διὰ τὸ ἐμποδίζειν τὸ σῶμα νόσοις καὶ
συμφοραῖς μυρίαὶς ἐνοχλούμενον καὶ σκοτίζον τὸν (σκοτιζόμενον
P² in marg.) ἀκίβδηλόν τι θεωρήσαι, ἀλλ’ κτλ.

καὶ θεῖα), ἡμῖν δὲ κατ' ἐνέργειαν (μεταβλητὰ γάρ, ἄλλ' οὐχ οὕτως ἡμεῖς)· ἀλλὰ τὴν τοπικὴν μόνην μεταβολὴν ὑπομένουσι· καθὼς ἀπὸ ἀνατολῶν ἐπὶ δυσμᾶς
60 κινουῦνται καὶ ἀπὸ δυσμῶν ἐπὶ ἀνατολᾶς. τὸ πλεον οὖν ἐκείνοις κοινωνεῖ, ὡς πλησιάζοντα τοῖς ἀεὶ καὶ ὡσαύτως οὖσιν· ὅτι γὰρ ἐκείνοις κοινωνεῖ ὁ οὐρανὸς καὶ πρὸς τῷ θεῷ ἐστὶ καὶ καθαρὸς τυγχάνει, δῆλον ἔκ τοῦ νομίζειν ἡμᾶς καὶ τὸν θεὸν ἐκεῖ εἶναι, ὥσπερ
65 γὰρ τὸν ἐγκέφαλον μᾶλλον ἀπολαύειν λέγομεν τῶν τῆς ψυχῆς ἐνεργειῶν, οὕτω καὶ αὐτόν· ὅθεν καὶ τὰς χεῖρας πάντες οἱ ἄνθρωποι εὐχόμενοι εἰς οὐρανὸν ἐν-τείνουμεν ὡς ἂν ἐκεῖ τοῦ θεοῦ κατοικοῦντος. ἔκ τοίνυν τούτων ἔστιν ἐπιλύσασθαι καὶ τὸ παρὰ Πλάτωνος
70 ἐν Τιμαίῳ εἰρημένον· τί τὸ ὄν μὲν ἀεὶ, γένεσιν δὲ οὐκ ἔχον; καὶ τί τὸ γινόμενον μὲν, ὄν δὲ οὐδέποτε; δῆλον γὰρ ὅτι ὄν μὲν ἀεὶ, γένεσιν δὲ οὐκ ἔχον τὸ νοητὸν πᾶν καὶ ἀίδιον καλεῖ· τί δὲ τὸ γινόμενον μὲν, ὄν οὐδέποτε τὰ τῆδε. καὶ προϋπτόν ἐστιν ὅτι οὐχ, ὡς τινες νομί-
75 λουσι, τὸ γενητὸν ἐνταῦθα αὐτὸν βούλεται, τοῦτο δὲ ἐστὶ γενητὸς ὁ κόσμος· ἀεὶ γὰρ γίνεσθαι αὐτὸν λέγει, ἀλλὰ γενητὸν καλεῖ τὸ μεταβλητὸν καὶ τρεπτόν ὡς εἰρήκαμεν· ὅθεν καὶ ὄν (ἀντὶ τοῦ κυρίως ὄντος) οὐδέ-ποτέ ἐστι· πῶς γὰρ δύναται;

δ. ἀπαιστον καὶ ἀμετακίνητον. οὕτω γὰρ καὶ Ἀριστοτέλης ἐν τοῖς ἀποδεικτικοῖς λέγει ἐμιστήμην εἶναι τὴν ἀεὶ καὶ ὡσαύτως ἔχουσαν καὶ τὴν αὐτήν. | ἀεὶ διατελοῦντα ἐν τῷ κόσμῳ. οὐχ ὅτι ἐν τῷ κόσμῳ ὑπάρχουσι
5 διὰ παντός, ἀλλ' ὅτι ἀεὶ τὰ ἐν τῷ κόσμῳ κοσμοῦσιν, ἐπιλάμποντα <τούτοις> τὸ ἑαυτῶν ἀγαθόν.

ε. τῶν ὁμωνύμως ὄντων καὶ καλουμένων. ὥσπερ γὰρ ὁμωνύμως τὸ ὄντως ζῶον καὶ τὸ γεγραμμένον καλοῦμεν, οὕτω καὶ τὰ τῆδε· οὐ γὰρ ὡς ὁμοίως ἔχοντα ἐκείνοις.

ς. μιμούμενα τὴν τῆς ἐξ ἀρχῆς αἰδίου ὕλης φύσιν. <ἀντὶ τοῦ> τῆς ἀρχούσης ὕλης. λέγει οὖν διὰ τὰ σώματα ταῦτα ὅτι μιμοῦνται τὴν ὕλην. ὁ μὲντοι φιλόσοφος

δ = Philop. δ—ε ε = Philop. ς

ς = Philop. ζ

δ, ι = Nicom. I, 2. 3–4 = Nicom. I, 2

ε, ι = Nicom. I, 2. ς, ι = Nicom. I, 3.

66 ὅθεν M: ὁμως A

71 μὲν M: om. A || δὲ A: om. M

73 γινόμενον M: γενόμενον A

75 αὐτὸν scripsi: αὐτῷ AM: αὐτὸς P² i. m. cf. n. ad loc.

δ. ι alt. καὶ M: om. A

6 ἐπιλάμποντα τούτοις τὸ ἑαυτῶν (Philop.)] ἐπιλάμποντες τὸ αὐτῶν AM

ς. ι μιμούμενα... φύσιν AM: inter ὕλης et φύσιν Nicomachus habet καὶ ὑποστάσεως

ι–2 ἀντὶ τοῦ (Philop.)] om. AM

Ἀμμόνιος, ὁ ἡμέτερος διδάσκαλος, ἔφη ὅτι οὐ καλῶς τὸ μιμεῖσθαι· οὐδενὸς γὰρ παράδειγμά ἐστιν ἡ ὕλη· 5 τὶς γὰρ θέλει ὕλη γενέσθαι;

ζ. δλη γὰρ δι' δλης ἦν τρεπτή καὶ ἀλλοιωτή. κακῶς εἶπε καὶ τοῦτο, ὡς φησιν ὁ θεῖος διδάσκαλος. ἔδει γὰρ εἰπεῖν “τρεπτική καὶ ἀλλοιωτική.” περὶ αὐτὴν γὰρ αἱ τροπαὶ καὶ ἀλλοιώσεις γίνονται, οὐ δῆπου γὰρ αὐτὴ τρέπεται ἢ ἀλλοιοῦται. εἰ γὰρ αὐτὴ ἐτρέπετο, 5 ἐδέετο ἐτέρας ὕλης ἐν ἣ ἔμελλεν ἀλλοιοῦσθαι καὶ τρέπεσθαι. ὥστε αὐτὴ μὲν ἀτρεπτος καὶ ἀναλλοιώτος, τὰ δὲ περὶ αὐτὴν εἶδη ἀλλοιοῦνται, λέγω δὴ ποιότητες καὶ ποσότητες καὶ διαθέσεις καὶ ἐνέργειαι καὶ ἰσότητες καὶ πάντα τὰ τοιαῦτα. | ταῦτα δὲ πάντα 10 ἀσώματά εἰσιν· οὐ γὰρ δῆπου σώματα. εἰ γὰρ ἦσαν σώματα, ἔμελλον σὺν τοῖς σώμασι μειουμένοις ἀπολλύειν τὸν ὅρον, οἷον εἰ ἦν σῶμα ὁ κύκλος, ὁ μέγας κύκλος γενόμενος μικρὸς καὶ ἀπολλύων τὸ εἶδος, ἄλλον ὅρον εἶχε δέχεσθαι ὡσαύτως καὶ ὁ ἐκ μικροῦ μέγας 15 γινόμενος. νῦν δὲ ὁ αὐτὸς ὅρος φυλάττεται καὶ τοῦ μικροῦ καὶ τοῦ μεγάλου καὶ πάντων, ἐπειδὴ ἀσώματα ὑπάρχουσι.

η. συμβεβηκότης δὲ μετέχει. ἀντὶ τοῦ κατὰ δεύτερον λόγον.

θ. τῶν δὲ τοιούτων ἐξαιρέτως. ἀντὶ τῶν θείων καὶ ἀμεταβλητῶν.

ι. ἀλλ' ἐκεῖνα μὲν ἄυλα. ἀτρεπτα γὰρ εἰσι καὶ ἀπερίγραπτα τόπων· διὸ καὶ λέγεται τὸ θεῖον καὶ πανταχοῦ εἶναι καὶ οὐδαμοῦ. πανταχοῦ μὲν τῇ δυνάμει καὶ τῇ εἰς ἡμᾶς ἐλλάμψει, οὐδαμοῦ δὲ τῇ ὑποστάσει· οὐκ ἔχει γὰρ τὸ ποῦ· πᾶν γὰρ τὸ ποῦ πέρας ἔχει· οὐκοῦν καὶ 5 περιέχεται. τὸ δὲ τοιοῦτον σωμάτων ἐστίν, ἀσώματος δὲ ὁ θεός. | ἀλλ' ἀεὶ μεταρρεῖ. διὰ παντός γὰρ ρεῖ καὶ τρέπεται, ὡς καὶ Πλάτων φησὶν ἐν Τιμαίῳ, ὅτι ἐκεῖνα μὲν γένεσιν οὐκ ἔχει, ἀλλ' ἀεὶ ὄντα εἰσὶ, τὰ δὲ τῆδε γίνονται, ὅ ἐστιν ἀλλοιοῦνται, καὶ οὐκ εἰσὶν οὐδέποτε 10 κυρίως ὄντα. καὶ ἐκεῖνα μὲν νῶς λαμβάνονται ἀεὶ κατὰ

ζ = Philop. η–ι η = Philop. ια

θ = Philop. ιβ ι = Philop. ιγ–ιδ

ζ, ι = Nicom. I, 3. ζ, ιι = Nicom. I, 3.

η, ι = Nicom. I, 3. θ, ι = Nicom. I, 4.

ι, ι = Nicom. II, ι. ι, 7 = Nicom. II, ι.

ζ. ι κακῶς AM: καλῶς P: οὐ καλῶς P² i. m.

3 τρεπτική M: προτρεπτική A

7 αὐτὴ (Philop.)] αὐτὴ AM

η. ι συμβεβηκότης Nicom.: συμβεβηκότης AM

θ. ι δὲ AM: δὴ Nicom.

ι. ι–2 ἀπερίγραπτα A: ἀπερίγραφα M

3–4 τῇ εἰς M: τῆς A

4–5 οὐκ... οὐκοῦν M: οὐκοῦν A

7 μεταρρεῖ AM et Nicom. SHΓ: μεταβαίνει Nicom.

ιι λαμβάνονται scripsi: λαμβάνοντα AM

ταῦτά ἔχοντα, ταῦτα δὲ δόξη, ὃ ἐστὶ φαντασίᾳ, καὶ αἰσθήσει, μηδέποτε ὄντα κυρίως, ἀλλὰ πρὸς τὰ μὴ ὄντα μᾶλλον ῥέποντα.

ια. εὐλογον ἄρα καὶ ἀναγκαιότατον. ἤδη εἰρήκαμεν τὸν σκοπὸν τοῦ βιβλίου τούτου. ἔφημεν δὲ καὶ ὅτι φιλοσοφία ἐστὶ φιλία σοφίας, ὡς δηλοῖ τοῦνομα, καὶ ὅτι τὸ σοφόν, ὡς Ἀριστοκλῆς ἐν τοῖς Περὶ Φιλοσοφίας 5 δέκα βιβλίοις φησί, πενταχῶς λέγεται, καὶ ὅτι κυρίως φιλοσοφία ἐστὶν ἡ φιλοσοφοῦσα τὰ αἰ καὶ ὡσαύτως ὄντα. ὁ τοῖνυν Νικόμαχος ἐντέχνως πάνυ τὸ τέλος πρότερον ζητεῖ, καὶ οὕτως ἐπὶ τὴν ὁδὸν τὴν ἀγούσαν ἐπὶ τοῦτο φέρεται. ὥσπερ γὰρ ὁ θέλων οἶκον ποιῆσαι 10 ἐκ τοῦ τέλους θεωρεῖ καὶ οὕτως ἄρχεται· πρότερον γὰρ ὀροφὴν ἐπινοεῖ, κώλυμα φθοροποιῶν κρύους καὶ θάλπους, εἶτα ἵνα αὕτη ἐπὶ τινος βεβήκη, τοίχους μηχανᾶται, <καὶ> διὰ τούτους θεμέλιον, καὶ διὰ τοῦτον ὀρύττει γῆν καὶ ἐντεῦθεν λοιπὸν ἄρχεται, οὕτω 15 καὶ ὁ Νικόμαχος πρότερον ζητεῖ τὸ τέλος τῆς φιλοσοφίας καὶ λέγει ὅτι τὸ τέλος ἐστὶν ἡ ἔφεσις τοῦ ἀγαθοῦ, ἀγαθοῦ δὲ οὐ τοῦ τυχόντος, ἀλλὰ τοῦ εὐζωίαν χαριζομένου. ἰστέον γὰρ ὅτι οὐ τοῦ τυχόντος ἀγαθοῦ· ἐστὶ γὰρ ἐν παντὶ μερικὸν ἀγαθόν, καὶ ἐν λίθῳ 20 γὰρ ἐστὶν ἀγαθόν, οἷον τὸ φέρεσθαι αὐτὸν ἐπὶ τὴν οἰκίαν χώραν· οὐ τοιοῦτον οὖν ἐστὶ τὸ ἀγαθὸν οὗ ἐφίεται ἡ φιλοσοφία. εἰ μὲν γὰρ μόνως σώματα ἦμεν, ἀγαθὸν ἂν ἦν ἡμῖν ἡ ὑγεία μόνη, ὡσαύτως καὶ εἰ 25 ζῶα μόνον, ἀγαθὸν ἂν ἦν ἡ εὐαισθησία· ἐπειδὴ δὲ οὐχ ἅπλως ἔσμεν ζῶα, ἀλλὰ λογικὰ ζῶα, ἰσχὺν ἔχοντες λογικὴν (ἡ δὲ ψυχὴ ζωὴ τίς ἐστι <λογικὴ>), εὐζωίαν ἐπιτιθεύμεν. ἄρα δὲ αὐτὴν καθ' αὐτὴν δεῖ ἀσκεῖν τὴν εὐζωίαν ἢ μετὰ τινος γνώσεως; ἰστέον ὅτι δεῖ καὶ γινώσκειν, ἐπεὶ ἄνευ γνώσεως εὐζωία οἶκε 30 τυφλῷ κατὰ τύχην ὀρθῶς περιπατοῦντι. αὕτη τοῖνυν ἐστὶ τὸ τέλος. τίνα δὲ φέρει ἐπὶ ταύτην; φαμέν ὅτι τὰ μαθήματα, οὐ δυνάμεθα ἀμέσως χωρῆσαι, ἀλλὰ δεῖ ἀπὸ τούτων τῶν φαινομένων εἰς ἐκεῖνα ἀνελθεῖν. ταῦτα δὲ τὰ φαινόμενα ἢ συνεχῆ ἐστὶν ἢ διηρημένα. ἐπειδὴ 35 ἐκεῖθεν προῆλθον, εἰσὶ δὲ κακεῖ συνέχεια καὶ διαίρεσις, ἀλλ' οὐ σώματα τοιαῦτα ἐκεῖ συνεχῆ καὶ διηρημένα, ἀλλὰ λόγοι δημιουργικοὶ τούτων ὥσπερ τῶν ἀνθρώπων καὶ πάντων. καὶ ἰστέον δὲ ὅτι ἐκεῖ μὲν μᾶλλον ἢ

ια = Philop. ιε

ια, ι = Nicom. II, 3

ια. 4 Ἀριστοκλῆς (Philop.) cf. etiam Asclepius I.α, 16] Ἀριστοτέλης AM

11 κώλυμα (Philop.)] κάλυμμα M: κάλυμμα A

12 ἵνα M: om. A || βεβήκη A: βεβήκει M || τοίχους M² s. v.: τείχους AM

13 pr. καὶ (Philop.)] om. AM

20 ἀγαθόν M: μερικὸν ἀγαθόν A

23 ὑγεία cf. p. 23

24 μόνον (Philop.)] μόνα AM

26 ζωὴ M: om. A || λογικὴ (Philop.)] om. AM

27 ἄρα (Philop.)] ἄρα AM

ἐνωσις, ἦττον δὲ ἢ διάκρισις· κακεῖ δὲ διάκρισις ψυχῶν, ἀγγέλων, καὶ τῶν ἄλλων δυνάμεων. ἐνταῦθα μέντοι 40 τὸ ἀνάπαλιν μᾶλλον ἢ διάκρισις καὶ ἦττον ἢ ἐνωσις. ἔστιν οὖν τὸ συνεχές καὶ τὸ διωρισμένον καὶ ἐναντίαν ὁδὸν βαδίζουσι· τὸ μὲν γὰρ διωρισμένον τὴν μὲν αὖξισιν ἐπ' ἄπειρον ἔχει, τὴν δὲ μείωσιν πεπερασμένην· ὁ γὰρ ἀριθμὸς ἐπ' ἄπειρον μὲν αὖξεται, πεπέρα- 45 σται δὲ ἡ μόνος. τὸ δὲ συνεχές τὸ ἐναντίον, τὴν μὲν αὖξισιν πεπερασμένην, εἴ γε πεπερασμένος ὁ κόσμος, τὴν δὲ μείωσιν οὐκέτι, ἐπειδὴ πᾶν μέγεθος ἐπ' ἄπειρον διαιρετόν. ἐπεὶ οὖν ταῦτα ἄπειρά εἰσιν, αἱ δ' ἐπιστῆμαι πεπερασμένων εἰσὶ πραγμάτων καὶ οὐδέ- 50 ποτε ἀπείρων, ἀνάγομεν τὸ μὲν πλῆθος τοῦ διωρισμένου ἐπὶ τὸ ποσόν, τὸ δὲ συνεχές ἐπὶ τὸ πηλίκον. καὶ φαμέν, ἐπειδὴ τοῦ ποσοῦ τὸ μὲν ὁρᾶται αὐτὸ καθ' αὐτό, τὸ δὲ πρὸς ἄλλο, εἰ μὲν αὐτὸ καθ' αὐτό 55 λάβωμεν, ποιεῖ τὴν ἀριθμητικὴν· γίνονται γὰρ ἀριθμοὶ ἢ τετράγωνοι ἢ τέλειοι ἢ περιττοὶ ἢ τινες ἄλλοι. εἰ δὲ πρὸς ἕτερον σχέσιν ἔχον ποιεῖ τὴν μουσικὴν· γίνονται γὰρ ἡμιόλιοι καὶ ἐπίτριτοι (καὶ λοιπὸν αἱ ἄκρα χορδαὶ ἢ διὰ τεσσάρων εἰσὶν ἢ διὰ πέντε, ἐὰν 60 ἔχωσιν ἡμιόλιον ἢ ἐπίτριτον λόγον πρὸς ἀλλήλας). 60 τοῦ δὲ πηλίκου πάλιν τὸ μὲν ἀκίνητος ἐστὶ, τὸ δὲ κινούμενον· ἀλλὰ περὶ μὲν τὸ κινούμενον καταγίνεται <ἡ> ἀστρονομία, περὶ δὲ τὸ ἀκίνητον ἡ γεωμετρία. διὰ τούτων τοῖνυν ἀναγόμεθα ἐπὶ τὰ αἰ καὶ ὡσαύ- 65 τως ἔχοντα· δεῖ γὰρ προκαταρτῆσθαι διὰ τούτων καὶ μὴ ἀνίπτοις χερσὶν ἐφάπτεσθαι τῶν θείων. ὁ Πλάτων οὖν κελεύει διὰ τούτων ἀναβῆναι ἐπὶ τὰ θεῖα· ἀμέλει καὶ ἐν ταῖς Πολιτείαις τοὺς νομοφύλακας βούλεται διὰ 70 τούτων ἐπὶ θεολογίαν ἀνάγεσθαι, ἵνα τὰ ἐκεῖ θεωροῦντες κάλλη μιμῶνται καὶ φροντίζωσι τῆς πόλεως. 70 τί οὖν οὐκ ἀδικεῖ αὐτοὺς φέρων αὐτοὺς καὶ καταβιβάζων ἀπὸ τῶν θεολογικῶν ἐπὶ τὴν πόλιν; φαμέν ὅτι οὐ τροφεῖά γε ὀφείλουσι τῇ πόλει; δεῖ οὖν τὸ κάλλος, τὸ ὄντως κάλλος, δίδωκεν καὶ μὴ τὸ φαινόμενον τοῦτο· εἰ γὰρ ἀκριβῶς τις πρόσσχη, εὐρήσει τὸ ἐν ἡμῖν κάλ- 75 λος πάσης αἰσχροτήτος γέμον. ὁ γὰρ ἔφη Πρόκλος· εἰ οὖν δυνατὸν τοὺς Λυγκέως ὀφθαλμοὺς ἔχοντά τινα βλέπειν διὰ βάθους τοῦ σώματος καὶ ἰδεῖν κόπρον καὶ πᾶσαν ἀκαθαρσίαν, ἐπείσθη ἂν πόσον ἐν ἡμῖν τὸ ἀκαλλές καὶ αἰσχρόν. ταῦτα ἐστὶν ἃ βούλεται διὰ 80 τούτων διδάξαι.

41 ἀνάπαλιν M: διάπαλιν A

42 τὸ συνεχές καὶ τὸ διωρισμένον (Philop.) et cf. lin. 43 et 46] συνεχέστερον καὶ διηρημένον AM

55 λάβωμεν A: λάβομεν M

60 λόγον πρὸς ἀλλήλας A: πρὸς ἀλλήλας λόγον M

61 πηλίκου A: πηλίκον M (ut vid.)

62 καταγίνεται (Philop.)] καὶ γινόμενον AM

63 ἡ (Philop.)] om. AM

64 ἀναγόμεθα M: ἀγόμεθα A

69 ἀνάγεσθαι (Philop.)] γίνεσθαι AM

75 πρόσσχη scripsi: πρόσχη AM

76 δ cf. n. ad loc.

ιβ. τὰ τοῖς οὖσι συμβεβηκότα. ἀντὶ <τοῦ> τὸ συνεχὲς καὶ τὸ διωρισμένον· ταῦτα γὰρ αὐτοῖς συμβέβηκεν.

ιγ. ὅπερ ἐστὶ νοητῶν τε καὶ αἰσθητῶν. νοητῶν ἀντὶ τοῦ διανοητῶν· οὐ γὰρ τῶν ὄντως νοητῶν. ἰστέον γὰρ ὅτι ὁ Πλάτων ὀλοσχερέστερον μὲν τὰ ὄντα διαιρεῖ εἰς νοητὰ καὶ αἰσθητά. λοιπὸν δὲ τὰ μὲν νοητὰ διαιρεῖ 5 εἰς διανοητά, ἃ ἐν τῇ ψυχῇ θεωροῦνται, καὶ εἰς νοητά, ἃ τοὺς λόγους ἔχει τοὺς δημιουργικούς. καὶ πάλιν διαιρεῖται τὰ αἰσθητά εἰς τὰ αἰσθητά καὶ εἰς τὰ εἰκαστά. εἰκαστά δὲ καλεῖ σκιάς καὶ τὰ ἐν τοῖς ἐνόπτοις θεωρούμενα. νοητὰ οὖν ἐνταῦθα τὰ διανοητὰ καλεῖ.

ιδ. καὶ ἀλληλουχούμενα. ἀντὶ τοῦ συνεχῆ καὶ ἀλλεπ-ἀλληλα.

ιε. τῶν ἄρα δύο εἰδῶν τούτων. τοῦ τε συνεχοῦς καὶ τοῦ διωρισμένου.

ισ. ἀπὸ ὠρισμένης ῥίζης. ἀντὶ τοῦ ἀπὸ τῆς μονάδος.

ιζ. οὐδαμοῦ δύναται παύειν. ἐπ' ἄπειρον γὰρ διαιρετόν.

ιη. ἀπ' ἀμφοῖν ἀφωρισμένον. ἀπὸ ἀμφοτέρων οὖν ὠρισμένον δεῖ λαβεῖν, τοῦ μὲν συνεχοῦς τὸ πηλίκον, τοῦ δὲ πλήθους τὸ ποσόν, οἷον τετράγωνον. τί ἐστὶν ἕκαστον τούτων μαθησόμεθα προϊόντες. ἵνα δὲ μὴ 5 ἀνόητοι ὦμεν, τετράγωνός ἐστιν ὁ ἐξ ἀριθμοῦ ἑαυτὸν πολλαπλασιάζοντος γενόμενος· οἷον ὁ δ τετράγωνος, ἐπειδὴ ὁ β ἑαυτὸν πολλαπλασιάσας ἐποίησεν αὐτόν· δις γὰρ β δ. ὡσαύτως καὶ ὁ ἐννέα (τρὶς γὰρ τρεῖς θ), καὶ ὁ ις (τετράκις γὰρ δ ις). οἱ δὲ ἐν μέσῳ οὐκ εἰσὶ τε- 10 τράγωνοι. καὶ περὶ τῶν ἄλλων τε μαθησόμεθα.

ιθ. ὅπερ γὰρ ζωγραφίη. Ἀνδροκύδους ἡ ῥῆσις ὅτι ὥσπερ πᾶσα βάνανσος τέχνη ἔχει πρὸς σκιαγραφίαν πρὸς ἣν ποιεῖ τὸ ἔργον, οὕτω δεῖ καὶ ἡμᾶς τὰς τέσσα- 5 ρας ταύτας ἐπιστήμας ἔχειν πρὸς κατάληψιν τῶν αἰ ὄντων. ὁ οὖν ἐστὶν ἐκείνοις τοῖς βάνανσον τέχνην ἐπιτηδεύουσιν ἡ ζωγραφία, τοῦτο ἡμῖν αἱ τέσσαρες ἐπιστήμαι· καὶ γὰρ οἰκοδόμος μηχανικοῦ σκάρηφον λαμβάνει καὶ πρὸς αὐτὸ ποιεῖ ἢ οἶκον ἢ τι ἕτερον, καὶ τέκτων καὶ οἱ λοιποί.

κ. καλῶς μοι δοκοῦντι. ταῦτα ὁ Ἀρχύτας λέγει. δω- 5 ρίζει δὲ οὗτος, τῷ δοκοῦντι οὖν δωρικῶς ἀντὶ τοῦ δοκοῦσι. τοὶ περὶ τὰ μαθήματα διαγνώμενοι ἀντὶ τοῦ οἱ περὶ τὰ μαθήματα διαγνώμην· διαγνώμενοι γὰρ ἀντὶ τοῦ διαγνώμην, τοὶ δὲ ἀντὶ τοῦ οἱ. τὰ γὰρ ἄρθρα 5 τῶν πληθυντικῶν εὐθειῶν μετὰ τοῦ τ στοιχείου προ- φέρονται.

κα. ἐντὶ, περὶ ἐκάστου. ἀντὶ τοῦ ἐστί· τὸ γὰρ ἐστὶν ἐντὶ φασιν. “οἷά ἐντι” ἀντὶ τοῦ ὅποιά εἰσιν. “εἶμεν ἀδελφεά” ἀντὶ τοῦ εἶναι συγγενῆ, ἐπειδὴ αἱ δ περὶ τὸ ποσὸν καὶ πηλίκον καταγίνονται· ἀριθμητικὴ μὲν καὶ μουσικὴ περὶ ποσόν, γεωμετρία δὲ καὶ ἀστρονομία 5 περὶ πηλίκον.

κβ. περὶ γὰρ ἀδελφεά. συγγενεῖς εἰσιν αἱ ἐπιστήμαι αἱ τέσσαρες, ἐπειδὴ περὶ συγγενῆ β, τό τε ποσόν καὶ τὸ πηλίκον, καταγίνονται. καὶ ἀπλῶς ὁ λέγει τοιοῦ- 5 τόν ἐστιν· ὅτι καλῶς μοι δοκοῦσι ποιεῖν οἱ διαγινώ- σκοντες τὰ μαθήματα, οἱ γὰρ τὴν τοῦ ὄλου φύσιν εὐρη- κότες ἔμελλον ἂν καὶ κατὰ μέρος εἰδέναι. διέγνωσαν οὖν ἀστρονομίαν καὶ γεωμετρίαν καὶ ἀριθμητικὴν καὶ μουσικὴν, ἐπειδὴ ἐκ τούτων ἡμῖν προσγίνεται τὸ τέ- 10 λος.

ιβ = Philop. ις ιγ = Philop. ιη ιδ = Philop. ιζ

ιε–ιη = Philop. κα

ιβ, ι = Nicom. II, 3. ιγ, ι = Nicom. II, 4

ιδ, ι = Nicom. II, 4 ιε, ι = Nicom. II, 5

ισ, ι = Nicom. II, 5

ιζ, ι = Nicom. II, 5. ιη, ι = Nicom. II, 5.

ιθ = Philop. κα

κ = Philop. κα κα = Philop. κβ–κγ

κβ = Philop. κγ

ιθ, ι = Nicom. III, 3.

κ, ι = Nicom. III, 4. κα, ι = Nicom. III, 4.

κβ, ι = Nicom. III, 4.

ιβ. ι τοῦ scripsi: om. AM

ιγ. ι ὅπερ M: ἄπερ A (ut vid.)

2 ὄντως scripsi: ὄντων AM

8 ἐνόπτοις (Philop.)] ἐσόπτοις AM

ιζ. ι οὐδαμοῦ AM: οὐδαμῇ Nicom.

ιη. 6 πολλαπλασιάζοντος scripsi: πολλαπλασιαζόντως M: πολ- 10 λαπλασιάζοντα A || γενόμενος A: γινόμενος M

8 ἐννέα M: ἐννάτος A

ιθ. ι ὅπερ M: ὑπὲρ A (ut vid.)

2 σκιαγραφίαν A et P² i. m.: σκιογραφίαν MP

9 τέκτων A: τέκτωνων M

κα. ι ἐντὶ M: ἀντὶ τοῦ A

2 εἶμεν scripsi: εἰ μὲν M: ἰμὲν A

3 ἀδελφεά scripsi: ἀδελφά AM || τὸ A: om. M

κβ. 7–9 καὶ μουσικὴν, ... τέλος inveniuntur in AM post μά- 10 λιστα δὲ in κγ

κγ. οὐχ ἤκιστα δέ. ἀντὶ τοῦ μάλιστα δέ.

κδ. καὶ Πλάτων τε ἐπὶ τῷ τέλει. ἤδη εἴρηται ὅτι οὐκ ἄλλως δυνάμεθα ἐπὶ τὰ ἀεὶ καὶ ὡσαύτως ἔχοντα ἐλθεῖν, εἰ μὴ διὰ τῶν μαθημάτων ὀδεύσομεν. ἔτι οὖν πιστοῦται ὁ Νικόμαχος τοῦτο ἐκ τῶν Πλατωνικῶν 5 ῥήσεων, καὶ φησιν ὅτι ἐν τῷ τρισκαιδεκάτῳ τῶν νόμων τῷ καλουμένῳ φιλοσόφῳ, ἐπειδὴ διδάσκει ποῖον δεῖ εἶναι τὸν φιλόσοφον, παρακελεύεται ὁ Πλάτων διὰ τούτων ἡμᾶς ἄγεσθαι ἐπὶ τὴν τῶν ἀεὶ καὶ ὡσαύτως ἔχόντων γνῶσιν. ταῦτα οὖν ἐστὶν ἃ προήρηται διὰ 10 τούτων εἰπεῖν.

κε. ἅπαν διάγραμμα. ἀντὶ τοῦ γεωμετρία. “ἀριθμοῦ τε σύστημα” τὴν ἀριθμητικὴν φησι. “καὶ ἁρμονίας σύστασιν” τὴν μουσικὴν. “τῆς τε τῶν ἄστρον φορᾶς” τῆς τε ἀστρονομίας. “τὴν ὁμολογίαν μίαν ἀναφανῆ- 5 ναι” ὥστε, φησὶν, τὰ δ ταῦτα μαθήματα μίαν ὁμολογίαν ποιῆσαι, ὃ ἐστὶν εἰς ἐν τέλος ἡμᾶς ἄγουσιν, ἢ ὅτι δεῖ αὐτὰς ταύτας τὰς δ ἐπιστήμας δοκούσας διαφέρειν εἰς συμφωνίαν ἀγαγεῖν καὶ δεῖξαι δι’ ἃ κοινωνοῦσιν ἴδιον γὰρ φιλοσοφίας τό τε τὰ πολλὴν δο- 10 κοῦντα ἔχειν διαφορὰν δεῖξαι κοινωνοῦντα, καὶ τὸ τὰ πολλὴν δοκοῦντα κοινωνίαν ἔχειν δεῖξαι διαφέροντα· οὐ γὰρ δυσχερὲς τὸ δεῖξαι φάττης καὶ περιστερᾶς κοινωνίαν· τοῦτο παντὶ γὰρ προῦπτον, ἀλλὰ τὸ διαφορὰν εἰπεῖν.

κς. εἴ τις εἰς ἐν βλέπων. ἀντὶ τοῦ εἴ τις εἰς ἐν τέλος καὶ ἕνα σκοπὸν βλέπων, ταῦτα πάντα μανθάνει.

κζ. δεσμός γὰρ ἀπάντων τούτων. τῶν γὰρ δ τούτων εἰς δεσμός ἐστι καὶ μία ἑνωσις, τὸ τὰ ἀεὶ καὶ ὡσαύτως ἔχοντα θηρᾶσαι.

κη. τύχην δεῖ καλεῖν συνεργόν. ἤδη γὰρ προειρήκαμεν ὅτι ὁ μὴ διὰ τούτων ἐρχόμενος ἔοικε τυφλῷ κατὰ τύχην ὀρθῶς βαδίζοντι· δεῖ οὖν τύχην καλεῖν βοηθήσουσαν τὸν μὴ διὰ τούτων ἐρχόμενον.

κγ = κδ = Philop. κδ κε = Philop. κε

κς = Philop. κς κζ = Philop. κζ κη = Philop. κη

κγ = Nicom. III, 4. κδ, I = Nicom. III, 5

κε, I = Nicom. III, 5 κς, I = Nicom. III, 5.

κζ, I = Nicom. III, 5. κη, I = Nicom. III, 5.

κδ. I καὶ Πλάτων τε ἐπὶ τῷ τέλει AM: καὶ Πλάτων δὲ ἐπὶ τέλει Nicom.

9 προήρηται scripsi: προεῖρηται AM

κε. 8–9 δεῖξαι δι’ ἃ κοινωνοῦσιν M: δι’ ἃ κοινωνοῦσιν δεῖξαι A 10–11 ἔχειν ... ἔχειν M: ἔχειν A

10 τὸ scripsi: τὰ M

κη. 3 τύχην M: τύχειν A

κθ. εἴτε χαλεπὰ εἴτε ῥάδια. ἐπειδὴ τινὲς φασιν ὅτι δυσχερῆ εἰσι καὶ οὐ δυνάμεθα, διὰ τοῦτο λέγει ὅτι εἴτε χαλεπὰ εἰσιν εἴτε σαφῆ ἀνευ τούτων οὐ δυνατόν ἐπὶ τὰ νοητὰ ὀδεῦσαι. εἰ δὲ κατὰ τάξιν δι’ αὐτῶν βαδίσομεν, εὐφρανθήμεν ἂν, ὡς μηδὲ κόρον ἔχειν, 5 ἀλλὰ χαίρειν ἐπ’ αὐτοῖς καὶ λέγειν τὸ τοῦ Ἡσιόδου “ἦν δ’ ἔς ἄκρον ἵκηται, ῥηιδίη δὴ πειτα πέλει χαλεπὴ περ ἐοῦσα”. ὅτι δὲ χαίρουσιν αἱ ψυχαὶ ἐπὶ τῇ εὐρέσει τῶν δογμάτων, δῆλον ἐκ τοῦ ἡδεσθαι ἡμᾶς εὐρίσκον- τὰς τι, καὶ οὕτως ἡδεσθαι ὡς καὶ δάκρυον προχεῖσθαι. 10 ἀμέλει καὶ ὁ φιλόσοφος Ἀμμώνιος ἔλεγεν ὅτι “ἔπρατ- τόν τινα ἀνδρὶ γραμμᾶς, καὶ ἡδετο πάννυ λέγοντός μου τὸ θεώρημα. ὅθεν παυσαμένου μου ἔφη Ἰνποῦμαι ὅτι νῦν ἐπλήρωσας, ἡθελον γὰρ ἀκούειν τῆς ἀποδείξε- 15 ως.”

λ. παίζων καὶ σπουδάζων. ἀντὶ τοῦ παντὶ τρόπῳ.

λα. κλίμαξι τισιν. ἐπιβάθρα γὰρ εἰσι τὰ μαθήματα καὶ θριγγίῳ ἐοίκασι περιφρουροῦντα πάντα. δεῖ οὖν διὰ τούτων ἐπὶ τὴν διαλεκτικὴν ἐλθεῖν, οὐ τὴν παρὰ Ἀριστοτέλει διαλεκτικὴν, ἀλλὰ τὴν τὰ θεῖα εὐρίσκου- 5 σαν, καὶ οὕτως δι’ αὐτῆς ἐπὶ τὰ ἀεὶ καὶ ὡσαύτως ἔχοντα βαδίσαι. | αὐτὰ καθ’ αὐτά· εἰσι θεῖα τὰ μαθή- ματα καὶ οὐ μετὰ τῶν ἐνύλων. ὅρα ὅτι ἡ γεωμετρία καταξιώσασα ἐλθεῖν εἰς τὴν ὕλην τὴν μηχανικὴν ἐποίησεν, ὥστε δεῖ ἀλύως αὐτὰ σκοπεῖν. | τότε γὰρ 10 τὸ ὄμμα, οὐ τὸ σωματικόν λέγω ἀλλὰ τὸ ψυχικόν, καθαίρεται καὶ ἀποβάλλει τὰς λήμας τὰς τῆς ἀγνοίας. ὥσπερ γὰρ τῶν τοῦ σώματος ὁμμάτων τῷ σπόγγῳ τὰς λήμας ὁ ἰατρὸς λαμβάνει, οὕτω τοῦ ψυχικοῦ ὄμ- ματος ἀποκαθαίρουσι δίκην σπόγγου <τὰς> λήμας 15 αἱ δ ἐπιστήμαι καὶ ποιοῦσι καθαρῶς ὁρᾶν. ἐνταῦθα οὖν δεῖ λέγειν τὸ τῆς Ἀθηνᾶς τὸ λέγον·

“ἀγλὺν αὖ τοι ἄπ’ ὀφθαλμῶν ἔλον ἦ πρὶν ἐπῆεν, ὄφρ’ εὖ γινώσκεις ἡμὲν θεὸν ἡδὲ καὶ ἄνδρα.”

κθ = Philop. κθ λ = Philop. κθ, I I

λα = Philop. λ–λβ

κθ, I = Nicom. III, 5. λ = Nicom. III, 5.

λα, I = Nicom. III, 6. 6 cf. Nicom. III, 6–7

9 cf. Nicom. III, 7

κθ. 7 ἔς M: εἰς A || ῥηιδίη A: ῥηδίη M || δῆπεια M: δῆπητα A 13 ὅθεν M: ὅτι A

λ. καὶ AM et [Plato], *Epinomis* 992 B 3: τε καὶ Nicom.

λα. I ἐπιβάθρα M: ὁ ἐπιβάθρα A

4 Ἀριστοτέλει M² s. v.: Ἀριστοτέλους AM

11 pr. τὰς A: εἰς τὰς M

12 τοῦ A: οὗ M (ut vid.)

14 τὰς (Philop.) om. AM

17 αὖ τοι M: οὕτοι A: δ’ αὖ τοι Homer.: δ’ αὖτ’ Philop. || ἡ Homer.: ἡ A: ἡ M

18 γινώσκεις AM: γινώσκης Philop.: γινώσκης Homer.

δεῖ οὖν τὸ ὅμμα τῆς ψυχῆς τὸ μυρίων σωματικῶν
20 κρεῖττον ἔχειν καθαρὸν.

λβ. μόνῳ γὰρ αὐτῷ. μόνον γὰρ τὸ τῆς ψυχῆς ὅμμα
τὴν ἀλήθειαν θηρᾷ.

λγ. τίνα οὖν ἀναγκαῖον πρωτίστην τῶν δ' αὐτῶν μεθό-
δων ἐκμαθεῖν καὶ τὰ ἐξῆς. ὅτι μὲν πρὸς τὸ τέλος τῆς
ὄντως φιλοσοφίας οὐ δυνατόν ἄλλως ἔλθειν, εἰ μὴ
βαδίσωμεν διὰ τῶν δ' αὐτῶν ἐπιστημῶν, ἥδη ἐπι-
5 στώσατο ὁ Νικόμαχος. ὅτι δὲ προτέρα τῶν λοιπῶν
ἐστὶν ἡ ἀριθμητικὴ, διὰ τούτων κατασκευάζεται. καί
φησιν ὅτι ἡ ἀριθμητικὴ πολιτεύεται παρὰ τῷ δη-
μιουργῷ, εἴ γε ἐκεῖ εἰσιν οἱ λόγοι τῶν εἰδῶν πάντων.
ἀμέλει ὁ Πλάτων τὰ εἶδη ἀριθμοῦς προσαγορεύει,
10 ἔπειδ' ὡς περὶ ὁ ἀριθμὸς μετρητικός ἐστὶ καὶ περιο-
ριστικός ἐκείνου οὗ ἂν ἡ ἀριθμὸς οὕτω καὶ τὰ εἶδη
πάντων ὀριστικά εἰσι καὶ μετρητικά· ἔπει οὖν λόγοι
τῶν εἰδῶν ἐκεῖ τοὺς ἀριθμοῦς μιμουμένων, διὰ τοῦτο
ἀριθμητικὴ ἐστὶ πρώτη ἐκεῖ. οἱ οὖν λόγοι πάντων
15 ἐκεῖ εἰσιν, οὐ γὰρ αὐτὰ τὰ εἶδη, καὶ διὰ τοῦτο καὶ ἡ
ποίησις λέγει, Ἄθην' ἂν μὲν τεκταίνεσθαι, Ἥφαιστον
δὲ χαλκεύειν· οὐχ ὅτι τῷ ὄντι ἐργάζονται, μυθῶδες
γὰρ τοῦτο, ἀλλ' ὅτι ἔχουσι τοὺς λόγους πάντων,
ὥς περὶ ὁ ἱατρὸς πάντων τῶν νοσούντων ἔχει τοὺς λό-
20 γους, μὴ ὦν αὐτὸς νοσέρος. κατὰ τοῦτο τοῖνυν πρώτη
ἡ ἀριθμητικὴ. καὶ κατὰ τοὺς ἄλλους δὲ τοὺς πολυ-
θρυλλήτους κανόνας προτέρα ἐστὶν· ἰστέον γὰρ ὅτι τῇ
φύσει πρῶτον λέγομεν τὸ συναναιρούμενον μὲν, μὴ συν-
αναιρούμενον δέ, καὶ τὸ συνεισφερόμενον μὲν, μὴ συν-
25 εισφέρον δέ· οὕτω γοῦν φαμεν ζῶον φύσει πρῶτον
ἀνθρώπου, ἔπειδ' ἀναιρεθέντος μὲν ζῶου καὶ ὁ ἄν-
θρωπος ἀνήρηται, ἀνθρώπου δὲ ἀναιρεθέντος τὸ
ζῶον οὐκ ἀνήρηται. καὶ πάλιν ἀνθρώπου μὲν εἰσφε-
ρομένου, συνεισφέρεται πάντως καὶ τὸ ζῶον, οὐκέτι
30 δὲ τῷ ζῳῳ συνεισφέρεται ὁ ἄνθρωπος. κατὰ τὸν
αὐτὸν τοῖνυν τρόπον κἀναυθῆ ἀναιρουμένης ἀρι-
θμητικῆς ἀναιρεῖται καὶ γεωμετρία· μὴ γὰρ ὄντος
ἀριθμοῦ, οὐκ ἔστι τὸ μοναχὲς καὶ διχὲς καὶ τριχὲς· μὴ
ὄντων δὲ τούτων, οὐδὲ γραμμὴ οὐδὲ ἐπιφάνεια οὐδὲ

μέγεθος. καὶ πάλιν συνεισφέρεται τῇ γεωμετρίας <ἡ 35
ἀριθμητικῇ>. πῶς γὰρ ἂν λεχθεῖ ὀκτάεδρον καὶ τε-
τράγωνον καὶ διπλάσιον καὶ τριπλάσιον, μὴ ὑπαρ-
χούσης ἀριθμητικῆς; εἰ μὴ γὰρ ὥσι δ, οὐκ ἔσται τε-
τράγωνον, οὐδὲ τρίγωνον μὴ ὄντων τριῶν, οὐδὲ
ὀκτάεδρον μὴ ὑπαρχόντων ὀκτώ· ἀλλ' οὐδὲ διπλά- 40
σιον ἢ τριπλάσιον, εἴ γε ἀριθμητικῆς ταῦτα. περὶ
γὰρ τοιούτων λόγων ἐν τῷ ε βιβλίῳ ὁ γεωμέτρης
διαλέγεται. προτέρα οὖν ἀριθμητικὴ γεωμετρίας, ἀλλὰ
καὶ μουσικῆς, εἴ γε προγενέστερον τὸ αὐτὸ καθ' αὐτὸ
τοῦ πρὸς ἕτερον. ὥστε εἰ ἡ μὲν ἀριθμητικὴ αὐτὴ καθ' 45
αὐτὴν ἢ δὲ μουσικὴ ἐν τῇ πρὸς ἕτερον σχέσει, προτέρα
ἡ ἀριθμητικὴ τῆς μουσικῆς. ἄλλως τε οἱ μουσικοὶ
λόγοι, ὁ ἐστὶν ὁ διὰ δ ἢ ὁ διὰ ε ἢ ὁ διὰ πασῶν ἢ ὁ
δις διὰ πασῶν, πῶς ἂν γένοιτο μὴ ὄντος ἀριθμοῦ;
ἡ μὲν γὰρ [τῶν] διὰ ε τὸν ἡμιόλιον λόγον ἔχει, ἡ δὲ 50
διὰ δ τὸν ἐπίτριτον, ἡ δὲ διὰ πασῶν τὸν διπλάσιον,
ἡ δὲ διὰ πασῶν ἅμα καὶ διὰ ε τὸν τριπλάσιον, ἡ δὲ
δις διὰ πασῶν, ἥτις καὶ τελειοτάτη ἐστὶ, τὸν τετρα-
πλάσιον. ταῦτα δὲ πάντα ἀριθμοῖς ὑποβάλλονται.
ἡμιόλιος μὲν γὰρ ὁ γ τῶν β, ὅτι ἔχει ὁ γ τὸν β καὶ 55
τὸ ἡμισυ αὐτοῦ. ἐπίτριτος δὲ ὁ δ τοῦ γ, ὅτι ἔχει ὁ δ
τὸν γ καὶ τὸ τρίτον αὐτοῦ. [ὁ δὲ δ τοῦ β τὸ διπλά-
σιον.] διπλάσιος δ' αὐ τοῦ β ὁ δ καὶ τετραπλάσιος ὁ
ὀκτώ. καὶ ὅρα πῶς καλῶς εἶπεν ὁ Νικόμαχος δι' ὃ ἡ
τελειοτάτη ἐστὶν ἡ δις διὰ πασῶν· ἐμελλε γὰρ τις 60
λέγειν ὅτι “ἄρα ὡς περὶ οἱ ἀριθμοὶ αὐξάνονται οὕτω
καὶ αἱ χορδαί;” λέγει οὖν ὅτι οὐ, ἔπειδ' ἡ πολλὴ
ἐπίτασις ῥῆξιν ἐργάζεται· ἄχρι οὖν τετραπλασίου
λόγου αὐξεται. πάλιν οὐδὲ ἄχρι πολλοῦ μειοῦται· ἡ
γὰρ πολλὴ ἄνεσις τὸ σιγαῖν τῇ χορδῇ χαρίζεται, 65
ὥστε πάλιν ἡ ἐσχάτη μείωσις ἄχρι τοῦ ἐπιτρίτου
λόγου γίγνεται. τοσαῦτα περὶ μουσικῆς καὶ ἀριθμη-
τικῆς, ἀλλὰ καὶ τῆς σφαιρικῆς πρώτη ἐστίν. εἰ μὲν
γὰρ λάβης τὴν ἀκίνητον σφαῖραν, ἔπειδ' ὁ ἀκίνη-
τον πρότερον τοῦ κινουμένου, ἐδείχθη δὲ περὶ μὲν τὸ 70
ἀκίνητον ἔχουσα ἡ γεωμετρία, περὶ δὲ τὸ κινούμενον
ἡ ἀστρονομία. εἰ προτέρα δὲ ἐστὶν ἡ γεωμετρία τῆς
ἀστρονομίας, ἡ δὲ ἀριθμητικὴ καὶ τῆς γεωμετρίας,
πολλῷ ἄρα καὶ τῆς ἀστρονομίας. ἄλλως τε πῶς δυνά-
μεθα τὰ διαστήματα τὰ πρὸς ἄλληλα τῶν ἀστέρων 75
εὑρεῖν, εἰ μὴ ἀριθμῷ; καὶ τί λέγω τὰ πρὸς ἄλληλα;
ὅπου γε οὐδὲ αὐτὰ καθ' αὐτά· τοὺς οὖν ἀναποδι-
σμούς καὶ προποδισμούς καὶ τὰς ἀνατολάς καὶ δύσεις
καὶ τὰ τοιαῦτα ἐξ ἀριθμῶν γνωρίζομεν· ἀριθμὸς γὰρ

λβ = Philop. λβ, 19 λγ = Philop. λγ-λδ

λβ, I = Nicom. III, 7. λγ, I-2 = Nicom. IV, 1.

λγ. 2 ἐκμαθεῖν AM et Nicom. Cμ: ἐκμανθάνειν Nicom.

4 βαδίσωμεν A: βαδίσωμεν M

10 ἔπειδ' M: ἔπει δὲ A || μετρητικός (Philop.) et cf. lin. 12
μετρικός AM

13 τοὺς ἀριθμοὺς scripsi: τῶν ἀριθμῶν AM

16 τεκταίνεσθαι (Philop.) || τεκταίνουσιν AM

17 ἐργάζονται scripsi: ἐργάζεται AM

23 συναναιρούμενον μὲν (Philop.) || μὲν συναιροῦν AM

23-24 συναναιρούμενον M: συναιρούμενον A

25 πρῶτον cf. p. 22 supra

28 ἀνήρηται (Philop.) || ἀναιρεῖται AM

30 ὁ M: om. A

33 τὸ μοναχὲς καὶ διχὲς καὶ τριχὲς AM: τὸ μοναχῇ καὶ διχῇ καὶ
τριχῇ Philop.

35-36 ἡ ἀριθμητικὴ (Philop.) || om. AM

42-43 ἐν τῷ ε βιβλίῳ ὁ γεωμέτρης διαλέγεται M: ὁ γεωμέτρης
διαλέγεται ἐν τῷ ε βιβλίῳ A

46 προτέρα (Philop.) || πρότερον AM

49 γένοιτο (Philop.) || γένοιτο AM

50-53 ἡ μὲν ... τελειοτάτη ἐστὶ, sc. συμφωνία (cf. Nicom.,
p. 11, 7-11 [Hoche]).

57-58 ὁ δὲ δ τοῦ β τὸ διπλάσιον M: ὁ δὲ δ τοῦ β ὁ διπλάσιος A

59 δι' δ scripsi: διὰ AM

61 ἄρα scripsi: ἄρα AM

68 πρώτη cf. p. 22 supra

80 θηρᾶ δι' ὃ νῦν οὕσα ἔσπερία ἢ Ἀφροδίτη μετ' ὀλίγον χρόνον ἔσται ἑώρα, καὶ ἐπὶ τῶν ἄλλων ὁμοίως. δέ-
δεικται γὰρ ἄρα διὰ πάντων, ὥς προὔχει τῶν ἄλλων
ἢ ἀριθμητική. ταῦτα οὖν βούλεται ἡμῖν ἢ παροῦσα
θεωρία διηγήσασθαι.

λδ. ἐν τῇ τοῦ τεχνίτου θεοῦ. οὐχ ὅτι αὐτὸς τεχνίτης,
ἀλλ' ὅτι πάντων τῶν τεχνιτῶν τοὺς λόγους αὐτὸς
ἔχει.

λε. ὡς πρὸς προκέντημά τι. προκέντημά ἐστιν <οἶον> ὁ
σκάριφος καὶ ἡ σκιαγραφία. ὥσπερ οὖν ἡμεῖς πρὸς
ταῦτα βλέποντες τὰ σκιαγραφήματα ποιοῦμεν τόδε
τι, οὕτω καὶ ὁ δημιουργὸς πρὸς ἐκεῖνον ἀποβλέπων
5 κοσμεῖ τὰ τῇδε· ἀλλ' ἵστέον ὅτι τὰ μὲν τῇδε σκιαγρα-
φήματα ἀτελῆ εἰσιν, ἐκεῖνος δὲ ὁ λόγος ἀρχέτυπος.

λς. τὰ ἐκ τῆς ὕλης ἀποτελέσματα. πρὸς ἐκεῖνον ἀποτε-
λέσματα, ὥστε ἐκείθεν παρήχθη καὶ ἡ ὕλη. εἰ γὰρ
μὴ ἦν ἐκείθεν, οὐκ ἂν οὐδὲ ἔκοσμεῖτο· μὴ γὰρ οὕσαν
αὐτὴν ἐκείθεν διὰ τί εἶχε κοσμεῖν;

λζ. καὶ ἐκ τοῦ ἐναντίου δέ. κἂν μὴ λάβης δὲ πρότερον
τὸ πρεσβύτερον, ἀλλὰ τὸ ἐναντίον τὸ νεώτερον, εὐ-
ρήσεις ὅτι συνεισφέρεται αὐτῷ τὸ πρεσβύτερον, τῷ
δὲ πρεσβυτέρῳ οὐκέτι τὸ νεώτερον συνεισφέρεται.

λη. καθάπερ τὸ μέγα τοῦ μείζονος. οὐχ ὅτι τὸ μέγα
πρότερόν ἐστι τοῦ μείζονος, ἀλλ' ὅτι μέλλον μείζον
λέγεσθαι σῶμα προὔποκεῖσθαι θέλει <τὸ μέγα>, ἵνα
οὕτω μείζον μέλλῃ εἶναι· ὡσαύτως καὶ ὁ μέλλων
5 πλουσιώτερος εἶναι, προὔπόκειται καὶ οὕτω πλού-
σιος, καὶ τὰ λοιπὰ ὁμοίως.

λθ. ἡ γὰρ κίνησις φύσει μετὰ τὴν μονήν. τὸ γὰρ ἀκίνη-
τον τοῦ κινουμένου πρότερον· ἀλλὰ τὸ μὲν ἀκίνητον ἢ
γεωμετρία ζητεῖ, τὸ δὲ κινούμενον ἢ ἀστρονομία. εἰ
πρώτη οὖν ἢ γεωμετρία τῆς ἀστρονομίας, ἡ δὲ ἀρι-

λδ = Philop. λε λε = Philop. λς λς = Philop. λζ

λζ = Philop. λη λη = Philop. λη λθ = Philop. μ

λδ, I = Nicom. IV, 2. λε, I = Nicom. IV, 2.

λς, I = Nicom. IV, 2

λζ, I = Nicom. IV, 3. λη, I = Nicom. V, 1.

λθ, I = Nicom. V, 2

80 δι' ὃ M: διὸ A

λδ. 2 τοὺς λόγους αὐτὸς M: αὐτὸς τοὺς λόγους A

λε. I ὡς πρὸς Nicom.: ὥσπερ AM || προκέντημά τι Nicom.:
προκεντήματι AM || οἶον scripsi: om. AM

λη. I καθάπερ τὸ μέγα Nicom.: καθάπερ οὐ τὸ μέγα AM

2 μέλλον M: τὸ μέλλον A || μείζον scripsi: μέγα AM

3 τὸ μέγα (Philop.) om. AM

5 πλουσιώτερος (Philop.) πλουσιότερος P² i. m.: πλούσιος AM

λθ. 4 πρώτη cf. p. 22 supra

θητική τῆς γεωμετρίας προὔχει, πολλῶ ἄρα ἢ ἀρι- 5
θητική προτέρα τῆς ἀστρονομίας.

μ. οὐδ' ὅτι δι' ἁρμονίας. οὐδὲ πάλιν διὰ τοῦτο μόνον
προτέρα ἐστὶν ἢ ἀριθμητική τῆς ἀστρονομίας, διὰ τὸ
ἁρμονίαν τινὰ ἐμμελῆ ἔχειν πρὸς τὰ κινήματα τῶν
ἄστρον, ζητοῦμεν γὰρ τὸν τῶν διαστημάτων αὐτῶν
λόγον, ἀλλ' ὅτι καὶ αἱ ἀνατολαὶ καὶ δύσεις καὶ τὰ 5
λοιπὰ πάντα ταῖς τῶν ἀριθμῶν περιόδους καὶ ταῖς πο-
σότησιν εὖ διαρθροῦνται. καλῶς οὖν, εἰδότες αὐτὴν
προτέραν οὕσαν καὶ μητέρα καὶ τροφὸν τῶν ἄλλων,
διδάσκομεν ταύτην πρὸ τῶν λοιπῶν.

μα. πάντα τὰ κατὰ τεχνικὴν διέξοδον. εἰρηκῶς ὅτι διὰ
τῶν δ μαθημάτων φερόμεθα ἐπὶ τὸ τέλος τῆς φιλο-
σοφίας, δείξας δὲ καὶ ὅτι ἡ ἀριθμητική φύσει προτέρα
τῶν ἄλλων, νῦν ἐπ' αὐτὸ τὸ προκείμενον ἔρχεται, ἐπὶ
τὸν ἀριθμὸν φημι, ὃν βουλόμεθα κατορθῶσαι. λέγει 5
τοῖνυν ὅτι ἐξ ἀρχῆς παρὰ τῷ δημιουργῷ ἐστὶν ὁ
ἀριθμὸς, εἰ γε τὰ εἶδη εἰσὶν ἐκεῖ ἀναλογούντα τῷ
ἀριθμῷ, ὥς ἀριθμητικὰ καὶ περιοριστικὰ πάντων
καὶ ὁ κόσμος οὖν κατὰ ἀριθμὸν γέγονε· περιοριστικός
γὰρ καὶ μετρητικός πάντων. ἐξ ἐκείνου τοῖνυν τοῦ 10
νοητοῦ γέγονεν ὁ διανοητὸς ἀριθμὸς ἐν τῇ ἡμετέρᾳ
ψυχῇ. ἐπεὶ τοῖνυν σύνθετός ἐστιν οὗτος (οὐ γὰρ ἀ-
πλοῦς τυγχάνει), σύγκειται ἄρα ἐξ ὄντων καὶ ὁμογε-
νῶν καὶ ἐναντίων· πᾶν γὰρ τὸ συντιθέμενον ἐξ ὄντων
σύγκειται καὶ ὁμογενῶν καὶ ἐναντίων· ἐκ μὲν γὰρ μὴ 15
ὄντων οὐδὲν σύγκειται· ἀλλ' οὐδὲ ἐξ ὁμογενῶν μὲν,
μὴ διαφόρων δέ, οὕτω γοῦν ἐκ δύο βαρέων χορδῶν
ἁρμονία οὐ γίνεται. οὐδὲ ἐκ δύο ὕδατινῶν στοιχείων·
ἀλλ' οὐδὲ ἐκ διαφόρων μὴ ὄντων ἐναντίων, οὕτως
οὖν ἐκ λευκοῦ καὶ θερμοῦ ἢ ἐκ λευκοῦ καὶ γλυκέος 20
οὐδὲν γίνεται· ἀλλ' ἐξ ἐναντίων καὶ ὁμογενῶν πᾶν-
των, οἶον ἐκ λευκοῦ καὶ μέλανος τὸ φαιόν, καὶ ἐκ θερ-
μοῦ καὶ ψυχροῦ τὸ σύμμετρον, εἰ τύχοι. ὅτι δὲ ἡ
ἁρμονία ἐξ ἐναντίων σύγκειται, οἱ Πυθαγόρειοι δη-
λοῦσι· φασὶ γὰρ ὅτι ἁρμονία ἐστὶ πολυμιγέων καὶ 25
δίχα φρονεόντων ἔνωσις. κἀνταῦθα τοῖνυν ὁ ἀριθμὸς
ἐξ ὁμογενῶν καὶ ἐναντίων συναρμόζεται, ἐξ ἀρτίου
λέγω καὶ περιττοῦ· ταῦτα τοῖνυν αὐτοῦ τὰ πρῶτα
εἶδη. αὐτῶν δὲ τούτων εἰσὶν ἄλλα εἶδη· τοῦ μὲν ἀρ-
τίου τὸ ἀρτιάκις ἄρτιον καὶ τὸ ἀρτιοπέριπτον καὶ τὸ 30
περισσάρτιον, τοῦ δὲ περιττοῦ τὸ πρῶτον καὶ ἀσύν-
θετον, καὶ τὸ δεύτερον καὶ σύνθετον, καὶ τὸ ἐν μέσῳ
τούτων· τί δὲ ἐστὶν ἕκαστον τούτων, μαθησόμεθα. ζη-

μ = Philop. μα μα = Philop. μβ

μ, I = Nicom. V, 2. μα, I = Nicom. VI, 1

μ. I δι' ἁρμονίας AM: ἁρμονίας Nicom.

7 διαρθροῦνται M: διαθροῦνται A

μα. 5 ὃν M: οἶον A || βουλόμεθα M et A² (o sup. ω): βουλώ-
μεθα A

23 ψυχροῦ M: ἐκ ψυχροῦ A

24 Πυθαγόρειοι scripsi: Πυθαγόριοι AM

τεῖ δὲ αὐτῶν καὶ τὴν οὐσίαν καὶ τί αὐτοῖς παρακολου-
 35 θεῖ, καὶ τὸν τρόπον τῆς γενέσεως· πρόσπει τούτοις
 δὲ δεῖξαι γραμμικαῖς ἀνάγκαις ὅτι φύσει προτέρα
 ἐστὶν ἢ μονὰς καὶ ἀρχὴ τῶν ἀριθμῶν. παραδώσει δὲ
 καὶ τοὺς ὁρισμούς τοῦ τε ἀρτίου καὶ τοῦ περιττοῦ,
 40 πρῶτον μὲν τοὺς δημῶδεις καὶ τοὺς πολυθρυλλήτους,
 εἴτα δὲ καὶ τοὺς κατὰ Πυθαγόραν. ταῦτα διὰ τῆς
 παρούσης θεωρίας μαθησόμεθα.

μβ. βεβαιουμένου. ἀντὶ τοῦ κρατυνομένου τοῦ διανοη-
 τοῦ ἀριθμοῦ ὑπὸ [τὸν] τοῦ παραδείγματος λόγον
 καὶ προχαράγματος ἐπέχοντος νοητοῦ ἀριθμοῦ· ὁ
 γὰρ νοητὸς ἀριθμὸς παράδειγμά ἐστι, προὔπουστος
 5 ἐν τῇ τοῦ θεοῦ διανοίᾳ, οὗτος δὲ εἰκὼν ἐκείνου τυγχά-
 νει.

μγ. οὐσίαν μέντοι τὴν ὄντως. ἐκεῖνος γὰρ μόνος αἰεὶ καὶ
 ὡσαύτως ἔχει. τῷ δὲ εἰπεῖν νοητὸν αὐτὸν μόνον
 οὐδὲν ἄλλο σημαίνει ἢ αὐτόχρομα νοητὸν καὶ αὐλὸν
 τυγχάνοντα.

μδ. ἐξελιγμοί. ἀντὶ τοῦ περιόδοι· ταῦτα γὰρ πάντα
 καὶ ὁ οὐρανὸς καὶ ὁ χρόνος καὶ ἄστρα ἐξ ἐκείνων τῶν
 λόγων προήλθον. Ἀμέλιος δέ, οὐκ οἶδα πόθεν ὀρμη-
 θεῖς, καὶ τῶν κακῶν οἶεται λόγους εἶναι παρὰ τῷ δη-
 5 μιουργῷ.

με. καὶ αὐτὸν <τὸν> ἐπιστημονικόν. ἀντὶ τοῦ τὸν δια-
 νοητόν.

μς. ἀλογα δὲ πρὸς ἄλληλα. λόγον ἐναντιότητος πρὸς
 ἄλληλα μὴ ἔχοντα.

μζ. οὐσίαν τε ἔχοντα τὴν τῆς ποσότητος. καὶ γὰρ τὸ
 περιττὸν ποσὸν καὶ τὸ ἄρτιον.

μβ = Philop. μγ μγ = Philop. μδ μδ = Philop. με

με = Philop. μς μς = Philop. μθ μζ = Philop. ν

μβ, I = Nicom. VI, 1. μγ, I = Nicom. VI, 1.

μδ, I = Nicom. VI, 1. με, I = Nicom. VI, 2

μς, I = Nicom. VI, 3. μζ, I = Nicom. VI, 4.

34 αὐτῶν (Philop.) αὐτὸν AM || αὐτοῖς M: αὐτῶν A

38 τοὺς M: αὐτοὺς τοὺς A

39 δημῶδεις (Philop.) βαλλῶδεις AM || πολυθρυλλήτους (Phi-
 lop.) περιθρυλλήτους AM

μβ. 1-2 διανοητοῦ scripsi: δὲ νοητοῦ AM

2 Cf. Philop. μγ, 1-2

μδ. 2 ἐξ M: δὲ ἐξ A

με. 1 καὶ αὐτὸν τὸν Nicom. Cμ: καὶ αὐτὸν AM: τὸν Nicom.

μς. 2 ἔχοντα M: ἔχοντα οὐσίαν A

μη. καὶ ἐναλλάξ ὑπὸ θαυμαστῆς. τοσαύτην τάξιν, φη-
 σίν, ἔχουσιν ὅτι θείως ἤνωνται ἐναλλάξ. ὅτι εἰς παρ'
 ἓνα ἀριθμὸς ἄρτιος καὶ περιττός ἐστιν, ἐνώσεως καὶ
 συνεχείας φυλαττομένης, οἶον ὁ β ἄρτιος, ὁ γ περιτ-
 τός, ὁ δ ἄρτιος, ὁ ε περιττός, ὁ ς ἄρτιος, ὁ ζ περιττός, 5
 ὁ η ἄρτιος, ὁ θ περιττός, ὁ ι ἄρτιος, καὶ ἐξῆς ὁμοίως.

μθ. ἀπλῶς γὰρ ἀριθμὸς ἐστίν. ὀρίζεται τὸν ἀριθμὸν καὶ
 λέγει ὅτι ἀριθμὸς ἐστὶ σύστημα καὶ πλῆθος μονάδων
 καὶ χύμα ποσότητος ἐκ μονάδων συγκείμενον.

ν. ἔστι δὲ ἄρτιον μὲν. τέως τοὺς δημῶδεις λέγει καὶ
 φησιν ὅτι ἄρτιός ἐστιν ὁ εἰς δύο ἴσα διαιρούμενος,
 ἑτέρας μονάδος ἐν τῷ μέσῳ μὴ παρεμπιπτούσης, πε-
 ριττός δὲ ἐστὶν ὁ μὴ εἰς δύο ἴσα διαιρούμενος διὰ τὴν
 ἐν μέσῳ, ὡς εἴρηται, μονάδα. ὀρισάμενος οὕτω λέγει 5
 λοιπὸν β μὲν Πυθαγορείους ἐνὸς [ἐστὶ τοῦ ἀρτίου καὶ
 περιττοῦ] ἑκάστου ὅρους, ἓνα δὲ ἐκ τῆς πρὸς ἄλληλα
 αὐτῶν σχέσεως. | ἄρτιος τοίνυν ἐστὶν ὁ τὴν εἰς τὰ μέγιστα
 καὶ εἰς τὰ ἐλάχιστα κατὰ ταῦτὸ τομὴν ἐπιδεχόμενος, μέγι-
 στα μὲν πηλικότῃ, ἐλάχιστα δὲ ποσότητι. οἶον ὁ η διαι- 10
 ρεῖται εἰς δύο μέρη, δ καὶ δ· ἰδοὺ κατὰ ταῦτό, κατὰ
 τὰ δ λέγω, καὶ μεγίστην καὶ ἐλαχίστην τομὴν ἀνεδέ-
 ξατο· τὰ μὲν γὰρ δ μεγίστη ἐστὶ τομή, εἰς ἄλλην γὰρ
 μείζονα τομὴν ὁ η δίχα διαιρεθῆναι οὐ δύναται.
 ἐλαχίστη δὲ τομή ἐστὶν ὁ β ἀριθμός· εἰς δύο γὰρ μέρη 15
 διηρέθη, ἃ δύο ἐλάχιστά εἰσι· μετὰ γὰρ τὰ β οὐκ
 ἔστιν ἄλλος ἀριθμός.

να. κατὰ τὴν φυσικὴν τῶν δύο τούτων γενῶν ἀντιπεπόν-
 θησιν. τὰ γὰρ δύο ταῦτα, τό τε πηλίκον καὶ τὸ ποσόν,

μη = Philop. να μθ = Philop. νβ-νγ

ν = Philop. νδ-νε να = Philop. νς

μη, I = Nicom. VI, 4. μθ, I = Nicom. VII, 1.

ν, I = Nicom. VII, 2. 8-10 = Nicom. VII, 3.

να, I = Nicom. VII, 3.

μη. 4 οἶον M: οἱ A

μθ. 1 ἀπλῶς γὰρ ἀριθμὸς ἐστὶν AM et Nicom. SH: ἀριθμὸς ἐστὶ
 Nicom.

2 ὅτι ... μονάδων M: ὅτι σύστημα καὶ πλῆθος ἐστὶ μονάδων A

ν. 3 ἐν τῷ μέσῳ M: μεσῆς A

5 ὀρισάμενος M: ὀρισμένους A

6-7 ἐστὶ τοῦ ἀρτίου καὶ περιττοῦ M (in quo postea deleta sunt
 τοῦ ἀρτίου καὶ περιττοῦ): τοῦ ἀρτίου καὶ περιττοῦ A

9 κατὰ ταῦτό M: κατ' αὐτό A || τομὴν M: τὸ μὲν A: τὸμιν aut
 τομὴν corr. A²

10 μὲν A: δὲ M

10-11 διαιρεῖται M: om. A

11 κατὰ ταῦτό M: κατ' αὐτό A

11-12 κατὰ τὰ M: καὶ τὰ A

12-13 ἀνεδέξατο M: ἀνεδέξαντο A

16 διηρέθη A: διαιρέθη M

να. 1 κατὰ τὴν φυσικὴν AM, Philop., Nic. CSH: κατὰ φυσικὴν
 Nicom. || τῶν δύο τούτων γενῶν A et Nicom.: τῶν δύο
 γενῶν τούτων M

ἀντιπεπονητότως ἔχουσι· τὸ μὲν γὰρ πηλίκον, ὃ ἐστι τὸ μέγεθος, ἐπὶ τὸ ἐλάχιστον αὖξεται· ἐπ' ἄπειρον
5 γὰρ διαιρετὸν τὸ μέγεθος. τὸ δὲ ποσόν (ἀντὶ τοῦ ὁ ἀριθμός) ἐπὶ τὸ μείζον αὖξεται· ὁ γὰρ ἀριθμὸς αἰ
πρόσθεσιν λαμβάνει.

νβ. περισσὸς δὲ ὁ μὴ δυνάμενος τοῦτο παθεῖν. ἐξ ἀποφάσεως ὀρίζεται τὸν περιττόν· περιττὸς γάρ ἐστιν ὁ μὴ πάσχων ὅπερ ὁ ἄρτιος· εἰς ἄνισα γὰρ τέμεται β.

νγ. ἐτέρῳ δὲ τρόπῳ κατὰ τὸν παλαιόν. ἄλλος τρόπος ὅρου· παλαιὸν δὲ ὅρον λέγει τὸν Πυθαγόρειον. ἄρτιος οὖν ἐστιν ὁ καὶ εἰς ἴσα δύο καὶ εἰς ἄνισα δύο τμηθῆναι δυνάμενος, οἷον ὁ η καὶ εἰς δύο ἴσα διαιρεῖται, εἰς δ
5 καὶ δ, καὶ εἰς δύο ἄνισα, οἷον ζ καὶ β, καὶ ε καὶ γ, καὶ ζ καὶ α. πᾶς οὖν ἄρτιος οὕτω διαιρεῖται, χωρὶς τῆς ἀρχοειδοῦς δυάδος· ἡ γὰρ δυάς καὶ ἀρτία οὔσα μόνον εἰς ἴσα διαιρεῖται, εἰς δύο μονάδας· ἀρχοειδῇ δὲ ταύτην εἶπεν ὡς ἀρχὴν ἀριθμῶν. ὁ δὲ περιττός αἰ εἰς ἄνισα
10 διαιρεῖται, οἷον ὁ ε εἰς ἴσα οὐ δύναται διαιρεθῆναι, ἀλλ' εἰς ἄνισα, εἰς δ καὶ α, εἰς γ καὶ β. ἰστέον τοίνυν ὅτι κατὰ τοῦτο κοινωνοῦσιν ὁ τε ἄρτιος καὶ <ὁ> περιττός· καὶ γὰρ ὁ ἄρτιος, καὶ εἰς ἄνισα, ὡς εἴρηται, διαιρεῖται. τί οὖν, κατὰ τοῦτο οἱ αὐτοὶ εἰσιν; οὐ
15 φαμεν, διὸ καὶ κατὰ τοῦτο ἔστι διαφορά· ὁ μὲν γὰρ ἄρτιος εἰς ἄνισα διαιρούμενος ὁμοειδεῖς τοὺς ἀνίσους ποιεῖται, <οἷον ὁ η> εἰς ε καὶ γ· ἰδοῦ, ἀμφοτέρω περιττοῖ· ὡσαύτως καὶ ἐπὶ τῶν ἄλλων πάντων. ὁ μέντοι περιττός οὐδέποτε ὁμοειδεῖς τοὺς ἀνίσους ποιεῖ, οἷον
20 ὁ θ διαιρεῖται εἰς ζ καὶ γ· ἰδοῦ ἀνομοειδεῖς· ὁ μὲν γὰρ ἄρτιος, ὁ δὲ περιττός. ὡσαύτως καὶ εἰς ζ καὶ [εἰς] β, καὶ η καὶ α, καὶ ἐπὶ πάντων ὡσαύτως.

νδ. θάτερον δὲ διχοτόμημα. δέχεται τὸ ἴσον, οὐκέτι τὸ ἄνισον. καὶ ἐν ἡτινι οὖν τομῇ. καὶ ἐν τῇ τομῇ τὸ εἰς ἴσα μόνον τμήμα παρεμφαίνει· εἰς μονάδα γὰρ μόνον διαιρεῖται ἡ δυάς, ἀμέτοχος οὔσα τοῦ λοιποῦ τμήματος, ὃ ἐστι τοῦ ἀνίσου.

νβ = Philop. νλ νγ = Philop. νη

νδ = Philop. νθ

νβ, ι = Nicom. VII, 3. νγ, ι = Nicom. VII, 4.

νδ, ι = Nicom. VII, 4. 2 = Nicom. VII, 4.

3 ἀντιπεπονητότως A: ἀντιπεπονητός M

νγ. ι τὸν AM: τὸ Nicom.

ι2 alt. ὁ (Philop.) om. AM

ι7 οἷον ὁ η (Philop.) om. AM

νδ. ι δὲ AM: τὸ Nicom.

2 Cf. n. ad loc.

νε. ἀμφοτέρα ἅμα ἐμφαίνων. τό τε ἄρτιον καὶ τὸ περιττόν, ἀντὶ τοῦ ἀνομοειδῆ ποιῶν τὰ οὐδέποτε ὁμοειδῆ· τοῦτο γὰρ ἐστι τὸ οὐδέποτε ἄκρατα ἀλλήλων, οὐδὲ γὰρ ἄρτια μόνον ποιεῖ τὰ ἄκρατα οὐδὲ περιττά,
5 ἀλλὰ ἅμα τὸ μὲν ἄρτιον τὸ δὲ περιττόν.

νς. ἐν δὲ τῷ δι' ἀλλήλων ὄρω περισσὸς ἐστιν. ἰδοῦ ὁ ἐκ τῆς σχέσεως ὅρος. περισσὸς ἐστιν ὁ μονάδι ἐφ' ἑκάτερα διαφέρων ἀρτίου, ὃ ἐστιν ἐπὶ τὸ μείζον καὶ τὸ ἔλαττον τοῦ ἀρτίου, οἷον ὁ ζ ἐφ' ἑκάτερα μονάδι διαφέρει τοῦ ἀρτίου, ἐπὶ μὲν τὸ ἕτερον μέρος, τὸ μείζον, τῇ ὀκτάδι·
5 μετὰ γὰρ τὸν ζ ὁ η ἐστιν, ὅς ἐστιν ἄρτιος. ἐπὶ δὲ τὸ ἕτερον, τὸ ἔλαττον, τῇ ἐξάδι· πρὸ γὰρ τοῦ ζ ὁ ς, ὃς ἄρτιος· μονάδι οὖν διαφέρει τοῦ ἀρτίου. ὡσαύτως καὶ ὁ ἄρτιος ἐφ' ἑκάτερα τὰ μέρη μονάδι διαφέρει τοῦ περιττοῦ, οἷον ζ ἐπὶ μὲν τὸ μείζον τῇ ἐπτάδι, ἐπὶ δὲ
10 τὸ ἔλαττον τῇ πεντάδι. ἄρτιος ζ ἐλάττων, περιττός ζ [ἐλάττων], ἄρτιος η μείζων, περιττός ε ἐλάττων, ἄρτιος ς, περιττός ζ μείζων.

νζ. πᾶς ἀριθμός. ἐντεῦθεν ἀναγκαστικῶς πάνυ καὶ θείως βούλεται δεῖξαι ὅτι φύσει ἀρχή ἐστιν ἡ μονὰς τῶν ἀριθμῶν· λέγει γὰρ οὕτω· πᾶς ἀριθμὸς τῶν παρ' ἑκάτερα ἅμα συντεθέντων ἡμισύς ἐστιν· οἷον εἰλήφθω
5 ὁ ι παραδείγματος χάριν· τούτου παρ' ἑκάτερα ἐστιν ὁ ι παρὰ δὲ θ καὶ ὁ ια, ἃ σύνθετες, τὸν θ καὶ τὸν ια, καὶ γίνονται κ· ἡμισὺς ἄρα τῶν κ ὁ ι. ὁμοίως καὶ ἐπὶ πάντων· οἷον τοῦ η παρ' ἑκάτερα ζ καὶ θ· σύνθετες τοὺς δύο, καὶ γίνονται ις· τούτων ἡμισὺς ὁ η. οὐ μόνον δὲ τῶν παρ' ἑκάτερα συντεθέντων ἡμισὺς εὑρίσκεται, ἀλλὰ
10 καὶ τῶν ὑπὲρ ἕνα ἐκατέρωθεν· οἷον <ὁ ι> οὐ μόνον τοῦ θ καὶ τοῦ ια, ἀλλὰ καὶ τῶν ἐκατέρωθεν τούτων, οἷον τοῦ η καὶ τοῦ ιβ· σύνθετες γὰρ τούτους, καὶ γίνονται πάλιν κ, καὶ ἡμισὺς τούτων ι. ὡσαύτως καὶ τῶν ἐκατέρωθεν τούτων, ζ καὶ ιγ, καὶ ἔτι ς καὶ ιδ, καὶ ε 15 καὶ ιε, καὶ δ καὶ ις, καὶ γ καὶ ιζ, καὶ β καὶ ιη, καὶ α καὶ ιθ. ἐπὶ μέντοι τῆς μονάδος οὐκέτι τοῦτο, ἀλλὰ τοῦ μὲν μετ' αὐτὴν ἀριθμοῦ, ὃ ἐστι τοῦ β, ἡμισὺς γίνεται·

νε = Philop. ξ νς = Philop. ξα

νζ = Philop. ξβ

νε, ι = Nicom. VII, 4. νς, ι = Nicom. VII, 5

νζ, ι = Nicom. VIII, ι.

νε. 2 τὰ AM: καὶ Philop.

3 ἄκρατα ἀλλήλων M: ἄκρα τῶν ἀλλήλων A

5 ἀλλὰ ἅμα M: ἀλλὰ καὶ ἅμα A

νς. 3 ἀρτίου (Philop.) περιττοῦ AM || ἐπὶ (Philop.) περὶ AM

νζ. 3 γὰρ M: om. A

6 δ τε A: δ τε ὁ M

6-7 γίνονται M: γίνεται A

9 ις A: ς M

ιι ὁ ι (Philop.) om. AM

ι5 ε A: θ M

ι8 αὐτὴν (Philop.) αὐτὸν AM || ἀριθμοῦ M: ἀριθμὸν A

οὐδένα δὲ ἔχει πρὸ αὐτῆς, ἵνα ἐκ τῆς ἑκατέρων συνθέ-
 20 σεως γένηται ἡμίσεια· ὥστε δέδεικται ὡς οὐδένα
 ἀριθμὸν ἔχει πρὸ αὐτῆς, ἀλλὰ φύσει ἀρχή ἐστιν ἡ
 μονάς καὶ ἀδιαίρετος. γίνωσκε οὖν ὅτι οὐδέποτε
 <διαίρεται> μονάς, ἢ μονάς ἐστιν· ἀλλ' ὅταν λέγωμεν
 αὐτὴν διαίρεσθαι, τὸ μέγεθός ἐστι τὸ διαιρούμενον,
 25 ὅθεν πάλιν ἡ διαίρεσις δύο ἀδιαίρετους μονάδας ἐρ-
 γάζεται.

νη. καθ' ὑποδιαίρεσιν δὲ τοῦ ἀρτίου. εἰρήκαμεν, ὅτι
 προήρηται εἰπεῖν, ὅτι τε φύσει ἐστὶ πρώτη ἡ μονάς,
 καὶ τὴν οὐσίαν τοῦ ἀρτίου καὶ τοῦ περιττοῦ
 καὶ τὸν τρόπον τῆς γενέσεως αὐτῶν καὶ τὰ πα-
 5 ρακολουθήματα. εἰρηκῶς τοίνυν περὶ τῆς μονά-
 dos καὶ περὶ τοῦ ἀρτίου καὶ τοῦ περιττοῦ νῦν
 ὑποδιαίρει τούτους εἰς ἑτέρα εἶδη καὶ λέγει ὅτι
 τοῦ μὲν ἀρτίου γ εἰσὶν εἶδη, τὸ ἀρτιάκις ἄρτιον
 καὶ τὸ περισσάρτιον καὶ τὸ ἀρτιοπέριττον· τοῦ δὲ
 10 περιττοῦ καὶ αὐτοῦ γ, τὸ μὲν πρῶτον καὶ ἀσύνθετον,
 τὸ δὲ δεύτερον καὶ σύνθετον, τὸ δὲ τρίτον πρὸς μὲν
 ἑαυτὸ σύνθετον καὶ δεύτερον πρὸς δὲ ἄλλο πρῶτον
 καὶ ἀσύνθετον. εἰ δοκεῖ τοίνυν ἐξηγησόμεθα αὐτά.
 ὁ ἀρτιάκις ἄρτιος ἀριθμὸς ἐστὶν ὁ ἄχρι μονάδος τὴν
 15 εἰς δίχα διαίρεσιν δεχόμενος, οἷον ὁ ξδ· ἡμισυ γὰρ
 τούτων λβ, καὶ ἡμισυ τούτων ις, καὶ τούτων η, καὶ
 τῶν η δ, καὶ τῶν δ β, καὶ τῶν β α· ἡ δὲ μονάς λοιπὸν
 ἀδιαίρετος. ἀρτιάκις μὲν ἄρτιός ἐστιν <οὔτος>. ἀρτιο-
 πέριττος δὲ ὁ ἀντικείμενος τούτῳ ὁ μίαν μόνην διαί-
 20 ρεσιν δεχόμενος καὶ λοιπὸν ἀδιαίρετος μένων ὡς πε-
 ριττὸν ποιῶν· οἷον ὁ ιδ· ἡμισυ γὰρ τούτων ιζ· ἰδού,
 ἐδέξατο μίαν διαίρεσιν, οὐκέτι δὲ ὁ ιζ ἐπιδέχεται ἐτέ-
 ραν, ἐπειδὴ περιττός· ἐναντίος οὖν τῷ ἀρτιάκις ἀρτίῳ
 διότι ἐκείνος μὲν ἄχρι μονάδος διαίρεται, οὗτος δὲ
 25 μίαν μόνην διχοτομίαν καὶ οὐκέτι ἄλλην τομὴν δέχε-
 ται. ἀρτιοπέριττος δὲ καλεῖται ὡς ἔχων πολὺ τὸ πε-
 ριττὸν καὶ πλεονάζων τῷ περιττῷ. περισσάρτιος δὲ
 ἐστὶν ὁ ἐν μέσῳ τῶν δύο τούτων· οὐδὲ γὰρ ἄχρι μο-
 νάδος διαίρεται, οὐδὲ μίαν μόνην τομὴν ἐπιδέχεται,
 30 ἀλλὰ δύο ἢ καὶ πλείους, οἷον ὁ κδ· ἡμισυ γὰρ ιβ, καὶ
 τούτων ς, καὶ τῶν ς γ· τούτων δὲ οὐκέτι. περισσάρ-

τιος δὲ καλεῖται ὡς ἔχων πλεονάζον τὸ ἄρτιον· ταῦτα
 περὶ τούτων. ἔλθωμεν λοιπὸν ἐπὶ τὰ τοῦ περιττοῦ
 εἶδη· πρῶτον εἶδος ὃ ἐστὶ πρῶτόν τε καὶ ἀσύνθετον·
 πρῶτον δὲ καὶ ἀσύνθετόν ἐστι τὸ μονάδι μόνον με- 35
 τρούμενον κοινῷ μέτρῳ· οἷον ὁ ε ἀριθμὸς πρῶτος
 καὶ ἀσύνθετος· οὐ συντίθησι γὰρ αὐτὸν ἕτερος, εἰ μὴ
 ἡ μονάς· πεντάκι γὰρ μία ε· ὡσαύτως καὶ ὁ γ καὶ ὁ ιζ
 καὶ ὁ ιθ καὶ οἱ τοιοῦτοι. δεύτερος δὲ καὶ σύνθετός
 ἐστὶν ὁ θ· οὗτος γὰρ μετρεῖται μὲν καὶ ὑπὸ τῆς μονά- 40
 dos· ἅπαξ γὰρ θ, θ· ἀλλὰ καὶ ὑπὸ ἄλλων συντίθεται·
 γ γὰρ τρεῖς θ· καὶ ὁ κε· ἅπαξ γὰρ κε, ἀλλὰ καὶ πεν-
 τάκις ε κε. ἔτι δὲ καθ' ἑαυτὸν μὲν σύνθετος, πρὸς ἄλλον
 δὲ ἀσύνθετος, ὁ θ καὶ κε· οὗτοι γὰρ καθ' ἑαυτοὺς μὲν
 σύνθετοι (τρὶς μὲν γὰρ τρεῖς θ, ἀλλὰ καὶ πεντάκις ε 45
 κε), πρὸς δὲ ἀλλήλους ἀσύνθετοι (ὁ γὰρ θ τρεῖς
 ἐστὶ καὶ οὐκ ἔχει ἐν ἑαυτῷ τὸν ε· ὁ δὲ κε πεντάκις ε
 ἐστὶ καὶ τὸν γ οὐδαμοῦ ἔχει)· οὐδεις οὖν ἔχει τοῦ
 ἐτέρου μέρος. ταῦτα ἐστὶν ἃ βούλεται διὰ τούτων
 διδάξαι. 50

νη. κατὰ τὴν τοῦ γένους φύσιν. κατὰ τὴν τοῦ ἀρτίου·
 καὶ γὰρ ὁ ἄρτιος διαίρεται δίχα, ἀλλ' οὐκ ἄχρι μο-
 νάδος, ὡς ἀρτιάκις ἄρτιος. | παρακολουθεῖ δὲ αὐτῷ.
 βούλεται εἰπεῖν, τί παρακολουθεῖ τῷ ἀρτιάκις ἀρτίῳ·
 ἀλλὰ πρότερον ἐξηγησόμεθα τὰς ἀσαφεῖς λέξεις, ἵνα 5
 σαφὲς ἡμῖν γένηται τὸ λεγόμενον. ἀρτιώνυμον καλεῖ
 τὸ μέρος, δύναμιν δὲ τοὺς ἀριθμούς. οἷον τί λέγω;
 τὸ τέταρτον παρώνυμόν ἐστιν· ἀπὸ γὰρ τοῦ δ ἀρι-
 θμοῦ γέγονε τὸ τέταρτον· καὶ ἀπὸ τοῦ η ὄγδοον· καὶ
 ἐπὶ τῶν λοιπῶν ὁμοίως. αὐτὸς δὲ ὁ δ ἀριθμὸς καὶ ὁ η 10
 καὶ οἱ λοιποὶ δυνάμεις καλοῦνται τούτων οὕτως εἰρη-
 μένων. ἰστέον ὅτι ἐπὶ τῶν ἀρτιάκις ἀρτίων παρακο-
 λουθεῖ τὸ καὶ τὰ μέρη καὶ τὰς δυνάμεις ἀρτιάκις ἄρτια
 εἶναι· οἷον ὁ ξδ ὑποκείμεθω ἀριθμός· τούτου φημὶ τὸ
 τέταρτον ις· ἰδού τὸ μὲν τέταρτον μέρος ὁ ις δύναμις, 15
 ἀλλὰ καὶ τὸ μέρος, ὃ ἐστὶ τὸ δ, ἀρτιάκις ἄρτιος· ἄχρι
 γὰρ μονάδος διαίρεται· καὶ ὁ ις δέ, ἀρτιάκις ἄρτιος·
 καὶ γὰρ αὐτὸς ἕως μονάδος. ἰστέον δέ, ὅτι εἴπωμεν,
 ὅτι ἐκκαιδέκατον τῶν ξδ δ εἰσί· τὸ μὲν ις μέρος ποιού-
 μεν, τὸν δὲ δ ἀριθμὸν δύναμιν. 20

νη = Philop. ξγ, ξδ

νη,ι = Nicom. VIII, 3.

23 διαίρεται (Philop.)] om. AM

νη. 2 προήρηται (Philop.)] προείρηται AM

3 pr. καὶ A: καὶ ὁ M

10 καὶ αὐτοῦ γ M: καὶ αὐτοῦ γ εἰσὶν εἶδη A || τὸ μὲν M: om. A

11 πρὸς (Philop.)] πρῶτον AM

16 καὶ τούτων η A: καὶ ὁ τούτων η M

17 καὶ τῶν δ β M: καὶ τῶν δ β καὶ τῶν δ β A || ἡ δὲ μονάς M:

εἰ δὲ ἡ μονάς A

18 οὔτος (Philop.)] om. AM

23 ἀρτίῳ A: om. M

25 μίαν μόνην A: μόνην μίαν M

30 pr. καὶ M: om. A

νη = Philop. ξε, ξς

νη,ι = Nicom. VIII, 4. 3 = Nicom. VIII, 6.

32 ἔχων M: ἔχον A

39 σύνθετός M: ἀσύνθετος A

43-44 πρὸς ἄλλον δὲ M: πρὸς δὲ ἄλλον A

46 ἀλλήλους scripsi: ἄλλους AM

48 οὐδαμοῦ ἔχει M: οὐδαμῶς ἔχειν A

νη. 5 ἐξηγησόμεθα M: ἐξηγησόμεθα A

8 δ scripsi: τετάρτου AM

9 τὸ A: om. M

16 τὸ δ A: ὁ δ M

20 δ M: τέταρτον A

ξ. μηδέποτε δὲ ἐτέρῳ γένει κοινωνεῖν. οὐδέποτε γὰρ ἢ τὸ μέρος ἢ ἡ δύναμις ὑπὸ ἕτερον γένος ἀνάγεται· ἀντὶ τοῦ ὑπὸ περιττόν· οὐ γὰρ περιττός ποτε εὐρεθήσεται, ἀλλὰ πάντως ἀρτιάκεις ἄρτιος.

ξα. μήτι δὲ ἄρα καὶ παρὰ τοῦτο. Πυθαγορικῶς φησιν ὅτι μὴ ἄρα καὶ διὰ τοῦτο ἀρτιάκεις ἄρτιός ἐστιν, ὅτι καὶ κατὰ μέρος αὐτοῦ ἀρτιάκεις ἄρτια, καὶ τῶν μερῶν τὰ μέρη ἄχρι μονάδος. ἐντεῦθεν τοίνυν ἐλέγχεται ὁ 5 Εὐκλείδης κακῶς ὀρισάμενος ἐν τῷ ἐβδόμῳ βιβλίῳ τὸν ἀρτιάκεις ἄρτιον ἀριθμόν· φησὶ γὰρ ὅτι ὁ ἀρτιάκεις ἄρτιος ἀριθμός ἐστιν ὁ ὑπὸ ἀρτίου ἀριθμοῦ μετρούμενος κατὰ ἄρτιον ἀριθμόν. τούτῳ γὰρ τῷ λόγῳ καὶ οἱ ἄρτιοι μόνως καὶ μὴ ὄντες ἀρτιάκεις ἄρτιοι, 10 ἀρτιάκεις ἄρτιοι εὐρεθήσονται· οἷον ὁ κδ οὐκ ἔστιν ἀρτιάκεις ἄρτιος, ἐπειδὴ ἄχρι μονάδος οὐ διαιρεῖται, κατ' Εὐκλείδην δὲ εὐρεθήσεται ἀρτιάκεις ἄρτιος· ἰδοὺ γὰρ μετρεῖται ὑπὸ τοῦ δ, ἀρτίου [τοῦ] ὄντος, κατὰ ἄρτιον ἀριθμόν τὸν 5· τετράκεις γὰρ 5 κδ· ὥστε κακῶς 15 ὥριστο.

ξβ. ὀνόματί τε καὶ δυνάμει. ἀντὶ τοῦ μέρει τε καὶ ἀριθμῷ· οἷον τοῦ λβ μέρος μὲν, εἰ τύχοι, τὸ τέταρτον, δύναμις δὲ ὁ η ἀριθμός.

ξγ. καὶ ἐτέρως πᾶν μέρος. ἡ ἕτερον ὅρον λέγει ἢ ἐπεξηγεῖται τὸν πρότερον· ἀρτιάκεις ἄρτιός ἐστιν οὐ πᾶν μέρος, ὃ ἂν ἔχη μέρος, ἔσται ἀρτιάκεις ἄρτιον.

ξδ. κατὰ τὸ ὄνομα. ἀντὶ τοῦ [οὐ] κατὰ τὴν παρωνυμίαν, ὃ ἐστὶ τὸ τε μέρος ἀρτιάκεις ἄρτιόν ἐστι· τὸ δὲ αὐτὸ καὶ κατὰ τὴν δύναμιν ἀρτιάκεις ἄρτιον· οἷον τί λέγω; τοῦ λβ ἕαν εἴπω ὅτι τὸ τέταρτόν ἐστιν ἡ· τὸ 5 μὲν δ μέρος ἐστίν, ὁ δὲ η δύναμις, ἐκάτερον δὲ αὐτῶν ἀρτιάκεις ἄρτιον· ἀλλὰ πάλιν ἕαν εἴπω ὅτι τῶν λβ τὸ η^{ον} δ, τὸ μὲν ὄγδοον μέρος εὐρίσκεται, ὁ δὲ δ δύναμις, καὶ εἰσι πάλιν ἀρτιάκεις ἄρτιοι.

ξ = Philop. ξς ξα = Philop. ξζ–ξη

ξβ = Philop. ξθ ξγ = Philop. οα ξδ = Philop. οα

ξ, ι = Nicom. VIII, 6. ξα, ι = Nicom. VIII, 7.

ξβ, ι = Nicom. VIII, 7. ξγ, ι = Nicom. VIII, 7.

ξδ, ι = Nicom. VIII, 7.

ξ. 2 γένος M: μέρος A

ξα. ι μήτι AM et Nicom. G₂CSH: μήτοι Nicom.

7 ἀρτίου M: τοῦ ἀρτίου A

11 ἀρτιάκεις ἄρτιος M et A²: ἄρτιος A

14 ἄρτιον M: τὸν ἄρτιον A

ξγ. ι ἐτέρως Nicom., Philop.: ἑβδομος AM || pr. ἡ M: om. A ||

ὄρον M et A² s. v.: λόγον A

2 ἀρτιάκεις M: ἡ ἀρτιάκεις A

3 ἔχη M: ἔχοι A

ξδ. 2 ἀρτιόν ἐστι M: ἄρτιον A

6 ἄρτιον M: ἄρτιος A

7 ἡ^{ον} M: ἡ A

8 ἀρτιάκεις ἄρτιοι scripsi: ἀρτιακῶν ἄρτια AM

ξε. γένεσις δὲ τοῦ ἀρτιάκεις ἀρτίου. περὶ τῆς γενέσεως τοῦ ἀρτιάκεις ἀρτίου λέγει καὶ ἐκτίθεται μέθοδον καθ' ἣν ἐπ' ἄπειρον προΐοντες δυνάμεθα εὐρίσκειν ποιοὶ εἰσιν οἱ ἀρτιάκεις ἄρτιοι. θαυμάσαι οὖν πάρεστι τὸ τῆς ἐπιστήμης μέγεθος ὅτι ποιεῖ ἡμᾶς ἀποφαινεσθαι 5 καὶ περὶ τῶν μηδέπω εὐρεθέντων ἐνεργείᾳ ἀριθμῶν ὅτι πάντως ἀδύνατον ἐκφυγεῖν ἡμᾶς ἓνα ἀρτιάκεις ἄρτιον ἀριθμόν ἔχοντας προΐσταμένην τὴν μέθοδον, ἀλλὰ πάντως λίνοις ἀφύκτοις θηραθήσεται. ἐστὶ δὲ ἡ μέθοδος αὕτη· ἀπὸ μονάδος προέρχου κατὰ τὸν δι- 10 πλάσιον λόγον καὶ σχέσεις ἐπ' ἄπειρον τοὺς ἀρτιάκεις ἀρτίους, οἷον διπλασάσων τὴν μονάδα, γίνονται β· ὁ β τοίνυν ἀριθμός ἀρτιάκεις ἄρτιος· καὶ οὗτος <ποιεῖ> τὸν δ, καὶ ὁ δ τὸν η· ὡσαύτως καὶ ὁ η ποιεῖ τὸν ις καὶ οὗτος τὸν λβ καὶ οὗτος τὸν ξδ καὶ πάλιν οὗτος 15 τὸν ρκη καὶ οὗτος τὸν σνς· καὶ ἐφεξῆς διπλασιάζων πάντως ἀρτιάκεις ἀρτίους ποιήσεις.

ξς. καὶ πᾶν μέρος, ὃ ἂν εὐρεθῇ. ἄλλο παρακολούθημα τοῦ ἀρτιάκεις ἀρτίου, ὃ δὲ λέγει, τοῦτο ἐστὶν· ἐκ- 5 τοῦ σύστημα μονάδων ἢ ἄρτιον ἢ περιττόν ὡς ὑποτέτακται· α, β, δ, η, ις, λβ, ξδ· ἰδοὺ περιττόν ἀριθμόν ἐλάβομεν· ἑπτὰ γὰρ πλήθη ἐλάβομεν. ἰστέον τοίνυν 5 ὅτι μέσος τούτων ἀριθμός ἐστὶν ὁ η· οὗτος τοίνυν ὁ η ἐφ' ἑαυτὸν πολλαπλασιαζόμενος ποιεῖ τὸν τελευταῖον, ὃ ἐστὶ τὸν ξδ· οὐκοῦν τοσοῦτος ἔσται ὁ ἐκ τούτου ἀριθμός, ὅσος καὶ ἐκ τῶν παρ' ἐκάτερα· ὀκτά- 10 κεις γὰρ η ξδ, ἀλλὰ καὶ ἄπαξ ξδ ξδ, καὶ δις λβ ξδ, καὶ 10 δ ις ξδ· ἀλλὰ καὶ κατὰ ἀντιπερίστασιν, ὡς λέγει, καὶ ἀμοιβῆν πάλιν τὸ αὐτὸ γενήσεται· οἷον λαβὲ τὸν μέσον η· ἡ η ξδ· μηκέτι ποιήσης ἄπαξ ξδ ξδ, ἀλλὰ εἰπέ ὅτι τὰ ξδ ὅλον τί ἐστὶν, ὥσπερ γὰρ ἡ μονὰς ὅλον 15 τί ἐστὶν οὕτω καὶ ὁ ξδ, ἐπειδὴ ξδ μονάδας ἔχει. ὡσαύ- 15 τως μηκέτι εἴπηξ δις λβ ξδ, ἀλλὰ κατὰ ἀντιπερίστασιν κάνταυθα τὰς λβ ἐπὶ τὰς β, καὶ γίνονται ξδ· καὶ πάλιν τὰς ις ἐπὶ τὰς δ. εἰ μὲν οὖν περιττόν ἢ τὸ σύστημα, εἰς μέσος εὐρεθήσεται, ὡς νῦν ὁ η, καὶ ἐφ' ἑαυτὸν πολλαπλασιαζόμενος ποιήσει τὸν τελευταῖον· 20 καὶ ἔσονται οἱ παρ' ἐκάτερα ὁμοίως τὸν τελευταῖον ποιοῦντες. εἰ δὲ ἄρτιον ἢ τὸ σύστημα, β ἔσονται μέσοι, καὶ πρὸς ἀλλήλους πολλαπλασιαζόμενοι ποιήσουσι

ξε = Philop. οβ ξς = Philop. ογ

ξε, ι = Nicom. VIII, 8. ξς, ι = Nicom. VIII, 10.

11–12 = Nicom. VIII, 10

ξε. 12 διπλασάσων A: δίπλασον M

13 ποιεῖ scripsi: om. AM

14 τὸν δ, καὶ ὁ δ τὸν η M²s. lin.: om. AM

ξς. ι πᾶν AM: πᾶν δὲ Nicom.

4 α... ξδ M: α, β, γ, η, κ, λ, ξδ A

8 ξδ A: ἐξηκοστὸν δ M

13 η η ξδ M: ὁ η ὁ η ξδ A || ποιήσης scripsi: ποιήσεις M: ποιήσ (σ s. v.) A

21 οἱ M: εἰ A

τὸν τελευταῖον. ἔστω οὖν ὡς ὑποτέτακται· α, β, δ, 25 η, ις, λβ, ξδ, ρκη· ἐνταῦθα τοίνυν, ἐπειδὴ ὁ η καὶ ὁ ις μέσοι εἰσὶ (παρ' ἑκάτερα γὰρ αὐτῶν, ἀνὰ τρεῖς εἰσι πρὸς ἀλλήλους) οἱ μέσοι πολλαπλασιαζόμενοι, ποιοῦσι τὸν τελευταῖον· ὁκτάκις γὰρ ις ρκη. ὁμοίως καὶ οἱ παρ' ἑκάτερα ποιήσουσι τὸν ρκη· ἄπαξ γὰρ ρκη 30 ρκη, ἀλλὰ καὶ δις ξδ ρκη, καὶ τετράκις λβ ρκη. ὡσαύτως καὶ κατὰ ἀντιπερίστασιν· αἱ γὰρ ρκη μονάδες εἰσὶν ρκη· ὅλος γὰρ τις ὁ ρκη· καὶ πάλιν ξδ ἐπὶ β ποιοῦσιν ρκη, καὶ λβ ἐπὶ δ ρκη ποιοῦσι. ταῦτά ἐστιν ἃ βούλεται διὰ τούτων εἰπεῖν.

ξζ. *μερῶν πρὸς δυνάμεις*. λέγεις γὰρ καὶ δις λβ, καὶ λαμβάνεις τὸ μὲν δις μέρος τὸν δὲ λβ δύναμιν· καὶ ἀμφοτέροι ἀρτιάκις ἄρτιοι· καὶ πάλιν τὸν λβ ἐπὶ τὸν β πολλαπλασιάζεις, δύναμιν πρὸς μέρος, καὶ πάλιν 5 ἀρτιάκις ἄρτιοι.

ξη. *ὥστε τὸ ὅλον*. ἰδοὺ τὸν τελευταῖον ὅλον ἐκάλεσεν, ἐπειδὴ τῇ μονάδι ἀντιπαρωνυμεῖται· ὥσπερ γὰρ λέγομεν ἄπαξ ξδ, οὕτως ἐροῦμεν καὶ τὰ ξδ ἔχειν ξδ μονάδας. καὶ μίαν μεσότητα οὐχ ἔξουσιν, ἀλλὰ δύο, 5 ἐπειδὴ ἄρτιοι αἱ ἐκθέσεις· δύο οὖν αἱ μεσότητες· ὁ τε γὰρ η ἔσται μέσος καὶ ὁ ις.

ξθ. *ἀνταποκρινοῦνται*. πῶς τὸ ἀνταποκρινοῦνται; ἐπειδὴ καὶ δις λβ, ξδ· καὶ λβ πάλιν ἐπὶ β, ξδ ποιοῦσι.

ο. *συμβέβηκε δὲ πάσαις*. ἄλλο παρακολούθημα τῶν ἀρτιάκις ἄρτίων ὅτι συντιθεμένων τῶν ἐκθέσεων παρὰ μονάδα ὁ ζητούμενος γίνεται· οἷον ἐκτίθημι τοὺς ἀρτιάκις ἄρτίους κατὰ τάξιν οὕτως· α, β, δ, η, 5 ις, λβ, ξδ, ρκη· ἐκτεθέντων τοίνυν τούτων, παρὰ μονάδα πάντως ὁ ζητούμενος γίνεται, ὥστε πάντως περιττός πίπτει ἀριθμός. οἷον ζητούμεν τὸν δ ἀρτιάκις ἄρτιον, σύνθεσις α, β, γίνεται γ. ἰδοὺ παρὰ μονάδα ὁ δ καὶ ὁ γ περιττός· πάλιν ἐπὶ τοῦ η· σύνθεσις α, β, δ, 10 γίνονται ζ· ἰδοὺ παρὰ μονάδα ὁ η καὶ ὁ ζ περιττός· ὡσαύτως ζητούμεν τὸν ις· σύνθεσις α, β, δ, η, γίνονται ιε· ἰδοὺ παρὰ μονάδα ὁ ις καὶ ὁ ιε περιττός. κατὰ τὸν αὐτὸν τρόπον καὶ ἐπὶ τοῦ λβ· σύνθεσις α, β, δ, η, ις, ὁμοῦ λα· παρὰ μονάδα ἄρα ὁ λβ καὶ περιττός ὁ λα· καὶ

ἐπὶ τοῦ ξδ ὁμοίως· σύνθεσις α, β, δ, η, ις, λβ, γίνονται 15 ξγ. ἰδοὺ παρὰ μονάδα ὁ ξδ καὶ περιττός ὁ ξγ. κατὰ τὸν αὐτὸν τρόπον συντιθεῖς τοὺς ἀρτιάκις ἄρτίους ἄχρι τοῦ ζητουμένου ἀρτιάκις ἄρτίου, τοῦτο εὐρήσεις θαυμαστόν ὃν παρακολούθημα. τοῦτο δὲ λέγει τὸ παρακολούθημα νῦν, ἐπειδὴ ὡς μαθησόμεθα χρησιμεύσει 20 αὐτῷ πρὸς τὴν κατάληψιν τῶν τελείων· ἔρει γὰρ ἄφυκτον μέθοδον δι' ἧς οὐδεὶς τῶν τελείων ἐκφυγεῖν δυνήσεται ἡμᾶς.

οα. *κἀκεῖνο δὲ μεμνησθαι ἀναγκαϊότατον*. ἐλέγομεν ἄνω ὅτι ἐὰν ἐκθώμεθα ἄρτίους διπλασιασμούς, δύο μέσοι ἀριθμοὶ γίνονται, εἰ δὲ περιττούς, εἰς γίνεται, καὶ ὅτι, ὥσπερ οἱ μέσοι πολλαπλασιαζόμενοι μὲν πρὸς ἀλλήλους ἐπὶ τῶν ἀρτίων ποιοῦσι τὸν τελευ- 5 ταῖον, οὕτω καὶ οἱ παρ' ἑκάτερα· ἐπὶ δὲ τῶν περιττῶν, ὥσπερ ὁ μέσος ἐφ' ἑαυτὸν πολλαπλασιασθεὶς ποιεῖ τὸν τελευταῖον, οὕτω καὶ οἱ παρ' ἑκάτερα. ἐνταῦθα τοίνυν καὶ ὑπὸ ἀναλογίαν αὐτοὺς φέρει καὶ λέγει ὅτι ἐπὶ τῶν ἀρτίων οἱ μέσοι πολλαπλασιαζό- 10 μενοι ποιοῦσι τὸν τελευταῖον, ὡσαύτως δὲ καὶ οἱ παρ' ἑκάτερα· ἰστέον δὲ ὅτι τὸ ὑπὸ τῶν ἄκρων γινόμενον ἴσον ἐστὶ τῷ ὑπὸ τῶν μέσων· ἐπειδὴ καὶ ἔχομεν ὅτι ἐὰν τέσσαρα μεγέθη ἀνάλογον ᾗ, τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ ὑπὸ τῶν μέσων· ἐπὶ δὲ τῶν περιττῶν τὸ 15 ὑπὸ τῶν ἄκρων ἴσον τῷ ἀπὸ τοῦ μέσου· εἰς γὰρ ὁ μέσος· ἔχομεν γὰρ καὶ τοῦτο γραμμικῶς δεδειγμένον ὅτι ἐὰν τρία μεγέθη ἀνάλογον ᾗ, τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ ἀπὸ τοῦ μέσου. ταῦτά ἐστιν ἃ βούλεται διὰ τούτων ἡμῖν παραδοῦναι. 20

οβ. *ἀρτιοπερίττος δὲ ἐστὶν ἀριθμός*. εἰρηκῶς περὶ τοῦ πρώτου εἵδους τοῦ ἀρτίου, λέγω δὴ τοῦ ἀρτιάκις ἀρτίου, νῦν περὶ τῶν λοιπῶν δύο βούλεται εἰπεῖν, τοῦ τε ἀρτιοπερίττου καὶ τοῦ περισσάρτιου, καὶ πρότερον λέγει περὶ τοῦ ἀρτιοπερίττου. φησὶν οὖν 5 ὅτι ἀρτιοπερίττος ἐστὶν ὁ μίαν μόνην διαίρεσιν διχῇ ἐπιδεχόμενος καὶ μηκέτι <ἄλλην>, ἀλλ' εὐθέως ἀδιαίρετον καὶ περιττὸν ποιῶν. οἷον ὁ 5 ἀρτιοπερίττος

οα = Philop. οη

οβ = Philop. οθ

οα,ι = Nicom. VIII, 14.

οβ,ι = Nicom. IX, 1.

ο. 15 τοῦ Α: om. Μ

18 τοῦτο Α (ut vid.): τοῦτον Μ

20 χρησιμεύσει Μ: χρησιμεύει Α

21 αὐτῷ Μ: αὐτὸν (ut vid.) Α

οα. 1 ἀναγκαϊότατον Μ et Nicom.: ἀναγκαϊότερον Α

3 μέσοι scripsi: μέν σοι Μ: μέν τοι Α

8 καὶ οἱ Μ: om. Α

13 τῷ scripsi: τῶν Μ: τὸ Α

15 et 19 τῷ scripsi: τὸ ΑΜ

16 τῷ Μ: τὸ Α

19–20 ἃ ... παραδοῦναι Μ et (ἡμῖν διὰ τούτων pro διὰ τούτων ἡμῖν) Α² i. m.: ἀριθμοὶ Α, del. Α²

οβ. 1 ἀρτιοπερίττος ... ἀριθμός Μ et Α² i. m.: om. Α

4–5 alt. καὶ ... ἀρτιοπερίττου Μ: om. Α

7 ἄλλην (Philop.) om. ΑΜ

ξζ = Philop. ογ, 32ff. ξη = Philop. οδ

ξθ = Philop. οε ο = Philop. οζ

ξζ,ι = Nicom. VIII, 10. ξη,ι = Nicom. VIII, 10.

ξθ,ι = Nicom. VIII, 10. ο,ι = Nicom. VIII, 12

24 ὑποτέτακται scripsi: ἀποτέτακται ΑΜ

29 τὸν Μ: om. Α

ξζ. 3–5 ἄρτιοι ... ἄρτιοι Μ: ἄρτιοι Α

ξη. 1 ὥστε τὸ ὅλον (Philop.) ὥστε τὸν ὅλον ΑΜ: ὥστε καὶ τὸ ὅλον Nicomachus || alt. ὅλον Μ: ὅρον Α

ἔστι· τὸ γὰρ ἡμισυ τῶν ζ γ, τὰ δὲ γ οὐκέτι διαιρεῖται·
 10 ὡσαύτως καὶ ὁ ι καὶ ὁ ιδ ἀρτιοπερίττοι εἰσιν. ὁ δὲ
 ἀρτιοπερίττος ἐναντίος ἐστὶ τῷ ἀρτιάκις ἀρτίῳ, ὅτι
 ὁ μὲν ἀρτιάκις ἀρτίος ἄχρι μονάδος δίχα διαιρεῖται
 καὶ τὸ ἐλάχιστον αὐτοῦ, ὃ ἐστὶν ἡ μονάς, ἀδιαίρετός
 15 ἐστίν, ὃ δὲ ἀρτιοπερίττος μίαν μόνην διαίρεσιν ἐπι-
 τάυτα μὲν περὶ τοῦ ἀρτιοπερίττου. λοιπὸν εἴπωμεν
 τὴν γένεσιν αὐτοῦ. ἐκτίθει τοὺς ἀπὸ μονάδος περιτ-
 τοὺς καὶ τούτους διπλασσίαζε, καὶ οἱ διπλασιαζόμενοι
 ἀρτιοπερίττοι εἰσιν. ἐκτιθέσθωσαν οὖν οἱ περιττοὶ
 20 πάντες, ἐάσθω δὲ ἡ μονάς ὡς ἀρχὴ καὶ μὴ οὔσα ἀρι-
 θμός, οὐκοῦν ἀπὸ τριάδος εἰλήφθωσαν· γ, ε, ζ, θ, ια,
 ιγ, ιε, ιζ, ιθ, κα· διπλασσίασον τούτους, καὶ γίνονται
 οἱ ἀρτιοπερίττοι, ὡς ὑποτέτακται· ζ, ι, ιδ, ιη, κβ,
 25 κς, λ, λδ, λη, μβ. οὕτω μὲν οὖν γίνονται οἱ ἀρτιοπέ-
 ριττοι· εὐρίσκονται δὲ ἐν τῷ χύματι πέμπτοι μὲν ἀπ’
 ἀλλήλων ἀεί· ἀπὸ γὰρ τοῦ ζ ἕως τοῦ ι, ε ἀριθμοὶ
 εὐρίσκονται, ζ γὰρ καὶ ζ καὶ η καὶ θ καὶ ι, καὶ γίνονται
 ε· καὶ πάλιν ἀπὸ τοῦ ι ἕως τοῦ ιδ ε εὐρίσκονται, καὶ
 30 ἀπὸ τούτου ἕως τοῦ ιη. ὑπερέχουσι δὲ καὶ τετράδι·
 ὁ γὰρ ι τοῦ ζ τετράδι ὑπερέχει, καὶ ὁ ιδ τοῦ ι, καὶ
 ἐφεξῆς ὁμοίως. τρεῖς δὲ ἐν τῷ μέσῳ αὐτῶν εἰσιν, οὓς
 ὑπερβαίνουσιν, οἷον μεταξὺ τοῦ ζ καὶ τοῦ ι γ εἰσιν
 ἀριθμοὶ ὁ ζ καὶ ὁ η καὶ ὁ θ, καὶ μεταξὺ τοῦ ι καὶ τοῦ
 35 ιδ τρεῖς, ὁ ια καὶ ὁ ιβ καὶ ὁ ιγ. ἐν μὲν τούτῳ παρακο-
 λούθημα, ἔστι δὲ καὶ ἄλλο· ἰστέον ὅτι ἐπὶ μὲν τῶν
 ἀρτιάκις ἀρτίων καὶ τὸ μέρος καὶ ἡ δύναμις ἄρτια
 ἦσαν· οἷον τοῦ λβ μέρος ἦν τὸ δ, δύναμις δὲ ὁ η ἀρι-
 40 θμός, δκ¹⁵ γὰρ η· ἀλλὰ καὶ τὸ τέταρτον ἄρτιον, ἀπὸ
 γὰρ τοῦ δ τὸ δ^ον παρήχθη, καὶ ὁ η δὲ ἄρτιος, καὶ
 ἐπὶ πάντων τῶν μερῶν ὁμοίως εὐρήσεις τοῦτο. ἐπὶ
 μέντοι τοῦ ἀρτιοπερίττου οὐκέτι, ἀλλ’ ἀντιπεπονητό-
 45 τως πάντως ἔχουσι· καὶ ἐὰν τὸ μέρος ἢ ἄρτιον, ἢ
 δύναμις ἐστὶ περιττὴ καὶ τὸ ἀνάπαλιν δηλονότι. οἷον
 ὁ ιδ ἔχει μέρος τὸ ἡμισυ καὶ τὸν ζ <δύναμιν>, ἀλλὰ
 τὸ μὲν ἡμισυ ἄρτιον (ἀπὸ γὰρ τοῦ β τὸ ἡμισυ γέγο-
 50 νεν), ὁ δὲ ζ ἀριθμός περιττός. καὶ καθόλου ἔστιν
 εὐρεῖν τοῦτο, ὅθεν, ὡς φησι, διὰ τοῦτο τάχα ἐκλήθη
 ἀρτιοπερίττος, ὅτι μετὰ τὴν πρώτην διαίρεσιν ἄτμη-
 τος μένει καὶ τὸ ἐκ τοῦ ἡμίσεος αὐτοῦ μέρος οὐκέτι
 ἐπιδέχεται διαίρεσιν. κάκεινο δὲ παρέπεται τοῖς ἀρτι-
 οπερίτοις· δεῖ εἰδέναι ὅτι τετράδι μείζους εἰσὶ τῶν
 πρὸ αὐτῶν, οἷον ἐστὶν ὁ ζ ἀρτιοπερίττος, μετ’ αὐτὸν
 ὁ ι· οὗτος τοῖνυν ὁ ι τετράδι μείζων αὐτοῦ· ὡσαύτως
 καὶ ὁ ιδ τοῦ ι. προστίθεμεν δὲ τὸν πρὸ αὐτοῦ καὶ

ἐγγύς· ἐπειδὴ μείζων μὲν ὁ ιδ τοῦ ζ, ἀλλ’ ἴσως οὐχ 55
 ὑπερέχει αὐτοῦ δ, ἐπειδὴ οὐ πλησίον ὁ ιδ τοῦ ζ· ἔστι
 γὰρ ἐν μέσῳ ὁ ι. ὁ ι οὖν μείζων ἐγγύς τοῦ ζ, καὶ διὰ
 τοῦτο καὶ δ ὑπερέχει. καὶ ὁ ιδ μείζων ἐγγύς τοῦ ι,
 ὅθεν καὶ δ ὑπερέχει. διὰ τί δὲ τετράδι ὑπερέχουσιν
 ἀλλήλων; ἡ διότι οἱ περιττοὶ δυάδι ὑπερέχουσιν 60
 ἀλλήλων, οἷον ὁ ε τοῦ γ δυάδι ὑπερέχει καὶ ὁ ζ τοῦ ε
 καὶ ὁ θ τοῦ ζ καὶ ὁ ια τοῦ θ καὶ τοῦτο ἐφεξῆς; εἰ οὖν
 οἱ περιττοὶ δυάδι ἀλλήλων ὑπερέχουσι, διπλασια-
 ζόμενοι δὲ οἱ περιττοὶ ποιοῦσι τοὺς ἀρτιοπερίττους·
 διπλασιασθήσεται δὲ ἄρα ἡ δυάς, διπλασιαζομένη 65
 δὲ ποιεῖ τὸν δ ἀριθμόν· καλῶς ἄρα τετράδι ὑπερέχου-
 σιν ἀλλήλων. ὑπάρχει δὲ καὶ ἄλλο παρακολούθημα·
 ἰστέον ὅτι ὡς εἴρηται ἐπὶ τῶν ἀρτιάκις ἀρτίων, εἰ
 μὲν περιττὸν σύστημα λάβωμεν ἀρτίων, εἰς μέσος
 εὐρίσκεται καὶ τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ ὑπὸ τῶν 70
 μέσων τυγχάνει· ἐνταῦθα τοῖνυν εἰ μὲν περιττὸν χύμα
 λάβωμεν τῶν ἀρτιοπερίττων, ὁ μέσος τῶν ἄκρων
 ἡμισυς ἔσται· οὐ γὰρ ἴσος αὐτοῖς. οἷον ἐπὶ παραδεί-
 γματος ἐκείσθωσαν κατὰ περιττὸν χύμα ἀρτιοπερίτ-
 75 τοι ὡς ὑποτέτακται· ζ, ι, ιδ, ιη, κβ· ἐνταῦθα τοῖνυν ὁ 75
 μέσος ἐστὶν ὁ ιδ· σύνθετες οὖν τοὺς ἄκρους, ὃ ἐστὶ τὸν
 ζ καὶ τὸν κβ, καὶ γίνονται κη· ἡμισυς οὖν τούτων <δ>
 μέσος εὐρίσκεται· ἡμισυ γὰρ τῶν κη ιδ. ὁμοίως καὶ
 ἐπὶ τῶν παρ’ ἐκάτερα ἄκρων, οἷον τοῦ ι καὶ τοῦ ιη·
 ι γὰρ καὶ ιη κη, ἡμισυ τούτων ιδ. ταῦτα μὲν οὖν συμ- 80
 βαίνει εἰ περισσαὶ εἰσιν αἱ ἐκθέσεις, εἰ δὲ ἄρτια, δύο
 μέσοι εὐρεθήσονται καὶ οὐκέτι οἱ μέσοι τῶν ἄκρων
 ἡμίσεις ἔσονται, ἀλλὰ ἴσοι. οἷον ὑποδείγματος χάριν
 πάλιν ἐκείσθωσαν ἀρτιοπερίττοι κατὰ ἄρτιον χύμα·
 85 ζ, ι, ιδ, ιη, κβ, κς· ἐνταῦθα εἰσὶ δύο μέσοι, ὁ ιδ καὶ ὁ 85
 ιη· οὐκοῦν οὗτοι τοῖς ἄκροις συντιθεμένοις ἴσοι ἔσον-
 90 ται· σύνθετες γὰρ τοὺς ἄκρους τὸν ζ καὶ τὸν κς, γίνονται
 λβ· σύνθετες δὲ καὶ τοὺς μέσους, καὶ γίνονται λβ· ιδ γὰρ
 καὶ ιη ποιοῦσι λβ. ὡσαύτως καὶ ἐπὶ τῶν παρ’ ἐκάτερα
 ἄκρων· ι γὰρ καὶ κβ λβ, ἀλλὰ καὶ ιδ καὶ ιη λβ, ὥστε 90
 τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ ὑπὸ τῶν μέσων, ὥστε
 ἐπὶ τῶν ἀρτίων ἐκθέσεων κοινωνία τίς ἐστὶ τῶν τε
 ἀρτιοπερίττων καὶ τῶν ἀρτιάκις ἀρτίων, ὅτι κάκει
 τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ ὑπὸ τῶν μέσων καὶ ἐν-
 95 ταῦθα δέ· ἀλλὰ διαφέρουσιν ὅτι ἐκεῖ μὲν πολλαπλα-
 σιάζοντες τοῦτο ἐποιοῦμεν, οἷον ὀκτάκις ις καὶ δις ζδ,
 ἐνταῦθα δὲ συντίθεμεν· οὐ γὰρ ποιοῦμεν ἑξάκις κς,

55 ἴσως AM: ὁμως Philop.

67–68 ὑπάρχει (ὑπάρχει (Philop.)) ὑπερέχει A) δὲ καὶ ἄλλο
 παρακολούθημα· ἰστέον ὅτι ὡς εἴρηται ἐπὶ τῶν A: om. M

69 et 72 λάβωμεν M: λάβομεν A

70 τῷ M: τὸ A

73 ἐπὶ M: ἐστί A

74–75 ἀρτιοπερίττοι ὡς (Philop.)) ἀρτιοπερίτοις AM

75 ιη M: ιχη A || ὁ A et M² s. v. (ut vid.): om. M

77 ὁ (Philop.)) om. AM

85 ιη M: ιβη A

91 ὥστε (Philop.)) ἐν τε AM

94 alt. ὑπὸ M: ἀπὸ A

21 ια M: ιδ A

22 ιζ M: ις A || κα M: κβ A

24 λ, λδ M: λ, λβ, λδ A

26 ἀριθμοὶ M: ἀριθμοῦ A

37 τὸ M: τὰ A (ut vid.)

38 δκ¹⁵ (Philop.)) τέταρτον AM

44 τὸν scripsi: τὸ AM || δύναμιν scripsi: om. AM

45 τοῦ M: τῶν A

49 ἡμίσεος M: ἡμίσεως A

54 ιδ fec. M² (ut vid.): δ AM

ἀλλὰ τὰς 5 προστίθεμεν ταῖς κς. ταῦτά ἐστιν ἃ βούλεται εἶπεν περὶ τοῦ ἀρτιοπερίττου. θᾶπτον οὖν ἀνα-
100 γνῶμεν τὴν λέξιν, πάντα γὰρ τὰ μέλλοντα λέγεσθαι σαφῶς τεθεώρηται.

ογ. ὁ τῷ γένει καὶ αὐτὸς ἄρτιος. κοινῶς γὰρ τὰ τρία εἶδη ἄρτια καλοῦνται, καὶ γὰρ ὁ ἀρτιάκις ἄρτιος, ὁ ἀρτιοπερίττος καὶ ὁ περισσάρτιος.

οδ. συμβέβηκε δὲ αὐτῷ. ἰδοὺ παρακολούθημα ὅτι καὶ ἐναντίως ἔχει τὸ μέρος τῇ δυνάμει, καὶ εἰ μὲν τὸ μέρος ἄρτιόν ἐστιν, ἡ δύναμις περιττὴ ἐστίν, εἰ δὲ ἡ δύναμις ἀρτία, τὸ μέρος περιττόν, οἷον ἐπὶ τοῦ ιη·
5 τὸ μὲν ἡμισυ μέρος ἄρτιον, ὁ δὲ θ περιττός· καὶ πάλιν τὸ μὲν τρίτον μέρος περιττόν, ὁ δὲ 5 ἄρτιος.

οε. γεννᾶται δὲ καὶ οὗτος. ἐντεῦθεν τὴν γένεσιν αὐτοῦ παραδίδωσιν. | οἱ μείζονες αἰ τῶν ἐγγύς. ὁρᾷς ἀντὶ τοῦ ὁ ι τετράδι τοῦ πλησίον αὐτοῦ, τοῦ 5, ὑπερέχει· καὶ ὁ ιδ τοῦ ι, καὶ ἐπὶ τῶν λοιπῶν ὁμοίως.

ος. γνώμονες αὐτῶν. γνώμονας καλοῦμεν τοὺς μετροῦντας ἀριθμούς· ἀμέλει ἕως τῆς νῦν πᾶν τὸ μετροῦν γνώμονα προσαγορεύομεν. | ἐναντιοπαθεῖς δὲ λέγονται ὅτι, φησὶν, ἐναντίος ὁ ἀρτιοπέριττος τῷ
5 ἀρτιάκις ἀρτίῳ.

οζ. ὑποδιπλάσιον τὸ μέσον. ἀντὶ τοῦ ἡμισυ τὸ μέσον τῶν ἄκρων ἐπὶ τῶν περιττῶν ἐκθέσεων· ἐπὶ δὲ τῶν ἀρτίων ἐφ' ὧν καὶ δύο οἱ μέσοι, ἴσον τὸ ὑπὸ τῶν ἄκρων τῷ ὑπὸ τῶν μέσων.

οη. περισσάρτιος δὲ ἐστὶν ἀριθμός. διαλεχθεὶς περὶ τοῦ ἀρτιοπερίττου, νῦν περὶ τοῦ περισσάρτιου διαλέγεται καὶ φησιν ὅτι ὁ περισσάρτιος ἀμφοτέροις κοινωνεῖ καὶ ἀμφοτέρων διαφέρει· τῷ μὲν γὰρ ἀρτιά-

ογ = Philop. π οδ = Philop. πα οε = Philop. πδ

ος = Philop. πε, πζ οζ = Philop. πη

οη = Philop. πθ

ογ, ι = Nicom. IX, 1.

οδ, ι = Nicom. IX, 2. οε, ι = Nicom. IX, 4.

2 = Nicom. IX, 4. ος, ι = Nicom. IX, 4.

ος, 3 cf. Nicom. IX, 6. οζ, ι = Nicom. IX, 6.

οη, ι = Nicom. X, 1.

ογ. 2 γὰρ scripsi: γ AM (Philop. hab. καὶ γὰρ ὁ ἀρτιάκις ἄρτιος ἄρτιός ἐστι καὶ ὁ ἀρτιοπέριττος καὶ ὁ περισσάρτιος).

οδ. 3 ἄρτιόν ἐστιν A: ἄρτιος ἢ M

ος. 3 προσαγορεύομεν M² s. v.: καλοῦμεν AM

οζ. 4 τῷ M: τὸ A

οη. 4 ἀμφοτέρων (Philop.) ἀμφοτέροις AM

κὶς ἀρτίῳ κοινωνεῖ, καθὼ καὶ οὗτος πλείους διαιρέσεις 5 ἐπιδέχεται, εἰ καὶ μὴ ἄχρι μονάδος, τῷ δὲ ἀρτιοπερίττῳ ὅτι κἂν πλείους ὑποδέχεται διαιρέσεις, τελευτᾷ πρὸ μονάδος εἰς ἀδιαίρετον. γίνεται δὲ οὕτως· ἐκθοῦ τὸ χύμα τῶν περιττῶν πάντων καὶ τῶν ἀρτιάκις ἀρτίων καὶ πολλαπλασίασον περιττοὺς πρὸς ἀρτιά- 10 κὶς ἀρτίους ἢ ἀρτιάκις ἀρτίους πρὸς περιττοὺς, ταῦτον γὰρ ἐστὶ, <καὶ> σχήσεις περισσάρτιους· οἷον ὑποδείγματος χάριν ἐκκείσθωσαν περιττοὶ γ, ε, ζ, θ, ια, ιγ, ιε, ἐκκείσθωσαν δὲ καὶ ἀρτιάκις ἄρτιοι κατὰ τάξιν δ, η, ις, λβ, ξδ, ρκη, σνς· πολλαπλασίασον 15 τοῖνυν περιττὸν ἐπὶ ἀρτιάκις ἀρτίους καὶ ποιήσεις περισσάρτιους. οἷον τὸν γ ἐπὶ τὸν δ πολλαπλασίασον, γίνονται ιβ· ὁ ιβ τοῖνυν περισσάρτιός ἐστι, δέχεται γὰρ πλείους διαιρέσεις· ἡμισυ γὰρ τούτων 5, καὶ τούτων ἡμισυ γ, τὰ δὲ γ ἀδιαίρετα. ὡσαύτως 20 καὶ ἐπὶ τὸν ἐφεξῆς ἀρτιάκις ἄρτιον πολλαπλασίασον, τὸν η, καὶ ποιήσεις περισσάρτιον, τρεῖς γὰρ η κδ· ὁ κδ τοῖνυν περισσάρτιος, ὅς πλείους διαιρέσεις ἐπιδέχεται ἄχρι τριάδος. ὡσαύτως καὶ ἐπὶ τῶν λοιπῶν· ποιεῖς γὰρ τρεῖς ις, μὴ γίνονται, καὶ ἔστιν οὗτος πε- 25 ρισσάρτιος, καὶ τρεῖς λβ γίνονται ρς, καὶ τρεῖς ξδ γίνονται ρρβ, καὶ ἐπὶ πάντων ὁμοίως. αὕτη μὲν ἡ γένεσις τοῦ περισσάρτιου. παρακολουθεῖ δὲ αὐτῷ τὸ καὶ ἔχειν μέρη καὶ δυνάμεις ἐναντιογενεῖς καὶ ὁμοιογενεῖς· οἷον ὁ κδ ἐστὶ περισσάρτιος· τούτου οὖν εἰ μὲν 30 λάβωμεν τὸ τρίτον καὶ τὸν η ἀνομογενῆ ἔσονται· τὸ μὲν γὰρ τρίτον περιττόν, ὁ δὲ η ἄρτιος· εἰ δὲ λάβωμεν τὸ δ <καὶ τὸν 5> ὁμογενὲς τὸ μέρος τῇ δυνάμει, καὶ γὰρ καὶ ὁ 5 ἄρτιος καὶ τὸ δ ἄρτιον. ἐπὶ δὲ τοῦ ἀρτιοπερίττου αἰ τὸ μέρος ἐναντίον τῇ δυνάμει. εἰ δὲ καὶ 35 ἄλλο παρακολουθεῖ αὐτῷ, ἀναγνῶμεν τὴν λέξιν καὶ εὐρήσομεν.

οθ. τὸ τρίτον εἶδος τοῦ ἀρτίου. τρία γὰρ εἶδη τοῦ ἀρτίου, ὧν τὸ τρίτον ὁ περισσάρτιος ἦν.

π. ἐστὶ δὲ ὅταν ἀριθμός. λείπει περισσάρτιος. ἀντὶ τοῦ περισσάρτιος δὲ τότ' ἐστὶν ὅταν ἄρτιός τις ἀριθμός εἰς δύο ἴσα διαιρεθεὶς ἔχη πάλιν τὰ διαιρούμενα

οθ = Philop. ρ π = Philop. φα, ρβ

οθ, ι = Nicom. X, 1. π, ι = Nicom. X, 2.

6 ἐπιδέχεται A: ὑποδέχεται M

7 τελευτᾷ A: τελευτῇ M

8 πρὸ M: πρὸς A

12 καὶ scripsi: om. AM || σχήσεις (Philop.) || σχέσεις AM

18 ὁ M: οἱ A || ιβ A: ι δύο M || περισσάρτιός ἐστι M: περισσάρτιοί εἰσιν A

21 τὸν scripsi: τῶν AM

22 περισσάρτιον M: περισσάρτιους A || τρεῖς M: τρεῖς A

31 λάβωμεν M (ut vid.): λάβομεν A || τὸν scripsi: τὸ AM

32 λάβωμεν M: λάβομεν A

33 καὶ τὸν 5 scripsi: om. AM

34 pr. καὶ M: δὲ A

π. 1-3 ἀριθμός . . . ἀριθμός M: ἀριθμός A

2 ἄρτιός τις (Philop.) ἀρτιοπέριττος M

δυνάμενα διαιρεθῆναι, εἰ καὶ μὴ ἄχρι μονάδος. | καὶ
5 ἐπὶ πλείον τὸν διχασμὸν ἐπιδεχόμενος. ὅτι, φησὶν, οὐ
μόνον δύο διαιρέσεις ἐπιδέχονται, ἀλλὰ καὶ πλείους,
εἰ καὶ μὴ ἄχρι μονάδος· οἷον ὁ ρς πολλὰς διαιρέσεις
ἐπιδέχεται· ἥμισυ γὰρ μη, καὶ τούτων κδ, καὶ τούτων
ιβ, καὶ τούτων ς, καὶ τούτων γ· ἰδοὺ ε διαιρέσεις ἀνε-
10 δέξατο.

πα. συμβέβηκε δὲ αὐτῷ μόνῳ ὑφ' ἐν. παρακολου-
θημα γλαφυρὸν λέγει, ἀλλὰ δεῖ αὐτῷ παρακολουθῆ-
σαι. φησὶν ὅτι ἐπὶ τοῦ ἀρτιάκις ἀρτίου, ἐπὶ μὲν τῶν
περιττῶν ἐκθέσεων τὸ ὑπὸ τῶν ἄκρων ἴσον ἦν τῷ
5 ἀπὸ τοῦ μέσου, ἐπὶ δὲ τῶν ἀρτίων τὸ ὑπὸ τῶν ἄκρων
ἴσον τῷ ὑπὸ τῶν μέσων· ταῦτα ἐπὶ τοῦ ἀρτιάκις
ἀρτίου. ἐπὶ δὲ τοῦ ἀρτιοπερίττου, ἐπὶ μὲν τῶν περιτ-
τῶν ἐκθέσεων ὁ μέσος τῶν ἄκρων ὑποδιπλάσιος ἦν,
ἐπὶ δὲ τῶν ἀρτίων ἴσοι οἱ μέσοι συντιθέμενοι τοῖς
10 ἄκροις συντιθεμένοις. ταῦτα μὲν ἐπ' ἐκείνων. τῷ δὲ
περισσαρτίῳ ὑφ' ἐν τὰ ἐκείνων ἀντὶ τοῦ τὰ εἶδη συμ-
βέβηκε· καὶ γὰρ καὶ τὰ ὑπὸ τῶν ἄκρων ἴσα τῷ ὑπὸ
τῶν μέσων καὶ τῷ ἀπὸ τοῦ μέσου, εἰ περιτταὶ αἱ
ἐκθέσεις ὥσπερ ἐπὶ τῶν ἀρτιάκις ἀρτίων· καὶ ὁ μέσος
15 δὲ ἥμισυς τῶν ἄκρων ὥς ἐπὶ τοῦ ἀρτιοπερίττου, ἀλλὰ
κατ' ἄλλο καὶ ἄλλο. ἔσται δὲ σαφὲς ὃ λέγω, εἰ ἀνα-
μνησθῶμεν τῆς γενέσεως τοῦ περισσαρτίου. εἰρήκαμεν
ὅτι ἐκκείσθωσαν οἱ περιττοὶ ἐξ ἀρχῆς καὶ οἱ ἀρτιάκις
ἄρτιοι καὶ πρὸς ἀλλήλους πολλαπλασιαζόμενοι ποιή-
20 σουσι τοὺς περισσαρτίους. οὐκοῦν οἱ μὲν κατὰ μῆκος
στίχοι κοινωνοῦσι τῷ ἀρτιάκις ἀρτίῳ, ἡ δὲ ἀκροστι-
χὶς τῶν κατὰ πλάτος ἀριθμῶν τῷ ἀρτιοπερίττῳ
κοινωνεῖ. ἴνα δὲ σαφὲς ᾖ τὸ λεγόμενον, ἐκθώμεθα τοὺς
τε περιττοὺς καὶ τοὺς ἀρτιάκις ἀρτίους καὶ ποιήσο-
25 μεν στίχους περισσαρτίων καὶ εὐρίσκομεν τὸ ζητού-
μενον· γ, ε, ζ, θ, ια, ιγ, ιε· δ, η, ις, λβ, ξδ, ρκη, σνς·
ἰδοὺ οἱ τε ἀρτιάκις ἄρτιοι καὶ οἱ περιττοί· πολλαπλα-
σιαζέσθω οὖν ὁ γ ἐπὶ πάντας τοὺς ἀρτιάκις ἀρτίους
καὶ ποιείτω τέως ἕνα στίχον περισσαρτίων· ιβ, κδ,
30 μη, ρς, ρρβ, τπδ, ψξη. πάλιν ἐφεξῆς πέντε πρὸς τοὺς
ἀρτιάκις ἀρτίους πολλαπλασιαζέσθω καὶ ποιείτω
ἄλλον στίχον περισσαρτίων· κ, μ, π, ρξ, τκ, χμ, ,ασπ.

πα = Philop. γγ-ρε

4-5 = Nicom. X, 2.

πα,ι = Nicom. X, 4.

5 πλείον AM: πλέον Nicom.

πα. 3 μὲν τῶν M: τῆς A

4 τῷ (Philop.) τὸ AM

6 ἴσον τῷ ὑπὸ τῶν μέσων A: τῷ ὑπὸ τῶν μέσων ἴσον M (τοῖς
pro τῷ fec. M² s. v., P²)

11 εἶδη M: ἡδη A

12 τὰ fec. M² (ut vid.): τὸ AM || ἴσα fec. M²: ἴσον AM

12-13 τῷ ὑπὸ τῶν μέσων καὶ τῷ ἀπὸ τοῦ μέσου AM: τῷ ἀπὸ
τοῦ μέσου M² (et del. τῷ ὑπὸ τῶν μέσων καὶ)

16 δὲ M: om. A

21 δὲ M: om. A

29-32 περισσαρτίων ... περισσαρτίων M: περισσαρτίων A

ὁμοίως πάλιν ὁ ἐφεξῆς ζ πολλαπλασιαζέσθω πρὸς
τοὺς ἀρτιάκις ἀρτίους καὶ ποιείτω ἄλλον στίχον
περισσαρτίων· κη, νς, ριβ, σκδ, υμη, ως, ,αφρβ. 35
πάλιν ὁ ἐφεξῆς θ πρὸς τοὺς ἀρτιάκις ἀρτίους πολλα-
πλασιαζόμενος ποιείτω ἕτερον στίχον περισσαρτίων·
λς, οβ, ρμδ, σπη, φος, ,αρνβ, ,βτδ. ὡσαύτως καὶ ἐπὶ
τῶν λοιπῶν, ἀλλὰ ἀρκέσει ἕνεκεν παραδείγματος· εἰ
δοκεῖ μὲν, ἅμα τοὺς στίχους τῶν περισσαρτίων ἐκθώ- 40
μεθα· εὐρήσεις τοίνυν ἐπὶ τῶν στίχων κοινωνίαν πρὸς
τὸν ἀρτιάκις ἄρτιον, ἐπὶ δὲ τῆς ἀκροστιχίδος πρὸς
τὸν ἀρτιοπερίττον· οἷον ἰδωμεν ἐπὶ τῶν στίχων τὴν
κοινωνίαν· ἐπὶ τοῦ πρώτου στίχου ἄκροι εἰσὶν ὁ ιβ
καὶ ὁ ψξη· πολλαπλασίασον τοίνυν αὐτούς, ὥσπερ 45
καὶ ἐπὶ τοῦ ἀρτιάκις ἀρτίου ἐποιοῦμεν (καὶ γὰρ ἐκεῖ
ἐπολλαπλασιάζομεν)· γίνεται τοίνυν δωδεκάκις ψξη,
,θσις· οὗτος τοίνυν ὁ ὑπὸ τῶν ἄκρων ἐστί, μέσος δὲ
εἷς ἔστιν ὁ ρς, ἐπειδὴ περιττὴ ἡ ἐκθεσις· ὁ τοίνυν ὑπὸ
τῶν ἄκρων ἴσος τῷ ἀπὸ τοῦ μέσου, τοῦ ρς· ὥσπερ 50
γὰρ αἱ ιβ ἐπὶ τὰς ψξη πολλαπλασιασθεῖσαι ποιοῦσι
,θσις, οὕτω καὶ ὁ ρς ἐφ' ἑαυτὸν πολλαπλασιασθεὶς
ποιεῖ <θσις>. ὡσαύτως καὶ ἐπὶ τῶν παρ' ἐκάτερα·
πάλιν γὰρ ὁ ὑπὸ τῶν ἄκρων, τοῦ τε κδ καὶ τοῦ τπδ,
ἴσος ἐστί τῷ ἀπὸ τοῦ μέσου, τοῦ ρς· πολλαπλασία- 55
ζόμενα γὰρ αἱ κδ ἐπὶ τὰς τπδ ποιοῦσι ,θσις, ἀλλὰ
καὶ ὁ ρς ἐφ' ἑαυτὸν πολλαπλασιασθεὶς ποιεῖ ,θσις. εἰ
δὲ ἀρτίας ἐκθέσεις λάβης, πάλιν εὐρήσεις ὅτι τὸ ὑπὸ
τῶν ἄκρων ἴσον τῷ ὑπὸ τῶν μέσων. ἰδοὺ τοίνυν ὅτι
ἐκοινώνησε κατὰ τοῦτο τῷ ἀρτιάκις ἀρτίῳ. κατὰ τὸν 60
αὐτὸν δὲ τρόπον καὶ ἐπὶ τοῦ δευτέρου στίχου εὐρή-
σεις τὸ ὑπὸ τῶν ἄκρων, τῶν κ καὶ τῶν ,ασπ, ἴσον
τῷ ἀπὸ τοῦ μέσου, τοῦ ρς· αἱ γὰρ κ ἐπὶ τὰς ,ασπ
πολλαπλασιαζόμενα ποιοῦσι μυριάδας β, ,εχ, ἀλλὰ
καὶ αἱ ρς ἐφ' ἑαυτὰς πολλαπλασιαζόμενα ποιοῦσι 65
τὰς αὐτὰς β μυριάδας ,εχ. ὡσαύτως καὶ τῶν παρ'
ἐκάτερα ἄκρων τὸ ὑπὸ τῶν μ καὶ τῶν χμ ἴσον τῷ
ἀπὸ τοῦ μέσου, τοῦ ρς· πάλιν γὰρ γίνονται μυριάδες
β, ,εχ· ὁμοίως καὶ τὸ ὑπὸ τῶν π καὶ τῶν τκ ἴσον τῷ
ἀπὸ τῶν ρς. κατὰ τὸν αὐτὸν δὲ τρόπον εὐρήσεις καὶ 70
ἐπὶ τῶν λοιπῶν στίχων, ὥστε τέως ἐδείχθη ἡ πρὸς
τὸν ἀρτιάκις ἄρτιον κοινωνία. ἐὰν δὲ καὶ ἀρτίας ποιή-
σης τὰς ἐκθέσεις, εὐρήσεις τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ
ὑπὸ τῶν μέσων. ἔλθωμεν λοιπὸν ἐπὶ τὴν ἀκροστιχίδα
καὶ πάντως εὐρήσομεν τὴν πρὸς τὸν περισσάρτιον 75

33 ὁμοίως M: ὁμοίως δὲ A

35 νς M: νδ A

37 ἕτερον M: τὸν ἕτερον A

50 ἴσος M: ἴσον A || τῷ (Philop.) τὸ AM

53 ,θσις (Philop.) om. AM (cf. n. ad loc.)

55 ἴσος M: ἴσον A || τῷ (Philop.) τὸ AM

56 ,θσις (σ s. v.) M²: ,θις AM

58 ἀρτίας M: ἀρτίωνας A || λάβης M: λάβεις A

64-65 πολλαπλασιαζόμενα ... πολλαπλασιαζόμενα M: πολ-
λαπλασιαζόμενα A

71 στίχων (Philop.) στοιχείων AM

72-73 ποιήσης M: ποιήσεις A

74 ὑπὸ M: ἀπὸ A

κοινωνίαν ἐπὶ τοῦ ἀρτιοπερίττου, ὁ μέσος ἡμισυς ἦν τῶν ἄκρων, εἰ περιτταὶ αἱ ἐκθέσεις, εἰ δὲ ἄρτιαι, οἱ μέσοι τοῖς ἄκροις ἴσοι· εὐρήσεις οὖν τοῦτο· ἐνταῦθα γὰρ ἐπὶ τοῦ προκειμένου παραδείγματος ἄκροι εἰσιν 80 ἐπὶ τῆς ἀκροστιχίδος ὁ ιβ καὶ ὁ λς· σύνθεσις τούτους (ἐπὶ τοῦ ἀρτιοπερίττου σύνθεσις ἐλαμβάνετο ὡς ἐδείξαμεν καὶ οὐ πολλαπλασιασμός), γίνονται μὴ σύνθεσις καὶ τοὺς μέσους τὸν τε κ καὶ τὸν κη, γίνονται μὴ ὁρᾷς ὅτι ὁ ὑπὸ τῶν ἄκρων ἴσος τῷ ὑπὸ τῶν μέ- 85 σων. εἰ δὲ περιττὰς ἐκθέσεις λάβῃς, πάντως ὁ μέσος ἡμισυς εὐρεθήσεται τῶν ἄκρων. καὶ ἐπὶ τῶν παρ' ἐκάτερα τὰ αὐτὰ παρακολουθήσει. δέδεικται ἄρα πῶς ἐν τῷ περισσάρτιῳ καὶ τὰ τοῦ ἀρτιάκις ἀρτίου συμβαίνοντα καὶ τὰ τοῦ ἀρτιοπερίττου.

πβ. καὶ πάλιν ὁ μηδετέρω. τὰ μὲν γὰρ τῶν ἄκρων καὶ τῶν μέσων συμβέβηκεν αὐτῷ, ὡς περ καὶ ἐπ' ἐκείνων· πάλιν δὲ οὐδετέρω αὐτῶν κοινωνεῖ· τῷ μὲν ἀρτιάκις ἀρτίῳ οὕτως· ὅτι ἐκεῖνος μὲν ἄχρι μονάδος 5 διαιρεῖται, οὗτος δὲ οὐ· τῷ δὲ ἀρτιοπερίττῳ οὕτως· ὅτι ἐκεῖνος μὲν μίαν τομὴν ἐπεδέχετο, οὗτος δὲ οὐ, ἀλλὰ καὶ πλείους. | γεννᾶται δὲ καὶ οὗτος. τὴν γένεσιν λέγει· ἥδη δὲ σαφῶς πάντα εἰρήκαμεν καὶ οὐδεμιᾶς χρῆζομεν ἄχρι τοῦ τέλους τοῦ περισσάρτιου 10 ἐξηγήσεως, ἀλλ' ἐκεῖνο μόνον εἰπωμεν ἔξωθεν ὅτι οἱ τῆς ἀκροστιχίδος ἀλλήλων ὀγδοάδι ὑπερέχουσιν, ἐπειδὴ πάντες οἱ τῆς ἀκροστιχίδος γίνονται τῶν περιττῶν ἐπὶ ὁ πολλαπλασιαζομένων· δις δὲ ὁ γίνονται ἡ· διὰ τοῦτο ἄρα ὀγδοάδι ὑπερέχουσιν ἀλλήλων.

πγ. περὶ τοῦ περισσοῦ. εἰρηκῶς τὰ τρία εἶδη τοῦ ἀρτίου νῦν μέτεισιν ἐπὶ τὰ τοῦ περιττοῦ, καὶ λέγει ὅτι τρία ἐστὶ καὶ αὐτὰ· ἐν μὲν τὸ πρῶτον καὶ ἀσύνθετον, ἕτερον δὲ τὸ δεύτερον καὶ σύνθετον, καὶ τρίτον, 5 ὁ πρὸς μὲν ἑαυτὸ σύνθετόν ἐστι πρὸς δὲ ἄλλο ἀσύνθετον. οἷον τί λέγω; πρῶτον καὶ ἀσύνθετόν ἐστι τὸ ὑπὸ μονάδος μόνῃς μετρούμενον κοινῶς μέτρῳ, οἷον ὁ

γ πρῶτος καὶ ἀσύνθετος, ἀλλὰ καὶ ὁ ε καὶ ὁ ζ καὶ ὁ ια καὶ ὁ ιγ καὶ ὁ ιζ καὶ ἀπλῶς πάντες οἱ ὑπὸ μόνῃς μονάδος μετρούμενοι πρῶτοι καὶ ἀσύνθετοί εἰσιν. 10 ὅσοι δὲ καὶ ὑπὸ τῆς μονάδος μετροῦνται καὶ ὑπὸ ἄλλου δὲ δευτέροι εἰσι καὶ σύνθετοι, ὡς περ ὁ θ καὶ ὁ ιε καὶ ὁ κα καὶ οἱ τοιοῦτοι· ὁ γὰρ θ μετρούμενος καὶ ὑπὸ μονάδος καὶ ὑπὸ ἄλλου μετρεῖται, καὶ γὰρ καὶ ὑπὸ τοῦ γ· τρεῖς γὰρ τρεῖς θ· ὡσαύτως καὶ ὁ ιε καὶ οἱ 15 λοιποί. λέγονται οὕτως ἐκεῖνοι μὲν πρῶτοι καὶ ἀσύνθετοι, ἐπειδὴ ὑπὸ μόνῃς τῇ μονάδος μετροῦνται, ἐπεὶ οὐκ ἔχουσιν ἄλλο τι τὸ συντιθέν αὐτοὺς ἢ μετροῦν· οὗτοι δὲ δευτέροι καὶ σύνθετοι λέγονται, ἐπειδὴ οἱ πρῶτοι καὶ ἀσύνθετοι αὐτοὺς συντιθέασι 20 καὶ μετροῦσιν, οἷον ὁ θ ὑπὸ τοῦ γ μετρεῖται, ὁ γ πρῶτος καὶ ἀσύνθετος· ὡσαύτως καὶ ὁ ιε ὑπὸ τοῦ γ καὶ ε μετρεῖται, ἀλλὰ καὶ ὁ γ πρῶτος καὶ ἀσύνθετος καὶ ὁ ε, ὥστε εἰς τοὺς πρῶτους καὶ ἀσυνθέτους ἀναλύνονται· εἰς ὁ δὲ τι ἀναλύεται, ἐκεῖνο πρῶτον καὶ 25 ἀρχοειδέστερόν ἐστι· τὸ γὰρ διαλυτὸν εἰς τι πρῶτον ἀναλύεται. ταῦτα καὶ περὶ τοῦ δευτέρου εἶδους. τρίτον δὲ ἐστὶν ὁ αὐτὸ μὲν πρὸς ἑαυτὸ σύνθετόν ἐστι, πρὸς δὲ ἄλλο ἀσύνθετον· οἷον ὁ θ πρὸς ἑαυτὸν δευτέρος καὶ σύνθετός ἐστι· τρεῖς γὰρ γ θ· πρὸς δὲ τὸν κε 30 ἀσύνθετος· ἐξ ὧν γὰρ ὁ θ μετρεῖται οὐκέτι ὁ κε, καὶ πάλιν ἐξ ὧν ὁ κε οὐκέτι ὁ θ· ὁ μὲν γὰρ θ ὑπὸ τοῦ γ μετρεῖται· τρεῖς γὰρ τρεῖς θ· ὁ δὲ κε ὑπὸ τοῦ ε· πεντάκις γὰρ ε κε, ἀλλ' οὐδὲ ἐν τῷ θ ἐστὶ ε οὐδὲ ἐν τῷ κε γ. ταῦτά ἐστιν ἃ βούλεται διὰ τούτων εἰπεῖν. ἀναγνῶ- 35 μεν οὖν τὴν λέξιν καὶ κατὰ ταύτην ἐκθώμεθα τὴν γένεσιν τούτων τῶν ἀριθμῶν πῶς οἷον τέ ἐστιν ἐπιστημονικῶς θηρᾶν αὐτοὺς πάντας. | καθ' ὑποδιαί- ρεσιν διακεκριμένον. καὶ γὰρ καὶ κατὰ τὴν διαίρεσιν διαφέρει ὁ περιττός τοῦ ἀρτίου, εἴ γε τοῦ ἀριθμοῦ τὸ 40 μὲν ἄρτιον τὸ δὲ περιττόν, καὶ καθ' ὑποδιαίρεσιν, εἴ γε καὶ τὰ εἶδη τῶν εἰδῶν διαφέρει· οὐδὲν γὰρ εἶδος τοῦ περιττοῦ εἶδει τινὶ τοῦ ἀρτίου κοινωνεῖ.

πδ. ἐπὶ καὶ ἐτερώνυμον ἢ ἐτερώνυμα. ἐτερώνυμον μὲν ἔχουσιν οἱ γινόμενοι τῆς πλευρᾶς ἐφ' ἑαυτῆς πολλαπλασιαζομένης, οἷον ὁ θ· ἐν γὰρ ἐστὶν ἐτερώνυμον· τρεῖς γὰρ γ θ· ὁ γ οὖν ἐφ' ἑαυτὸν πολλαπλασιαζόμε- 5 νος ποιεῖ τὸν θ. ἐτερώνυμα δὲ οἱ ἔχοντες τὸν πολλαπλασιασμόν· οἷον ὁ ιε· ὁ γὰρ γ ἐπὶ τὸν ε πολλαπλασιασθεὶς ἐποίησε τὸν ιε· ἐτερώνυμα οὖν ἔχει οὗτος.

πδ = Philop. φη

38–39 = Nicom. XI, 1. πδ,1 = Nicom. XII, 1.

πβ = Philop. φε, 62 ff. πγ = Philop. φς, φζ

πβ,1 = Nicom. X, 4. 7 = Nicom. X, 6.

πγ,1 = Nicom. XI, 1.

76 ἀρτιοπερίττου A et M² s. v.: περισσάρτιου M

78 ἄκροις M: om. A

83 κη M: κβ A

84 ὁ M: τὸ A || ἴσος M: ἴσον A

85 λάβῃς M: λάβεις A

πβ. 1 ὁ M: ὁ A: & Nicom.

4 ἐκεῖνος M: ἐκεῖνο A

6 ἐπεδέχετο M: ἐπιδέχετο A

7 pr. καὶ A: om. M || alt. καὶ AM et Nicom. P: om. Nicom.

11 τῆς A² (ex corr.), et M: τοῖς A || ἀλλήλων M: om. A

πγ. 1 περὶ τοῦ περισσοῦ i. m. M² et Nicom. GmH: τοῦ δὲ περιττοῦ ἀριθμοῦ AM

5 ἑαυτὸ A: ἑαυτὸν M

8–9 καὶ ὁ ια scripsi: ὁ ια M: καὶ ὁ ιβ A (ut vid.)

13 ιε A: ι M

23 καὶ ε M (s. v.) et A

28 ὁ αὐτὸς M: ὁ αὐτὸς A || ἑαυτὸ A: ἑαυτὸν M

29–30 δεύτερος scripsi: β^{ος} (ut vid.) M: β' A

πδ. 2 ἐφ' ἑαυτῆς (Philop.) || ὑφ' ἑαυτὴν AM

πε. ἀλλὰ πάντως ἐκείνον ἢ ἐκείνους. ἐκείνον μὲν ὡς τὸν γ ἐπὶ τοῦ θ· εἰς γὰρ ἔστιν ὁ γ καὶ ἐφ' ἑαυτὸν πολλαπλασιασθεὶς ἐποίησε τὸν θ· ἐκείνους δὲ ὡς ὁ γ καὶ ὁ ε ἐπὶ τοῦ ιε· τρις γὰρ ε ιε. | ἐξηλλαγμένως καὶ 5 οἰκειότερον. ἔπειδ' ἡ μετὰ τὸ καὶ τούτους τῷ κοινῷ τῆς μονάδος μέτρῳ μετρεῖσθαι, μετροῦνται καὶ ὑπὸ ἀλλήλων.

πς. ἡ δὲ τούτων γένεσις καλεῖται ὑπὸ Ἐρατοσθένους κόσκι-
νον. ἐντεῦθεν λοιπὸν τὴν γένεσιν ἐκτίθεται τῶν τριῶν
διὰ μιᾶς μεθόδου, ἔπει οὖν ὥσπερ καρπὸν καὶ ἄχυρον
διακρίνει ἀπ' ἀλλήλων καὶ ψάμμον τὸ κόσκινον, οὕτω 5
κάνταυθα ὑπὸ μίαν μέθοδον ἀνάγονται τὰ τρία καὶ
διακρίνομεν αὐτὰ ὡς μέλλομεν λέγειν· διὰ τοῦτο κό-
σκινον φαμέν τὴν γένεσιν. ἔστιν οὖν ἡ γένεσις αὐτῶν
τοιαύτη. ἐκτίθει τοὺς ἀπὸ τριάδος περιττοὺς ἐν στίχῳ
καὶ ἔκτεινον ἐπὶ πολὺ, ἵνα τῷ πλήθει θηράσης τὰ γ
10 εἶδη· καὶ ὁ μὲν γ εὐθύς ἐφ' ἑαυτὸν πολλαπλασιαζέσθω
καὶ ποιεῖτω τὸν θ. εἴτα ἐπὶ τὸν ἐφεξῆς τὸν ε καὶ με-
τρεῖτω τὸν ιε, εἴτα ἐπὶ τὸν ζ καὶ μετρεῖτω τὸν κα.
καὶ οὕτως ἕως οὗ βούλει τὸν στίχον εἶναι· εἴτα μετὰ
τὸ πληρῶσαι, πάλιν τὸν ε τὸν ἐφεξῆς τοῦ γ ἄρξαι
15 μετρικῶς λαμβάνειν, εἴτα πάλιν πληρώσας τὸν στί-
χον, τὸν ζ. καὶ πάλιν πληρώσας, τὸν θ· καὶ τοῦτο
ἐφεξῆς. καὶ εὐρήσεις πάντως τὰ τρία εἶδη· ἡ γὰρ
μετρηθήσεται τις ὑπὸ δύο ἢ οὐ μετρηθήσεται ὑπὸ
δύο, ἀλλὰ ὑπὸ ἐνός, ἢ οὐδὲ ὅλως τις μετρηθήσεται.
20 καὶ οἱ μὲν μετρούμενοι ὑπὸ πλειόνων πάντως δεύτε-
ροι καὶ σύνθετοί εἰσιν, οἱ δὲ μὴ μετρούμενοι ὅλως
πρῶτοι καὶ ἀσύνθετοι, οἱ δὲ ἅπαξ μετρούμενοι πρὸς
μὲν ἑαυτοὺς σύνθετοι, πρὸς δὲ ἀλλήλους ἀσύνθετοι.
καὶ ἵνα σαφὴς σοι γένηται ἡ εὕρεσις αὐτῶν τοῖς με-
25 τρουμένοις τοὺς ὑφ' ὧν μετροῦνται ἐπάνω προστίθει,
καὶ ἐκ τούτου ὅσοι εὐρεθῶσι μηδὲ ὅλως δεξάμενοι
προσθήκην δῆλοι ἔσονται ὡς πρῶτοι ὄντες καὶ
ἀσύνθετοι, οἱ δὲ δύο ἔχοντες προσθήκας δεύτεροι καὶ
σύνθετοι εὐρεθήσονται, οἱ δὲ μίαν πρὸς μὲν ἑαυτοὺς
30 σύνθετοι, πρὸς δὲ ἀλλήλους ἀσύνθετοι. τάξει δὲ τινι

προέρχεται ἡ γένεσις αὐτῶν· ὁ γὰρ γ ἑαυτὸν πολλα-
πλασιάζων ποιεῖ τὸν θ, δύο ἔχων ἐν μέσῳ ἀριθμούς,
τὸν ε καὶ τὸν ζ· ὡσαύτως δὲ τὸν ιε μετρεῖ· τρις γὰρ ε
ιε· δύο ἔχων ἐν τῷ μέσῳ ἀριθμούς, τὸν ια καὶ τὸν ιγ·
καὶ πάλιν τὸν κα μετρεῖ κατὰ τὸν ζ, δύο ἔχων ἐν 35
μέσῳ, τὸν ιζ καὶ ιθ· καὶ τοῦτο ἐφεξῆς εὐρήσεις, ὅτι ὁ
ε μὲν κατὰ τὸν γ τὸν ιε μετρεῖ, τέσσαρας ἐν τῷ μέσῳ
ἔχων ἀριθμούς, τὸν ζ καὶ τὸν θ καὶ τὸν ια καὶ τὸν ιγ·
πάλιν δὲ τὸν κε μετρεῖ ἐφ' ἑαυτὸν πολλαπλασιαζό-
μενος, τέσσαρας ἐν τῷ μέσῳ ἔχων, τὸν ιζ, τὸν ιθ, τὸν 40
κα, τὸν κγ· καὶ ἐφεξῆς οὕτως. ὁ δὲ ζ πάλιν τῇ αὐτῇ
τάξει μετρήσει, 5 ἔχων ἐν τῷ μέσῳ, ὁ δὲ θ η, καὶ ἁ-
πλῶς ἡ μέθοδος τῆς τάξεως ἔστι τοιαύτη. κατὰ τὴν
τάξιν τῶν ἀρτίων πάντως ὁ ἀριθμὸς τῶν μέσων
εὐρίσκεται, οἶον πρῶτος ἄρτιος ὁ β· διὰ τοῦτο οὖν 45
ὁ γ πρῶτος ὢν τῶν περιττῶν, δύο ἔχει τοὺς μέσους·
πάλιν ὁ δ δεύτερος ἄρτιος· διὰ τοῦτο οὖν ὁ ε δεύτερος
ὢν περιττός, τέσσαρας ἔχει τοὺς μέσους· ὡσαύτως
τρίτος ἄρτιος ὁ 5· διὰ τοῦτο ὁ ζ τρίτος ὢν περιττός,
5 ἔχει τοὺς μέσους. καὶ ἐπὶ τῶν λοιπῶν πάντων ἡ 50
αὐτὴ τάξις εὐρεθήσεται. ἔστι δὲ καὶ ἄλλως εὐρεῖν τὴν
τάξιν· τὰς χώρας γὰρ διπλασιάζουσι καὶ ὅσος ὁ δι-
πλασιασμός, τοσοῦτοι οἱ μέσοι, οἶον ὁ γ τὴν πρῶ-
την χώραν ἔχει· οὐκοῦν δις μία, τί ἔστι; δύο· διὰ
τοῦτο οὖν ὁ γ δύο μέσους ἔχει· εἴτα ὁ ε τὴν β ἔχει 55
χώραν, οὐκοῦν δις δύο γίνεται δ, διὰ τοῦτο τέσσα-
ρας ἔχει μέσους· ὁ ζ τρίτην ἔχει χώραν, δις οὖν γ 5·
οὐκοῦν διὰ τοῦτο οὗτος ἔχει 5· καὶ ἐπὶ τῶν ἄλλων
εὐρήσεις ταύτην τὴν τάξιν. ἔπει τοίνυν τὰ τῆς μεθό-
δου παραδέδοται, ἐκθώμεθα καὶ παραδείγματα, ἀλλὰ 60
ἐπὶ μῆκος τῆς τετράδος ἵνα μείζων ὁ στίχος γένηται·

γ, ε, ζ, $\frac{\gamma}{\theta}$, ια, ιγ, $\frac{\gamma, \epsilon}{\iota \epsilon}$, ιζ, ιθ, $\frac{\gamma, \zeta}{\kappa \alpha}$, κγ, $\frac{\epsilon}{\kappa \epsilon}$, $\frac{\gamma}{\kappa \zeta}$, κθ, λα,
 $\frac{\gamma}{\lambda \gamma}$, $\frac{\epsilon, \zeta}{\lambda \epsilon}$, λζ, $\frac{\gamma}{\lambda \theta}$, μα, μγ, $\frac{\gamma}{\mu \epsilon}$, μζ, $\frac{\zeta}{\mu \theta}$, $\frac{\gamma}{\nu \alpha}$. ἰδοὺ τοίνυν

οἱ μὲν μὴ ἔχοντες ἄνω τὰ μέτρα πρῶτοι καὶ ἀσύνθετοί
εἰσιν, οἱ δὲ β ἔχοντες ἐπάνω δεύτεροι καὶ σύνθετοι, 65
οἱ δ' ἐν πρὸς ἀλλήλους μὲν ἀσύνθετοι πρὸς δὲ ἑαυτοὺς
σύνθετοι. ἀλλ' οὖν ἰστέον ὅτι, ἔπειδ' ἡ μὴ ἔστι χάρτης

πε = πς = Philop. ρ

πε, ι = Nicom. XII, ι. 4-5 = Nicom. XII, ι.

πς, ι-2 = Nicom. XIII, 2.

πε. ι pr. ἐκείνον AM: ἢ ἐκείνον Nicom. || ἐκείνους Nicom. (et
cf. lin. 3): ἐκείνου AM

2 τὸν A: om. M

3 ἐκείνους M: ἐκείνα A

5 οἰκειότερον AM: ἰδιότερον Nicom. || τῷ κοινῷ M: κοινῆς (ut
vid.) A

6 μετρεῖσθαι A: μετρεῖται M || ὑπὸ A: ἀπὸ M

7 ἀλλήλων M: ἄλλων A

πς. ι-2 καλεῖται ... κόσκινον AM: ὑπὸ Ἐρατοσθένους καλεῖται
κόσκινον Nicom.

2 λοιπὸν A: λοιπονῶν M

16 τοῦτο M: οὕτως A

23 et 30 ἀλλήλους (Philop.)] ἄλλους AM

35 κα μετρεῖ scripsi: καταμετρεῖν AM

36 ὅτι A et (ti fec. M² ut vid.) M

36-37 ὁ ε scripsi: οὗτος AM

45 ὁ β A et M² i. m. (ὁ δύο): ὁ δεύτερος M

48 περιττός M: περιττός A

62 $\frac{\gamma}{\theta}$ scripsi: $\frac{\gamma, \gamma}{\theta}$ M: θ A || $\frac{\gamma, \epsilon}{\iota \epsilon}$ scripsi: ιε AM || $\frac{\gamma, \zeta}{\kappa \alpha}$ M: κα

A || $\frac{\epsilon}{\kappa \epsilon}$ scripsi: $\frac{\epsilon, \epsilon}{\kappa \epsilon}$ M: κε A || $\frac{\gamma}{\kappa \zeta}$ scripsi: $\frac{\gamma, \theta}{\kappa \zeta}$ M: κζ A

63 $\frac{\gamma}{\lambda \gamma}$ scripsi: $\frac{\gamma, \iota \alpha}{\lambda \gamma}$ M: λγ A || $\frac{\epsilon, \zeta}{\lambda \epsilon}$ M: λε A || $\frac{\gamma}{\lambda \theta}$ scripsi:

$\frac{\gamma, \iota \gamma}{\lambda \theta}$ M: λθ A || $\frac{\gamma}{\mu \epsilon}$ scripsi: $\frac{\gamma, \iota \epsilon}{\mu \epsilon}$ M: με A || $\frac{\zeta}{\mu \theta}$ scripsi:

$\frac{\zeta, \zeta}{\mu \theta}$ M: μθ A || $\frac{\gamma}{\nu \alpha}$ scripsi να AM

66 ἀλλήλους (Philop.)] ἄλλους AM

ὁ ὀφείλων ἐπ' ἄπειρον στίχον ἀριθμῶν διέχεσθαι, δοκεῖ ψεύδεσθαι τὸ λέγον, ὅτι ὁ ἐν μέτρον ἔχων ἀριθμὸς πρὸς μὲν ἑαυτὸν σύνθετός ἐστι πρὸς δὲ ἄλλον ἀσύνθετος· ἰδοὺ γὰρ ἐν τῷ ἑκτεθέντι ὑφ' ἡμῶν παραδείγματι ὁ κζ ἐν μέτρον ἔχει τὸ τοῦ γ· ὡσαύτως καὶ ὁ λθ καὶ ὁμῶς οὐκ εἰσὶ πρὸς ἀλλήλους ἀσύνθετοι, πρὸς δὲ ἑαυτοὺς σύνθετοι· ἀμφοτέροι γὰρ ὑπὸ τοῦ γ μετροῦνται. χρή οὖν εἰδέναι ὅτι εἰ ἦν δυνατὸν μείζονα στίχον ποιῆσαι, εἶχε καὶ ὁ κζ δέξασθαι ἄλλο μέτρον τὸ τοῦ θ, ὅτε τὸν θ ἐμέλλομεν ποιεῖν· ἐννάκις γὰρ τρεῖς κζ. καὶ ὁ λθ δὲ ὡσαύτως ἄλλο μέτρον δέξαιτο ἂν τὸ τοῦ ιγ, εἴ γε ἦμεν λαβόντες τὸν ιγ· τρισκαίδε-
80 κάκις γὰρ τρεῖς λθ. ἐπεὶ οὖν διὰ τοῦτο οὐ δυνάμεθα ὅσον ἐκ τούτου ἀποφύνασθαι καὶ εἰπεῖν ἔστι καθόλου ἐπὶ τῆς ἐκθέσεως τῶν περιττῶν· οἱ μὲν ἑαυτοὺς πολλαπλασιαζόντες, ποιοῦσι πρὸς μὲν ἑαυτοὺς συνθέτους πρὸς δὲ ἀλλήλους ἀσυνθέτους, οἷον ὁ θ καὶ ὁ κε·
85 πρὸς μὲν ἀλλήλους ἀσύνθετοι, πρὸς δὲ ἑαυτοὺς σύνθετοι, ἐπειδὴ τὸν μὲν θ ὁ γ πολλαπλασιασθεὶς ἐποίησε, τὸν δὲ κε ὁ ε· ὡσαύτως καὶ ὁ κε καὶ ὁ μθ, ἐπειδὴ τὸν μὲν κε ὁ ε ἐποίησεν ἐφ' ἑαυτὸν πολλαπλασιασθεὶς, τὸν δὲ μθ ὁ ζ. οἱ δὲ γενόμενοι ἐκ τῶν ἑαυτοὺς πολλα-
90 πλασιαζόντων οὗτοι δεύτεροι καὶ σύνθετοί εἰσι· ταῦτα μὲν περὶ τῆς μεθόδου ταύτης. ἴστέον δὲ ὅτι ἔστι μέθοδος ὥστε εὐρίσκειν σε τοὺς πρὸς μὲν ἑαυτοὺς συνθέτους πρὸς δὲ ἀλλήλους ἀσυνθέτους, οἷον τέως ὥς ἐπὶ μὲν τῶν τετραγώνων περιττῶν δηλονότι
95 γυμνάσωμεν· λαβὲ πρώτους καὶ ἀσυνθέτους ἀριθμούς, οἷον τὸν γ καὶ τὸν ε, πολλαπλασίασον τούτους ἐφ' ἑαυτοὺς, καὶ γίνονται θ (τρὶς τρία) καὶ κε (πεντάκις ε). ἰδοὺ οὗτοι οἱ γενόμενοι τετράγωνοι πρὸς ἀλλήλους μὲν ἀσύνθετοί εἰσι πρὸς δὲ ἑαυτοὺς σύνθετοι,
100 ὡσαύτως ἐπ' ἄπειρον· τὸν μὲν ἐκ τοῦ θ προϊόντα ἐπὶ τὸν γ πολλαπλασίαζε, τὸν δὲ ἐκ τοῦ κε ἐπὶ τὸν ε, καὶ πάντας ποιήσεις πρὸς μὲν ἑαυτοὺς συνθέτους πρὸς δὲ ἀλλήλους ἀσυνθέτους, οἷον πάλιν ποιήσον τρεῖς θ κζ, ἀλλὰ καὶ πεντάκις κε ρκε· ὁ ἄρα κζ καὶ ὁ ρκε
105 πρὸς μὲν ἀλλήλους εἰσὶν ἀσύνθετοι, πρὸς δὲ ἑαυτοὺς σύνθετοι· καὶ πάλιν ποιήσον τρεῖς κζ, γίνονται πα, καὶ πεντάκις ρκε γίνονται χκε· οἱ ἄρα πα καὶ χκε πρὸς ἀλλήλους μὲν ἀσύνθετοι πρὸς δὲ ἑαυτοὺς σύνθετοι. καὶ ἐφεξῆς τοῦτο ποιῶν εὐρήσεις τοὺς γινομένους
110 πάντας τοιούτους. οὐ μόνον δὲ ἐπὶ τῶν τετραγώνων ἐστὶ τοῦτο, ἀλλὰ καὶ ἐπὶ τῶν ἑτερομηκῶν (καὶ αὐτὸς μὲν ἔχει προϊόντων εἰπεῖν ὅτι ἑτερομήκεις καὶ προμήκεις

διαφέρουσιν· ἑτερομήκεις μὲν γὰρ εἰσιν οἱ μονάδι μόνοι διαφέροντες, οἷον ὁ δ καὶ ὁ γ, ὁ ε καὶ ὁ ζ, καὶ οἱ τοιοῦτοι· προμήκεις δὲ οἱ δυάδι ἢ καὶ τριάδι καὶ τετράδι 115 καὶ πλείονι ἀριθμῷ, οἷον ὁ γ καὶ ὁ ε ἢ ὁ γ καὶ ὁ ζ). ἂν τοίνυν λάβῃς ἀριθμούς τέσσαρας πρὸς ἀλλήλους πρώτους καὶ ἀσυνθέτους καὶ πολλαπλασιάσῃς τοὺς δύο καὶ πάλιν τοὺς δύο καὶ ἀπὸ τῶν μειζόνων ἄχρι τοσούτου ἀφαιρήσῃς ἄχρις οὗ μηκέτι ἔστι τοῦ μεί- 120 λονος ἀφελεῖν, καταντήσεις εἰς <μονάδα> τὸ κοινὸν αὐτῶν μέτρον. τοσαῦτα καὶ περὶ τούτου. ἀναγινώσκεσθω λοιπὸν ἡ λέξις, καὶ εἴ που τί ἐστὶν ἐν αὐτῇ ἄσαφές, ἐξηγήσεως ἀξιούσθω.

πζ. ἀρξάμενος ἀπὸ τοῦ πρωτίστου. τουτέστιν ἀπὸ τοῦ γ, τοὺς δύο μέσους διαλείποντας, τὸν τε ε καὶ τὸν ζ, ὅταν ἐφ' ἑαυτὸν πολλαπλασιαζόμενος τὸν θ μετρεῖ· εἰ δὲ τὸν ιε ἐπὶ τὸν ε πολλαπλασιαζόμενος, τὸν ια καὶ τὸν ιγ μέσους ἔχει· καὶ ἐφεξῆς ὡς εἴρηται ἐν τῇ 5 μεθόδῳ ἄχρις οὗ μετρεῖ δύο μέσους εὐρίσκεται ἔχων.

πη. ἀλλὰ τὸν μὲν πρώτον. ἀντὶ τοῦ τὸν πρώτως ὑπὸ τοῦ γ μετρούμενον, ὃ ἐστὶ τὸν θ. μὴ οὖν εἰκῇ μετρεῖ- τωσαν, ἀλλὰ τὸν θ οὕτω κείμενον ὡς δύο μέσους ὑπερβαίνειν, τὸν τε ε καὶ τὸν ζ· μετρήσει ὁ κατὰ τὴν τοῦ πρωτίστου ἐν τῷ στίχῳ κείμενος ποσότητα, ὃ 5 ἐστὶν ὁ γ.

πθ. κατὰ τὴν ἑαυτοῦ. ἀντὶ τοῦ ἐφ' ἑαυτὴν πολλαπλα- σιαζόμενος.

φ. τρεῖς γάρ. ἀντὶ τοῦ τρεῖς γὰρ τρεῖς θ γίνεται.

φα. τὸν δὲ ἀπ' ἐκείνου. ἀντὶ τοῦ τὸν ιε τὸν ὄντα μετὰ τὸν θ διαλείποντα <β>· διαλείπουσι γὰρ μέσοι

πζ = Philop. ρα πη = Philop. ρβ πθ = Philop. ρβ

φ = Philop. ρβ φα = Philop. ργ

πζ, ι = Nicom. XIII, 3. 2 = Nicom. XIII, 3.

πη, ι = Nicom. XIII, 3. πθ, ι = Nicom. XIII, 3.

φ, ι = Nicom. XIII, 3. φα, ι = Nicom. XIII, 3.

113 μὲν γάρ A: γὰρ μὲν M

120 ἀφαιρήσεως A: ἀφαιρήσεις M

121 μονάδα scripsi: om. AM

πζ. ι πρωτίστου AM et Nicom. SH: πρώτου Nicom.

2 διαλείποντας AM, Nicom. C, Philop.: διαλείποντα Nicom.

SH: παραλείποντας Nicom. (ex ci. Ast): παραλείποντα Nicom. GP

3 πολλαπλασιαζόμενος M: πολλαπλασιασάμενος A

4 μετρεῖ A: μετρεῖ M

πη. ι πρώτων AM et Nicom. H: πρώτως Nicom. || alt. τὸν M: om. A

φ. ι pr. τρεῖς Nicom.: τρεῖς AM

φα. ι ἀπ' Nicom.: ἐπ' AM (cf. etiam lin. 6)

2 β scripsi: om. AM

73 πρὸς ἀλλήλους A: πρὸς ἄ ἀλλήλους M

76 ποιῆσαι M: ποιεῖσαι A || εἶχε καὶ M: εἶχεν A

78 ἄλλο M: ἄλλω A || μέτρον M: μέτρῳ A

79 τὸ M: τῷ A

80 διὰ τοῦτο M: ἐκ τούτου (vel τούτου) A

81 ἔστι (Philop.) ὅτι AM

89-90 πολλαπλασιαζόντων A: πλησιαζόντων M

92 εὐρίσκειν (ut vid.) AM: εὐρίσκειν P: εὐρίσκεσθαι P² i. m. || σε M: τε A

93 ἀλλήλους scripsi: ἄλλους AM

110 πάντας A (ut vid.): πάντως M

πάλιν δύο, ὁ ια καὶ ὁ ιγ· μετρήσει ὁ γ κατὰ τὴν πο-
σότητα τοῦ βου τεταγμένου ἀντὶ τοῦ κατὰ τὸν ε·
5 οὗτος γὰρ δεύτερος· ὁ γὰρ γ τὸν ιε κατὰ τὸν ε μετρεῖ·
πεντάκις γὰρ τρεῖς ιε. | τὸν δὲ πάλιν ἀπ' ἐκείνου. τὸν
δὲ κα τὸν μετὰ τὸν ιε διαλείποντα τοὺς β, τὸν τε ιζ
καὶ τὸν ιθ, μετρήσει ὁ γ.

ρβ. κατὰ τὴν τοῦ γου ἀριθμοῦ ποσότητα. ἀντὶ τοῦ ζ·
τρίτος γὰρ ὁ ζ. ὁ οὖν γ κατὰ τὸν ζ μετρεῖ τὸν κα·
ἐπτάκις γὰρ τρεῖς κα.

ργ. τὸν δὲ ἔτι περαιτέρω κείμενον. ἀντὶ τοῦ τὸν δὲ
κζ τὸν μετὰ τὸν κα διαλείποντα β τὸν τε κγ καὶ τὸν
κε μετρήσει <ὁ γ>.

ρδ. κατὰ τὴν τοῦ τετάρτου ποσότητα. ὁ ἔστι κατὰ
τὸν θ μετρεῖ· ἑννάκις γὰρ τρεῖς κζ.

ρε. ἔπειτα μετὰ τοῦτο ἀπ' ἄλλης ἀρχῆς. μετὰ δὲ τὸ
πληρῶσαι σε ἕως οὗ θέλεις τὸν γ μέτελθε ἐπὶ τὸν ε
καὶ πάλιν ὡς ἀπ' ἄλλης ἀρχῆς αὐτῷ μέτρει διαλιμ-
πάνων δ.

ρς. ἀλλὰ τὸν μὲν αον. ἀλλὰ τὸν μὲν ιε· πρῶτον γὰρ
τοῦτον ὁ ε μετρεῖ.

ρβ = Philop. ρδ

ργ = ρδ =

ρε = Philop. ρε ρς = Philop. ρε

6 = Nicom. XIII, 3. ρβ,ι = Nicom. XIII, 3.

ργ,ι = Nicom. XIII, 3. ρδ,ι = Nicom. XIII, 3.

ρε,ι = Nicom. XIII, 4. ρς,ι = Nicom. XIII, 4.

4 βου (Philop.) β AM

5 κατὰ (Philop.) καὶ AM

6 τὸν ... ἐκείνου AM et Nicom. SH: τὸν δὲ περαιτέρω πάλιν
Nicom.

7 τοὺς scripsi: τοῖς AM

7-8 τὸν et τὸν (Philop.) τῷ et τῷ AM

ρβ. ι γου Nicom.: γ AM || ἀριθμοῦ ποσότητα AM: τεταγμένου
Nicom.: τεταγμένου ποσότητα Nicom. S

ργ. ι τὸν ... κείμενον AM: inter περαιτέρω et κείμενον Nicom.
hab. ὑπὲρ δύο || alt. δὲ M: om. A

2 τὸν μετὰ τὸν scripsi: τῷ μετὰ τῷ AM

3 ὁ γ scripsi (et cf. etiam ρα, 8): om. AM

ρδ. ι τετάρτου A: δ M || ποσότητα AM: τεταγμένου Nicom. ||
ὁ ἔστι M: τουτέστι A

2 θ scripsi: κθAM

ρε. ι ἔπειτα AM: ἐπ' εἶτα M² s. v. || τοῦτο AM et Nicom. H:
τοῦτον (εἶτα μετὰ τοῦτον ἀπ' ἄλλης ἀρχῆς ἐπὶ κτλ.) Nicom.

3 μέτρει (Philop.) μετρεῖ AM

4 δ A: δὲ M

ρς. ι αον M: α A

ρζ. κατὰ τὴν τοῦ πρώτου ποσότητα. ἀντὶ τοῦ κατὰ
τὸν γ· τρεῖς γὰρ ε ιε.

ρη. τὸν δὲ δεύτερον. ἀντὶ τοῦ τὸν κε· τοῦτον γὰρ
μετρεῖ μετὰ τὸν ιε ἐφ' ἑαυτὸν πολλαπλασιαζόμενος·
πεντάκις γὰρ ε κε.

ρθ. τὸν δὲ τρίτον. τὸν δὲ λε· τοῦτον γὰρ τρίτον μετὰ
τὸν κε μετρεῖ κατὰ τὸν γ ἀριθμὸν τῇ τάξει, ὁ ἔστι τὸν
ζ· ἐπτάκις γὰρ ε λε.

ρ. πάλιν δὲ ἀνωθεν. πληρώσας δὲ τοῦτον ἕως οὗ
θέλεις πάλιν ἄρξαι τοῦ τρίτου, ὁ ἔστι τοῦ ζ, καὶ ς
ὑπολιμπάνων μέτρει ὁμοίως ὡς προεῖρηται.

ρα. ὥστε τὸ μὲν μετρεῖν διαδέχονται. τὸ μὲν μέτρον
κατὰ τὴν τάξιν τῶν ἐν τῷ στίχῳ ἀριθμῶν γίνεται,
οἷον πρῶτος μετρεῖ ὁ πρῶτος ἐν τῷ στίχῳ ὁ ἔστιν ὁ
γ, δεύτερος δὲ ὁ ε, ἐπειδὴ δευτέραν τάξιν ἔχει, τρίτος
δὲ ὁ ζ, καὶ τέταρτος ὁ θ, καὶ πέμπτος ὁ ια, καὶ ἑφεξῆς 5
ὁμοίως. ἡ δὲ τάξις τῶν διαλειπόντων, ὡς εἴρηται,
κατὰ δύο τρόπους γίνεται ἢ κατὰ τὴν εὐτακτον τῶν
ἀρτίων ἐπ' ἄπειρον προκοπὴν ἢ κατὰ τὸν διπλασια-
σμὸν τῆς χώρας, καὶ ἤδη ἐν τῇ μεθόδῳ εἰρήκαμεν πῶς.

ρβ. ἐὰν οὖν σημείοις τισίν. αὐτὸς μὲν λέγει ὅτι ση-
μεῖόν τι ἐπάνω τῶν μετρούμενων ποιεῖ καὶ γνωρίσεις,
ποῖοι μὲν πρῶτοι καὶ ἀσύνθετοι ὅτι οἱ μὴδὲ ὅλως
μετρούμενοι, ποῖοι δὲ οἱ δεύτεροι καὶ σύνθετοι οἱ ὑπὸ 5
β ἀριθμῶν μετρούμενοι, ποῖοι δὲ οἱ πρὸς ἑαυτοὺς μὲν
σύνθετοι πρὸς ἀλλήλους δὲ ἀσύνθετοι οἱ ἅπαξ. σὺ δὲ
αὐτὰ τὰ μέτρα ἐπάνω ἀποτίθεσο πρὸς πλείονα διά-
γνωσιν.

ρζ = Philop. ρε ρη = Philop. ρε

ρθ = Philop. ρε ρ = Philop. ρε

ρα = Philop. ρς

ρβ = Philop. ρζ

ρζ,ι = Nicom. XIII, 4. ρη,ι = Nicom. XIII, 4.

ρθ,ι = Nicom. XIII, 4. ρ,ι = Nicom. XIII, 5.

ρα,ι = Nicom. XIII, 6.

ρβ,ι = Nicom. XIII, 7.

ρζ. ι κατὰ... ποσότητα AM: κατὰ τὴν τοῦ ἐν τῷ στίχῳ πρώτου
τεταγμένου ποσότητα Nicom.

ρθ. ι alt. δὲ M: om. A

ρα 4 δευτέραν M: δευτέρας A (ut vid.) || ἔχει (Philop.) ἔχουσι
AM

6 διαλειπόντων (Philop.) διαλιπόντων AM

ρβ. ι ἐὰν M: πᾶν A

4-5 ὑπὸ β ἀριθμῶν (Philop.) δεύτεροι AM

6 ἀλλήλους scripsi: ἄλλους M: ἄλλα A || ἅπαξ, cf. n. ad loc.

ργ. ἐν μόνον μόριον. ἀντὶ τοῦ πρὸς ἑαυτοὺς μὲν σύνθετοι πρὸς δὲ ἀλλήλους ἀσύνθετοί εἰσι· μετὰ γὰρ τὸ κοινὸν μέτρον τῆς μονάδος καὶ ἄλλο ἐν μόνον ἑτερώ-
νυμον ἔξουσιν, οἷον ὁ μὲν θ τὸ γ^{ον}, ὁ δὲ κε τὸ ε^{ον}.

ρδ. καὶ μὴ τῇ ἑαυτοῦ. ὁρῶς ὅπως οὐκ ἀποφαίνεται ἐκ τοῦ ὑπὸ δύο μετρεῖσθαι ὡς εἰδῶς ὅτι οὐ πάντως χωρεῖ ὁ χάρτης τὸν στίχον ἐπὶ πλεῖον, ἀλλὰ ἐκ τοῦ αὐτὸν καθ' αὐτὸν μὴ πολλαπλασιάζεσθαι, ἀλλ' ὑπὸ
5 ἐνὸς καὶ ἑτέρου, οἷον ὁ ιε ὑπὸ ἐνὸς τοῦ γ καὶ ἄλλου τοῦ ε πολλαπλασιαζόμενος γίνεται, ὥστε δευτερος καὶ σύνθετός ἐστιν, ἐπειδὴ οὐκ ἐποίησεν αὐτὸν ἀριθμὸς ἐφ' ἑαυτὸν πολλαπλασιασθεὶς, ἀλλ' ἐπὶ ἑτερον.

ρε. πῶς δὲ ἂν καὶ μέθοδον ἔχοιμεν. ἵνα μὴ ὡς οἱ ἰδιῶ-
ται λέγωμεν ὅτι “ἄρα οὗτός ἐστιν ὁ πρῶτος καὶ ἀσύνθετος ἀριθμὸς ἢ ἄλλος,” μέθοδον παραδίδωσι δι' ἧς ὀφείλομεν εὐρίσκειν ἀφύκτοις λίνοις τοὺς τε
5 πρῶτους καὶ ἀσυνθέτους καὶ τοὺς δευτέρους τε καὶ συνθέτους. καὶ λέγει ὅτι λάμβανε τοὺς ἀναδοθέντας ἀριθμούς· δῆλον οὖν ὅτι ἄνισοί εἰσι· πῶς γὰρ ἴσοι; οἱ γὰρ ἴσοι οὐδὲ διαφορὰν ἔχουσιν. εἰ οὖν ἄνισοί εἰσιν, ὁ μὲν μείζων ἐστὶν ὁ δὲ ἐλάττω· ἀφαίρει τοῖνυν ἀπὸ
10 τοῦ μείζονος τὸν ἐλάττωνα καὶ τοῦτο ποιεῖ ἄχρις οὗ μηδὲν ἐστὶ μηκέτι ἀφαιρήσειν· καὶ εἰ μὲν εἰς μονάδα καταντήσομεν, πάντως οἱ ἀναδοθέντες πρῶτοι καὶ ἀσύνθετοί εἰσιν, εἰ δὲ εἰς ἄλλον ἀριθμόν, πάντως δεύτε-
ροι καὶ σύνθετοι. οἷον ὑποκεισθῶσαν ἀριθμοὶ ὁ τε νγ
15 καὶ ὁ λα· λαβὲ τοῦ νγ λα, λοιπαὶ κβ· πάλιν τὰς κβ ἀφαιρήσον ἀπὸ τοῦ λα, λοιπαὶ θ· τὰς θ πάλιν λαβὲ ἀπὸ τῶν κβ, λοιπαὶ ιγ· πάλιν ἀπὸ τῶν ιγ λαβὲ θ, λοιπαὶ δ· τούτων γ, λοιπὴ μονάς. οὐκοῦν ὁ νγ καὶ ὁ λα πρῶτοι καὶ ἀσύνθετοι καὶ τῷ ὄντι εἰσιν οὗτοι.
20 ὑποκεισθῶσαν δὲ ἑτεροὶ ἀριθμοὶ, ὁ κγ καὶ ὁ με· ἀφαιροῦμεν τῶν με κγ, λοιπαὶ κβ· τῶν κγ ἀφαιροῦμεν κβ, λοιπὴ α· ταύτην πάλιν ἀφαιρῶ τὴν μονάδα ἀπὸ τῶν κβ, ἅπαξ κα· λοιπὸν μένει μονάς ὥστε ὁ κγ καὶ ὁ

ργ = Philop. ρθ ρδ = Philop. ρι ρε = Philop. ριγ

ργ,ι = Nicom. XIII, 8. ρδ,ι = Nicom. XIII, 8.

ρε,ι = Nicom. XIII, 10.

ργ. 1 ἑαυτοῦ (Philop.) ἀλλήλους AM

2 ἀλλήλους (Philop.) ἄλλους AM

4 τὸ γ^{ον} (Philop.) τὸν γ AM || τὸ ε^{ον} (Philop.) τὸν ε AM

ρδ. 1 τῇ ἑαυτοῦ A: τῆς αὐτοῦ M

8 ἐπὶ M: ἔπιον A

ρε. 2 ἄρα scripsi: ἄρα AM

4 λίνοις A: om. M

5–6 τοὺς δευτέρους τε καὶ συνθέτους A: τοὺς συνθέτους τε καὶ δευτέρους M

8 εἰ A: οἱ M

13 εἰ A: οἱ M

15 τοῦ scripsi: τὸν AM (ut vid.)

22 λοιπὴ M: λοιπὸν A

23 ἅπαξ κα (sc. κα¹⁵). cf. Nicom., p. 35, 13: ὁσάκις δυνατόν.

με πρῶτοι καὶ ἀσύνθετοί εἰσι πρὸς ἀλλήλους. εἰ δὲ ἐκθῶμεθα τὸν κα, εἰ τύχη, καὶ τὸν μθ, λαμβάνομεν 25
ἀπὸ τοῦ μθ κα, λοιπαὶ κη· ἀπὸ τῶν κη λαβὲ κα, λοιπαὶ ζ· πάλιν ἀπὸ τοῦ κα λαβὲ ζ, λοιπαὶ ιδ· ἀπὸ τῶν ιδ ἄφελε ζ, λοιπαὶ ζ· μένει ἄρα ζ, ὅς μέτρον ἐστὶ κοινὸν τοῦ κα καὶ τοῦ μθ. δευτεροὶ ἄρα καὶ σύνθετοί εἰσιν· ὑπὸ γὰρ τοῦ ζ μετροῦνται ἀμφότεροι καὶ ὁ κα 30
καὶ ὁ μθ. εὐρίσκεται τοῖνυν ἐκ τῆς μεθόδου ταύτης τὸ κοινὸν μέτρον καὶ οὐχ ἀπλῶς τοῦτο, ἀλλὰ τὸ μέγιστον· οὐ γὰρ τὸ ἐλάχιστον. ταῦτά ἐστιν ἃ βούλεται διὰ τούτων εἰπεῖν. σαφῆ δὲ τυγχάνει πάντα ἄχρι τοῦ τέλους αὐτῶν μηδεμιᾶς ἐξηγήσεως δεόμενα. 35

ρς. περὶ τῶν τοῦ ἀρτίου εἰδῶν κατὰ δευτέραν διαίρεσιν καὶ ἀπλῶς περὶ τελείων καὶ τῶν συγγενῶν. πάλιν δὲ ἄνωθεν. ἑτέραν διαίρεσιν τοῦ ἀρτίου θέλει παραδοῦναι. λέγει τοῖνυν ὅτι τῶν ἀρτίων οἱ μὲν εἰσιν ὑπερτελεῖς, οἱ δὲ ἑλλιπείς, οἱ δὲ τέλειοι. καὶ ἑλλιπείς μὲν εἰσιν ὧν 5
τὰ μέρη ἐλάττωνα αὐτῶν εἰσιν· οἷον ὁ δ ἑλλιπὴς ἐστὶν· ἔχει γὰρ μέρη ἡμισυ καὶ δ^{ον}. ἡμισυ μὲν β, δ^{ον} δὲ μία· β δὲ καὶ α γ· αὐτὰ γὰρ τῶν δ ἐλάττω. ὥσαύτως καὶ ὁ η ἑλλιπὴς· ἔχει γὰρ μέρη ἡμισυ, δ^{ον}, ὄγδοον· ἡμισυ μὲν δ, δ^{ον} δὲ β, ὄγδοον δὲ α· δ δὲ καὶ 10
β καὶ ἐν γίνονται ζ, αὐτὰ δὲ ζ ἐλάττω τῶν η. ὥσαύτως δὲ καὶ ὁ ι καὶ ἀπλῶς οἱ τοιοῦτοι ἑλλιπείς εἰσιν. ὑπερτελεῖς δὲ, ὧν τὰ μέρη πλείονας ἑαυτῶν ποιοῦσιν ἀριθμούς· οἷον ὁ ιβ ὑπερτελής ἐστι· τὰ γὰρ μέρη αὐτοῦ τὸν ις ποιεῖ, ὅς πλείων ἐστὶ τοῦ ιβ· ἔχει γὰρ ὁ ιβ 15
ἡμισυ ζ, γ^{ον} δ, δ^{ον} γ, ζ^{ον} β, δωδέκατον α. ζ δὲ καὶ δ, γ, β, καὶ α γίνονται ις. ὥσαύτως καὶ ὁ κδ καὶ οἱ τοιοῦτοι πάντες ὑπερτελεῖς εἰσι. τέλειος δὲ ἐστὶν ὁ τοῖς ἑαυτοῦ μέρεσιν ἴσος ὧν, οἷον ὁ ζ τέλειός ἐστιν· ἔχει γὰρ μέρη ἡμισυ γ, τρίτον β, ἕκτον α· γ δὲ καὶ β 20
καὶ μία ζ γίνονται. ὥσαύτως καὶ ὁ κη καὶ οἱ τοιοῦτοι. ἰστέον δὲ ὅτι οἱ μὲν ὑπερτέλειοι τοῖς ἑξαδακτύλοις καὶ τοῖς ὑπὲρ τὸ δέον ἔχουσιν ἄτακτον αὐξήσιν ἐοίκασιν, οἱ δὲ ἑλλιπείς τοῖς τετραδακτύλοις καὶ τοῖς τέρασιν, οἱ δὲ τέλειοι τὸ σύμμετρον διώκουσι· πᾶσα γὰρ 25
κακία διττὴ ἐστὶν, ἢ μὲν καθ' ὑπερβολήν, ἢ δὲ κατ' ἔλλειψιν. οὕτω γοῦν καὶ ἐπὶ τῶν ἀρετῶν, δικαιοσύνης μὲν κατὰ τὸ πλεονάζον κακία ἢ πλεονεξία, κατὰ τὸ ἐλλείπον δὲ μειονεξία· ἀνδρείας δὲ κατὰ τὸ πλεονάζον θρασυτής, καὶ δειλία κατὰ τὸ ἐλλείπον. ὥσαύτως καὶ 30
ἐπὶ σωφροσύνης ἀκολασία καὶ ἡλιθιότης καὶ ἐπὶ φρονήσεως πανουργία καὶ ἀπλότης. ὁ γοῦν τέλειος πέ-

ρς = Philop. ριδ, ριε

ρς,ι–2 = Nicom. XIV, ι.

ρς. ι–2 περὶ ... ἄνωθεν AM: περὶ τῶν τοῦ ἀρτίου εἰδῶν κατὰ δευτέρον (δευτέραν m) διαίρεσιν Nicom. Gm: πάλιν δὲ ἄνωθεν Nicom. (et cf. etiam Hoche ad loc.)

7, 9, et 10 δ^{ον} M (hab. τέταρτον): δ A

27 δικαιοσύνης (Philop.) δικαιοσύνη AM

28 κακία M: ἀδικία A || alt. κατὰ M: καὶ A

φευγε ταῦτα καὶ σύμμετρός ἐστιν· εἰσὶ δὲ οἱ μὲν ὑπερ-
 τελεῖς καὶ ἑλλιπεῖς πάμπολλοι, οἱ δὲ τέλειοι ὀλίγοι·
 35 καὶ οἱ μὲν ὑπερτελεῖς καὶ ἑλλιπεῖς πάμπολλοι εἰσιν
 ὡς χεῖριστοι· τοὺς πλείους γὰρ κακίους ὁ Βίας εἶπεν.
 οἱ δὲ τέλειοι ὡς κάλλιστοι ὀλίγοι· τὰ γὰρ καλὰ σπά-
 νια. τοσοῦτον δὲ σπάνιοι εἰσιν ὅτι ἄχρι μὲν δεκάδος
 ἀπὸ μονάδος εἰς ἐστίν, ὁ ς , ἀπὸ δὲ δεκάδος ἄχρι ἑκα-
 40 τοντάδος ἄλλος εἰς, ὁ $\kappa\eta$ μόνος, ἀπὸ δὲ ἑκατοντάδος
 ἄχρι χιλιάδος εἰς ὁ $\upsilon\rho\varsigma$, καὶ ἀπὸ χιλιάδος ἕως μυριάδος
 εἰς ὁ $\eta\rho\kappa\eta$ · καὶ ὁ μὲν πρῶτος τέλειος ὁ ἐστίν ὁ ς αὐτὸ
 τοῦτο ἔχει τὸ $\xi\varsigma$, ὁ δὲ δεύτερος ὁ ἐστίν ὁ $\kappa\eta$ εἰς η λήγει,
 ὁ δὲ τρίτος πάλιν ὁ $\upsilon\rho\varsigma$ εἰς ς , ὁ δὲ τέταρτος ὁ $\eta\rho\kappa\eta$
 45 εἰς η . εὐρήσεις δὲ τοῦτο ἐφεξῆς φυλαττόμενον ἓνα παρ'
 ἓνα λαμβάνων. | ἐπεὶ τοίνυν περὶ τούτων διελέχθη-
 μεν, ἔλθωμεν λοιπὸν ἐπὶ τὴν μέθοδον τὴν εὐρίσκουσαν
 ἀναγκαστικοῖς λίνιοις τοὺς τελείους πάντας. ἔστι τοί-
 νυν ἡ μέθοδος γλαφυρά τις οὕσα τοιαύτη· ἐκθοῦ ἀπὸ
 50 μονάδος τοὺς ἀρτιάκας ἀρτίους ἕως οὗ βούλει καὶ
 συντίθει τούτους ἕως οἴου βούλει ἀρτιάκας ἀρτίου.
 καὶ εἰ μὲν ὁ ἀνελθὼν περιττός πρῶτος ἦ καὶ ἀσύνθε-
 τος, γίνωσκε ὅτι πάντως γενήσεται ὁ ἐξ αὐτοῦ τέλειος
 πολυπλασιασθέντος ἐφ' ὃν ἔληξαμεν ἀρτιάκας ἄρτιον.
 55 εἰ δὲ μὴ ἦ πρῶτος καὶ ἀσύνθετος, ἀλλὰ δεύτερος καὶ
 σύνθετος, παρέρχου· ἀδύνατον γὰρ ἐξ αὐτοῦ γενέσθαι
 τέλειον. ἵνα δὲ σαφές ἦ τὸ λεγόμενον, ἐκκείσθω τὸ
 χύμα τῶν ἀρτιάκας ἀρτίων ἀπὸ μονάδος ἕως οὗ βου-
 λόμεθα· α , β , δ , η , $\iota\varsigma$, $\lambda\beta$, $\xi\delta$, $\rho\kappa\eta$, $\sigma\upsilon\varsigma$, $\phi\iota\beta$. ἔλθωμεν
 60 τοίνυν ἄχρι τοῦ β συντιθέντες καὶ ἴδωμεν εἰ γίνεται
 τέλειος. λάβωμεν οὖν α καὶ β , γίνονται γ · ὁ γ τοίνυν
 πρῶτος καὶ ἀσύνθετός ἐστι, ποιήσει ἄρα τέλειον·
 πολλαπλασίασον γὰρ αὐτὸν ἐφ' ὃν ἔληξας τῶν ἀρ-
 τιάκας ἀρτίων· ἔληξας δὲ ἐπὶ τὸν β , τρις β ς , ὁ ς ἄρα
 65 τέλειός ἐστιν. εἴτα ἔλθωμεν ἐπὶ τὸν δ · α , β , δ , γίνονται
 ζ · ὁ ζ πρῶτος καὶ ἀσύνθετός ἐστιν· οὐκοῦν ποιήσει
 πολλαπλασιασθεὶς πάλιν ἐφ' ὃν ἔληξας ὁ ἐστίν ἐπὶ
 τὸν δ (εἰς ἐκείνον γὰρ ἔληξας), ἐπτάκας οὖν δ $\kappa\eta$ · ὁ $\kappa\eta$
 ἄρα τέλειός ἐστιν. ὁμοίως καὶ ἐπὶ τῶν ἐφεξῆς· οἶον
 70 ἔλθωμεν ἐπὶ τὸν $\langle\eta\rangle$ · α , β , δ , η , γίνεται $\iota\epsilon$ · ὁ $\iota\epsilon$ δὲ
 οὐκ ἐστὶ πρῶτος καὶ ἀσύνθετος· μετρεῖ γὰρ αὐτὸν ὁ
 γ καὶ ὁ ϵ · οὐκ ἄρα ποιήσει τέλειον· πολλαπλασιασ-
 θεὶς γὰρ ἐφ' ὃν ἔληξας ὁ ἐστίν ἐπὶ τὸν η ποιεῖ τὸν $\rho\kappa$ ·
 ὁ δὲ $\rho\kappa$ οὐκ ἐστὶ τέλειος, ἀλλ' ὑπερτέλειος. πάλιν λά-
 75 βωμεν τὸν $\iota\varsigma$ · α , β , δ , η , $\iota\varsigma$ γίνονται $\lambda\alpha$ · οὗτος πρῶτος
 καὶ ἀσύνθετος· οὐκοῦν πολλαπλασιασθεὶς ἐπὶ τὸν $\iota\varsigma$
 ποιήσει τέλειον· τριακοντάκας γὰρ $\iota\varsigma$ καὶ ἅπαξ $\iota\varsigma$

γίνονται $\upsilon\rho\varsigma$ · ὁ δὲ $\upsilon\rho\varsigma$ τέλειός ἐστι. καὶ ἐπὶ τῶν λοι-
 πῶν τῇ αὐτῇ μεθόδῳ προῖων θηράσεις πάντας τοὺς
 τελείους καὶ οὐκ ἐστὶν ὅς διαφεύξεται σε, εἰ μένησαι 80
 ὁ εἶπεν ἄνω, ὅτι αἰεὶ ὁ παρὰ μονάδα ἴσος ἀρτίῳ πε-
 ριττός ἐστι, καὶ ἔφη ὅτι τοῦτο χρησιμεύει ἡμῖν εἰς τὴν
 τῶν τελείων κατάληψιν. εἴπωμεν οὖν πῶς συμβάλ-
 λεται, ἵνα μὴ ἀπὸ μονάδος συντιθῆς τοὺς ἀρτιάκας
 ἀρτίους κάμνης, μάλιστα εἰ ἄχρι πολλῶν ἀριθμῶν 85
 ἀρτιάκας ἀρτίων θέλεις γυμνάσαι τοῦτο· λάμβανε τοῦ
 ἀναδοθέντος σοι καθόλου ἀρτιάκας ἀρτίου μονάδα
 $\langle\kappa\alpha\iota\rangle$ τήρει, εἰ ὁ καταληφθεὶς πρῶτος καὶ ἀσύνθετός
 ἐστὶ, καὶ εἰ ἐστὶ πρῶτος καὶ ἀσύνθετος, πολλαπλα-
 σίαζε αὐτὸν ἐπὶ τὸν πρὸ τοῦ ἀναδοθέντος σοι ἀρτιά- 90
 κας $\langle\alpha\rangle$ ρτίου· ἀριθμοῦ ἀρτιάκας ἄρτιον ἀριθμὸν καὶ
 ποιήσεις τέλειον· οἶον ἀνεδόθη σοι ὁ $\lambda\beta$, λαβὲ μονάδα,
 γίνεται $\lambda\alpha$ · οὗτος πρῶτος καὶ ἀσύνθετός ἐστι· πολλα-
 πλασίασον αὐτὸν ἐπὶ τὸν πρὸ τοῦ $\lambda\beta$ ἀρτιάκας ἄρτι-
 ον, ὁ ἐστίν ἐπὶ τὸν $\iota\varsigma$, γίνεται $\upsilon\rho\varsigma$ · ὁ ἄρα $\upsilon\rho\varsigma$ τέλειός 95
 ἐστίν. εἰ δὲ μὴ ἐστὶν ὁ μετὰ τὴν μονάδα πρῶτος καὶ
 ἀσύνθετος, οὐ ποιήσει τέλειον· οἶον εἰ ἀναδοθῇ σοι ὁ
 $\iota\varsigma$, λαμβάνεις τὴν μονάδα, γίνεται $\iota\epsilon$ · οὗτος δεύτερος
 καὶ σύνθετός ἐστι. θαρρῶν οὖν τοῖς νεύροις τῆς ἀπο-
 δείξεως προαναφαίνῃ καὶ προλέγεις ὅτι οὐ ποιήσει 100
 τέλειον· πολλαπλασιασθεὶς γὰρ ἐπὶ τὸν πρὸ τοῦ $\iota\varsigma$
 ἀρτιάκας ἄρτιον, τὸν η , ποιεῖ $\rho\kappa$ · ὁ δὲ $\rho\kappa$ οὐκ ἐστὶ
 τέλειος, ἀλλ' ὑπερτέλειος. ταῦτά ἐστιν ἃ βούλεται διὰ
 τούτων εἰπεῖν· παρέλθωμεν οὖν θάττον τὴν λέξιν,
 σαφὴς γὰρ πᾶσα τυγχάνει. 105

ρζ. οὔτε διαφοροῦσα. ἀντὶ τοῦ οὔτε παρασύρουσα
 ἕτερον ἀριθμὸν μὴ ὄντα τέλειον ὡς τέλειον, ἀλλὰ καὶ
 τοὺς μὴ ὄντας τελείους οἶδε καὶ οὐκ ἀπατάται περὶ
 ἀριθμούς, καὶ τοὺς τελείους ὡς τελείους παραλαμβάνει. 5

ρη. καὶ τοῦτον ἀποφαινόμεθα ἐνεργεῖα πρῶτον εἶναι.
 καλῶς τὸ ἐνεργεῖα, ἐπειδὴ πρῶτως ἡ μονὰς πᾶς
 ἀριθμὸς ἐστὶ καὶ τέλειος καὶ τετράγωνος καὶ κύβος,
 εἴ γε ἐξ αὐτῆς πάντες γίνονται· ἀλλ' οὐκ ἐνεργεῖα
 ἐστὶ, ἀλλὰ δυνάμει. 5

ρζ = Philop. ρις ρη = Philop. ριζ

ρζ,ι = Nicom. XVI, 4. ρη,ι = Nicom. XVI, 4.

46 cf. Nicom. XVI, 4.

34 et 35 πάμπολλοι (Philop.)] πάμπολλοι AM
 38 τοσοῦτον δὲ M: om. A || σπάνιοι (Philop.)] σπάνια M: om. A
 41 ἕως M: ἄχρι A
 52 ἦ (Philop.)] εἰ AM
 54 πολυπλασιασθέντος M: πολλαπλασιασθέντος A
 60 συντιθέντες scripsi: συντεθέντες AM || γίνεται A: γίνηται
 M (ut vid.)
 70 pr. η (Philop.)] om. AM
 74 ὑπερτέλειος M: ὑπερτελής A

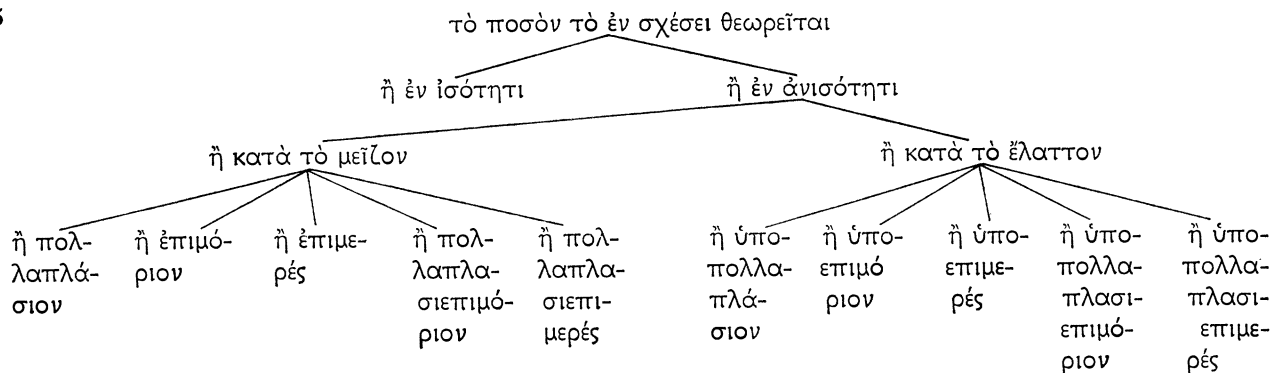
79 θηράσεις M: εὐρήσεις A
 80–81 μένησαι ὁ scripsi: μενήσθαι δὲ AM
 81 παρὰ M: περὶ A
 81–82 ἀρτίῳ περιττός (Philop.)] ἀρτιοπεριττός AM
 85 κάμνης M: καὶ (in comp.) μὲν ἦς A
 88 pr. καὶ scripsi: om. AM || καταληφθεὶς AM et Philop.
 (καταλειφθεὶς[?])
 90 πρὸ τοῦ M: τοῦ πρὸ A || σοι M: om. A
 91 ἀρτίου (Philop.)] om. AM
 ρζ. ι οὔτε διαφοροῦσα Nicom. S: οὔτε ἀδιαφοροῦσα Nicom.:
 οὔτε διάφορον ποιοῦσα A: ἄτε διάφορον ποιοῦσα M
 ρη. ι ἀποφαινόμεθα AM: ἀποφαινομαι Nicom.

ρθ. ἴση γὰρ τοῖς ἰδίοις μέρεσι κατὰ δύναμιν. ἰδοὺ τὸ κατὰ δύναμιν· ἄπαξ γὰρ ἓν μονὰς γίνεται. οἱ δὲ ἄλλοι πάντες τέλειοι κατ' ἐνέργειαν.

ρι. προτετεχνολογημένου δὲ ἡμῖν ἐν τοῖς ἄνω. ἐν τῇ ἀρχῇ εἰρήκαμεν ὅτι τοῦ ποσοῦ τὸ μὲν καθ' αὐτό ἐστὶ τὸ δὲ πρὸς ἕτερον· διδάξας τοίνυν περὶ τοῦ καθ' αὐτό ποσοῦ νῦν βούλεται περὶ τοῦ πρὸς τι ποσοῦ τοῦ πρὸς 5 ἕτερον ἔχοντος τὴν σχέσιν διαλεχθῆναι.

ρια. τοῦ πρὸς τι ποσοῦ. ἐπειδὴ τοῦ ποσοῦ τὸ μὲν αὐτὸ καθ' αὐτό λαμβάνεται τὸ δὲ ἐν σχέσει διαλαβὼν περὶ τοῦ αὐτοῦ καθ' αὐτό λοιπὸν περὶ τοῦ ἐν σχέσει διαλέγεται. διαιρεῖ τοίνυν τὸ ἐν σχέσει οὕτως·

5



αὕτη ἡ τοῦ πρὸς <τι κατὰ> τὴν σχέσιν ποσοῦ διαίρε-
10 σις. ἡ μὲν οὖν ἰσότης ἀδιαίρετος μένει, οὐκ ἔστι γὰρ
διαφορὰ τῶν ἴσων· οὐ γὰρ ὁ 1 τῶν 1 διαφέρει οὐδὲ ὁ
η τῶν η ἢ ὁ ρ τῶν ρ. τῶν δὲ ἀνίσων ἡ διαφορὰ τυγ-
χάνει· τὸ μὲν γὰρ μείζον τὸ δὲ ἑλάττω, ἀλλὰ τὸ
μείζον ἢ πολλαπλάσιον τοῦ ἐλάττωνος ὡς τὸ διπλά-
15 σιον ἢ τριπλάσιον ἢ τετραπλάσιον καὶ ἐφεξῆς· οὕτω
φαμέν τὸν η τοῦ δ μείζονα ὡς πολλαπλάσιον, διπλά-
σιος γὰρ ἐστὶν αὐτοῦ (δὶς γὰρ δ η)· ὡσαύτως καὶ
τὸν ς τοῦ γ, διπλάσιος γὰρ αὐτοῦ· ἀλλὰ καὶ τὸν ιε
τοῦ ε ὡς τριπλάσιον καὶ τὸν ις τοῦ δ ὡς τετραπλά-
20 σιον καὶ τὸν ιε τοῦ γ ὡς πενταπλάσιον καὶ ἐφεξῆς
ὁμοίως. ἡ οὖν πολλαπλάσιός ἐστὶν αὐτοῦ ἢ ἐπιμό-
ριος. ἐπιμόριος δὲ ἐστὶν ὅταν ἔχη αὐτὸν καὶ μόριον

ρθ = Philop. ρκα ρι = Philop. ρκβ

ρια = Philop. ρκγ

ρθ,1 = Nicom. XVI, 10. ρι,1 = Nicom. XVII, 1.

ρια,1 = Nicom. XVII, 2.

ρι. 1 προτετεχνολογημένου Nicom: προτετεχνολογημένου A:
προτετεχνολογουμένου Nicom. S: προτετεχνολογησαμένου M ||
δὲ A: om. M || ἐν τοῖς ἄνω AM et Nicom. CSH: ἐν τοῖς
ἄνωθεν add. Nicom. P: om. Nicom.

ρια. 1 τι AM: τι τοίνυν Nicom.

5-8 hab. in marg. M: om. A

9 τι κατὰ scripsi (et cf. Philop.): om. AM

10 οὐκ ἔστι M: οὐκέτι A

αὐτοῦ ἓν· οἷον ὁ γ τοῦ β ἐπιμόριός ἐστιν· ἔχει γὰρ
αὐτὸν καὶ μόριον αὐτοῦ ἓν· ὁ γὰρ γ ἔχει τὸν β καὶ τὸ
ἡμισυ αὐτοῦ, ὃ ἐστὶ τὴν α· δύο γὰρ καὶ μία γίνονται 25
γ· καὶ ἔστιν ἡμιόλιος οὗτος ὁ λόγος. ὡσαύτως δὲ καὶ
ὁ ἐπίτριτος τοῦ ἐπιμορίου ἐστίν, οἷον ὁ δ τοῦ γ ἐπί-
τριτος· ἔχει γὰρ τὸν γ καὶ τὸ τρίτον αὐτοῦ. ὡσαύτως
ἐστὶ καὶ ἐπιτέταρτος καὶ ἐπίπεμπτος, καὶ ἐπ' ἄπειρον
οὕτως. ἐπιμερὴς δὲ ἐστὶν ὁ ἔχων τινὰ ἀριθμὸν καὶ 30
μέρη αὐτοῦ· οὐ γὰρ μέρος· οἷον ὁ ε τοῦ γ· ἔχει γὰρ
τὸν γ καὶ β αὐτοῦ μέρη. πολλαπλασιεπιμόριος δὲ
ἐστὶν ὁ ἐκ τούτων συγκείμενος, οἷον ὁ ις τοῦ ε· τριπλα-
σίων γὰρ αὐτοῦ ἐστὶ μετὰ τοῦ καὶ ἐν μέρος ἔχειν· γ
γὰρ ε ιε καὶ α γίνονται ις. πολλαπλασιεπιμερὴς δὲ ὁ 35
πολλαπλασιάζων τινὰ μετὰ τοῦ καὶ μέρη ἔχειν, οἷον

ὁ ιε τοῦ δ· τριπλασιάζει γὰρ αὐτὸν καὶ ἔχει τρία
αὐτοῦ μέρη· τρεῖς γὰρ δ ιβ καὶ τρεῖς ιε. οἱ δὲ ἐναντίοι
τούτοις τοῦ ἐλάττωνος τοῖς αὐτοῖς ὀνόμασι καλοῦνται
τῆς ὑπὸ μόνης προθέσεως προστιθεμένης, ἐπειδὴ 40
ἐλάττωτος ὄντες ὑπὸ τούτοις εἰσίν· οἷον ὁ ς τοῦ β πολ-
λαπλάσιός ἐστι, τριπλάσιος γὰρ, οὐκοῦν ὁ β ὑπο-
πολλαπλάσιος καλεῖται. πάλιν ὁ γ τοῦ β ἐπιμόριος
γενικῶς, ἰδικῶς δὲ ἡμιόλιος· ὡσαύτως ὁ δ τοῦ γ
ἐπιμόριος κοινῶς, ἰδικῶς δὲ <ἐπίτριτός ἐστιν· οὐκοῦν 45
καὶ ὁ β τοῦ γ κοινῶς μὲν ὑποεπιμόριος, ἰδικῶς δὲ
ὑφημιόλιός ἐστιν, ὡσαύτως δὲ ὁ γ τοῦ δ κοινῶς μὲν
ὑποεπιμόριος, ἰδικῶς δὲ > ὑποεπίτριτός ἐστι. πάλιν
ὁ ε τοῦ γ ἐπιμερὴς ἐστίν· ἔχει γὰρ τὸν γ καὶ β αὐτοῦ·
οὐκοῦν ὁ γ τοῦ ε ὑποεπιμερὴς ἐστὶ. πάλιν ὁ ις τοῦ ε 50
πολλαπλασιεπιμόριός ἐστιν· οὐκοῦν ὁ ε τοῦ ις ὑπο-
πολλαπλασιεπιμόριός ἐστι. πάλιν ὁ ιε τοῦ ιε ὑποπολλαπλασι-
επιμερὴς· τοσαῦτα περὶ τῆς διαιρέσεως. γλαφυρῶς δὲ
καὶ <διὰ> διαγράμματος καὶ διὰ προστάγματος δείξει 55
ὅτι οὐκ ἂν ἐξ ἄλλου γένοιτο ἡ ἀνισότης, εἰ μὴ ἐκ τῆς
ἰσότητος· ὥσπερ γὰρ τῇ ὕλῃ τὸ εἶδος χαρίζεται τὸν
κόσμον οὕτω καὶ τῇ ἀνισότητι ἐκ τῆς ἰσότητός ἐστιν

31 μέρος, cf. n. ad loc.

35 γίνονται M: γίνον A

44 ἰδικῶς (Philop.)] ἰδικώτερον AM

45-48 ἰδικῶς δὲ ... ἰδικῶς δὲ scripsi: ἰδίως δὲ AM

54 τοσαῦτα M: τοιαῦτα A

55 pr. διὰ (Philop.)] om. AM || alt διὰ M: om. A

ἡ πρόδος. καὶ πρῶτος μὲν ὁ πολλαπλάσιός ἐστιν, εἴτα
60 ὁ ἐπιμόριος, καὶ τοῦ ἐπιμορίου πρότερος ὁ ἡμιόλιος,
εἴτα καὶ ὁ ἐπίτριτος, καὶ οὕτως οἱ ἐφεξῆς. πῶς δὲ
δείκνυσιν, ἑτέρᾳ ἡμᾶς θεωρίᾳ διδάξει.

ριβ. ἡ μνᾶ πρὸς μνᾶν. τοῦτο τῆς ῥοπῆς ἐστίν· οὐ μό-
νον γὰρ εἰς συνεχῆς καὶ διωρισμένον τὸ ποσὸν διαι-
ρεῖται, ἀλλὰ καὶ εἰς ῥοπήν· οὕτω γοῦν φαμέν λίτραν
λίτρᾳ ἴσην καὶ μείζονα καὶ μνᾶν μνᾶς καὶ τάλαντον
5 ταλάντου.

ριγ. ἀμέλει καὶ τὸ ἀνθυπακοῦον τῷ ἴσῳ οὐχ ἑτερωνυμεῖ.
οὐ γάρ, ὥσπερ φαμέν, ὅτι τὸ μείζον ἐλάττονός ἐστι
μείζον καὶ ἑτερωνυμοῦσιν, ἄλλο γὰρ τὸ μείζον καὶ
ἄλλο τὸ ἑλαττον, οὕτω καὶ ἐπὶ τοῦ ἴσου· τὸ γὰρ ἴσον
5 ἴσῳ ἴσον. ἰδοὺ οὖν ὅτι ταῦτά εἰσι τὰ ὀνόματα καὶ
οὐχ ἑτερώνυμα. τὸ δὲ πρὸς τι ἢ κατὰ τόπον λέγεται,
ὥς τὸ δεξιὸν καὶ τὸ ἀριστερόν, ἢ κατὰ φύσιν, ὥς
πατὴρ καὶ υἱός, ἢ κατὰ σχέσιν τινά, ὥς τὸ μείζον καὶ
τὸ ἑλαττον, ἢ κατὰ τύχην, ὥς δοῦλος καὶ δεσπότης,
10 ἢ κατὰ προαίρεσιν, ὥς τὸ φίλος· οὐδὲ γὰρ ταῦτα
ἑτερωνυμεῖ, ἀλλὰ ταῦτά ἐστι· φίλος γὰρ φίλῳ φίλος,
καὶ γείτων πρὸς γείτονα λέγεται, καὶ συστρατιώτης
πρὸς συστρατιώτην.

ριδ. ὡς ὄλον ὄλω. ὥσπερ τὸ μείζον τῷ ἐλάττονι ἀντί-
κεται οὕτω καὶ τὰ μέρη τοῦ μείζονος τοῖς μέρεσι τοῦ
ἐλάττονος. | ὡς εὐθύς εἰσόμεθα. μετ' ὀλίγον γάρ, ὥς
εἴρηται, λέγει ὅτι πρῶτον πάντων τῶν μερῶν ἐστὶ
5 τὸ πολλαπλάσιον. | πλεονάκις ἢ ἅπαξ. ὅταν πολλα-
πλασιάζῃ τινὰ καὶ μὴ ἅπαξ αὐτὸν μετρεῖ, οἷον πάν-
τες οἱ μετὰ τὴν μονάδα εὐτάκτως πολλαπλάσιοι εἰσιν·
ὁ μὲν β διπλάσιος, δις γὰρ α β· ὁ γ τριπλάσιος, τρίς
γὰρ α γ· ὁ δ τετραπλάσιος, τετράκι γὰρ μία δ· καὶ
10 ἐφεξῆς ὁμοίως.

ριε. πληρούντως πλεονάκις. ἀντὶ τοῦ ἀρτίως καὶ ὁλο-
κλήρως, οἷον ὁ β πρὸς τὸν ζ· τριπλάσιος γὰρ ὁ ζ τοῦ
β. ὡσαύτως καὶ ὁ ζ πρὸς τὸν ιη. τοῦτο οὖν ἐστὶ τὸ
τελείως· οὐ γὰρ δύνασαι εἰπεῖν τὸν γ τοῦ η ὑποπολ-
5 λαπλάσιον· οὐδὲ γὰρ ἔχει λόγον πρὸς αὐτόν· τρίς

ριβ = Philop. ρκγ, 8ff., ρκδ ριγ = Philop. ρκς

ριδ = Philop. ρκη, ρκθ ριε = Philop. ρλ

ριβ,ι = Nicom. XVII, 3. ριγ,ι = Nicom. XVII, 5.

ριδ,ι = Nicom. XVII, 8. 3 = Nicom. XVIII, 1.

5 = Nicom. XVIII, 1. ριε,ι = Nicom. XVIII, 2.

ριβ. ι ἢ A et Nicom.: ἡ M

ριγ. ι ἑτερωνυμεῖ M: ἑτερώνυμον A

5 et ιι ταῦτα scripsi: ταῦτα AM

ι2 συστρατιώτης scripsi: στρατιώτης AM

ριδ. 4 λέγει M: λέξει A

7 οἱ M: om. A || εὐτάκτως M: om. A

γὰρ β ζ καὶ λοιπαὶ μένουσι β· καὶ μετρήσει τὸν β ὁ γ
ὅπερ ἄτοπον· τὸ ἑλαττον γὰρ τὸ μείζον μετρεῖ, οὐχ
ὁ μείζων ἀριθμὸς τὸν ἐλάττονα.

ρις. γενικῶς δὲ ἀπείρου. ὥσπερ ἐπ' ἄπειρον λαμβάνε-
ται τὸ πολλαπλάσιον καὶ τὸ ὑποπολλαπλάσιον,
οὕτω καὶ τὰ μέρη αὐτῶν· ἐπ' ἄπειρον γὰρ τὸ τρι-
πλάσιον καὶ τὸ ὑποτριπλάσιον καὶ τὸ διπλάσιον
καὶ τὸ ὑποδιπλάσιον καὶ τὸ τετραπλάσιον καὶ τὸ
5 ὑποτετραπλάσιον καὶ ἐφεξῆς ὁμοίως.

ριζ. τὸ γὰρ διπλάσιον ἀρχόμενον ἀπὸ τοῦ δευτέρου. τὴν
μέθοδον τῶν διπλάσιων λέγει, καὶ φησιν ὅτι διὰ πάν-
των τῶν ἀρτίων πρόεισιν ἀντὶ τοῦ ὁ πᾶς διπλάσιος ἄρ-
τιός ἐστιν· εἰ γὰρ τὸ διπλάσιον ἀπὸ τοῦ δευτέρου
παρῆκται, τὰ δὲ β ἄρτια, πάντως ἄρτιοί εἰσιν οἱ δι-
5 πλάσιοι. οἱ μὲν οὖν διπλάσιοι πάντες ἄρτιοί εἰσιν·
ὧν δὲ εἰσι διπλάσιοι ἐκεῖνοι καὶ ἄρτιοι καὶ περιττοί,
οἷον ὁ β τῆς μονάδος διπλάσιος, ὁ δ τῆς δυάδος, ἡ δὲ
δυάς ἄρτια, ὁ ζ τῶν γ διπλάσιος, ὁ δὲ γ περιττός. καὶ
ἀπλῶς ἓνα παρ' ἓνα παραλιμπάνων περιττὸν εὐρή-
10 σεις τὸν διπλάσιον· οἷον ὁ δ τῶν β διπλάσιος παρα-
λιπὼν τὸν γ, ὁ ζ τὸν γ παραλιπὼν τὸν ε, ὁ η τοῦ δ
ἔχων τὸν ζ, ὁ ι τοῦ ε τὸν θ ἔχων πρὸς αὐτοῦ· καὶ
οὕτως ἐφεξῆς. καὶ ὁ μὲν πρῶτος ἄρτιος πρὸς τὸν
πρῶτον περιττὸν πολλαπλασιασθεὶς, ποιεῖ πρῶτον
15 διπλάσιον, οἷον ὁ β πρὸς τὴν α· δις γὰρ μία β. καὶ
πάλιν πρὸς ἄρτιον τὸν μετὰ τὴν μονάδα ποιεῖ δι-
πλάσιον· δις γὰρ β δ. καὶ πάλιν πρὸς περιττὸν τὸν
γ· δις γὰρ γ ζ. καὶ πάλιν πρὸς ἄρτιον τὸν δ· δις γὰρ
δ η. καὶ ἐφεξῆς οὕτω παρ' ἓνα ποτὲ ἄρτιόν ποτε
20 περιττὸν πολλαπλασιάζων, ποιήσεις τοὺς διπλα-
σίους.

ριη. τριπλάσιοι δὲ πάντες εἰσίν. ἀπ' ἀρχῆς δύο παρα-
λειπομένων τριπλάσιοι εἰσιν, οἷον ζ τῶν β τριπλά-
σιος, δύο παραλιπὼν τὸν δ καὶ τὸν ε, καὶ ὁ θ τριπλά-
σιος, δύο παραλιπὼν τὸν ζ καὶ τὸν η, καὶ ὁ ιβ τρι-
πλάσιος, τὸν ι καὶ τὸν ια παραλιπὼν, καὶ ἐφεξῆς
5 ὁμοίως. ἰστέον δὲ ὅτι οἱ μὲν διπλάσιοι πάντες ἄρτιοι
ἦσαν, τοῖς δὲ τριπλάσιος συμβέβηκε τὸ ἓνα παρ'
ἓνα περιττοὺς καὶ ἀρτίους εἶναι· οἷον ὁ γ τριπλάσιος
ὧν τῆς μονάδος περιττός ἐστιν, ὁ μετ' αὐτὸν ζ τῆς
δυάδος ἄρτιος, πάλιν ὁ μετ' αὐτὸν θ περιττός, ὁ δὲ
10 ιβ ἄρτιος καὶ ὁ ιε περιττός, καὶ ἐφεξῆς ὁμοίως. οἱ δὲ
τετραπλάσιοι αἰετὶ ἄρτιοί εἰσιν, ἐπειδὴ παρήχθησαν

ρις = Philop. ρλβ ριζ = Philop. ρλγ

ριη = Philop. ρλγ

ρις,ι = Nicom. XVIII, 4. ριζ,ι = Nicom. XVIII, 4

2-3 = Nicom. XVIII, 4. ριη,ι = Nicom. XVIII, 5.

ριζ. 8 οἷον M: ὧν A

ριη. ιο μετ' αὐτόν A: μετὰ τὸν M

ἀπὸ τετράδος, ἥτις ἄρτια· ποιοῦσι δὲ καὶ οὗτοι τρεῖς
 παραλιμπάνεσθαι, οἷον ὁ δ τετραπλάσιος τρεῖς πα-
 15 ραλιπών, α, β, γ, ὁ η τοῦ β τετραπλάσιος τρεῖς πα-
 ραλιπών, ε, ς, ζ, ὁ ιβ τοῦ γ τρεῖς παραλιπών, θ, ι,
 ια, καὶ ἐφεξῆς ὁμοίως. ὁ δὲ πενταπλάσιος καὶ αὐτὸς
 μίαν παρὰ μίαν ὡς ὁ τριπλάσιος γίνεται καὶ ἄρτιος
 καὶ περιττός· οὗτος δὲ δ παραλιμπάνει, ὁ δὲ ἑξαπλά-
 20 σιος ε, ὁ δὲ ἑπταπλάσιος ς, καὶ ἐπὶ πάντων ὁ αὐτὸς
 τρόπος. καὶ οἱ τριπλάσιοι καὶ οἱ ἐξῆς ὥσπερ καὶ οἱ
 διπλάσιοι εὐτάκτως κατὰ τὸ χύμα τῶν ἀριθμῶν
 προέρχονται· τρεῖς γὰρ μία καὶ τρεῖς β καὶ τρεῖς
 καὶ τρεῖς δ καὶ τρεῖς πέντε καὶ ἐφεξῆς ὁμοίως.

ριθ. συμβέβηκε δὲ καὶ τούτοις πᾶσιν. ἀντὶ τοῦ καὶ τοῖς
 τετραπλασίοις συμβέβηκεν ἄρτιοις εἶναι· ἕνα γὰρ παρ'
 ἕνα ἐστὶν ἄρτιος. οἷον τί λέγω; τετράκις α δ' ἰδού
 5 παρήκεν ἕνα ἄρτιον τὸν β· πάλιν τετράκις β η' ἰδού
 παρέλειψε τὸν ς. καὶ πάλιν τετράκις γ ιβ' ἰδού τὸν ι
 παρέλειψε, καὶ ἐφεξῆς ὁμοίως. ὥστε οἱ μὲν ἄρτιοι πάν-
 τες διπλάσιοί εἰσιν, οἱ δὲ τετραπλάσιοι ἕνα παρ' ἕνα·
 οὐ γὰρ πᾶς ἄρτιος τετραπλάσιος, ἀλλ' εἰς παρ' ἕνα.
 ὡσαύτως καὶ ἑξαπλάσιοι οὐ πάντες οἱ ἄρτιοι, ἀλλ'
 10 εἰς παρὰ δύο· οἷον ὁ ς ἑξαπλάσιος· ὑπέρβια δὲ τὸν η
 ἄρτιον καὶ τὸν ι καὶ ὁ ιβ ἑξαπλάσιος· πάλιν ὑπέρβια
 τὸν ιδ καὶ τὸν ις καὶ ὁ ιη ἑξαπλάσιος. καὶ ἐπὶ πάντων
 κατὰ τὸν αὐτὸν τρόπον.

ρκ. πενταπλάσιοι δὲ ὁφθήσονται. πενταπλάσιοί εἰσιν
 ὡς εἰρήκαμεν οἱ τέσσαρας παραλιμπάνοντες.

ρκα. καίτοι ἀπείρου τινὸς γένους εἶδη ὄντα. ἰστέον ὅτι
 τὰ εἶδη ἐπ' ἑλαττόν ἐστι τῶν γενῶν· οὐκοῦν εἰ τὰ
 γένη ἄπειρα, τὰ εἶδη ὡς ἐπ' ἑλαττον πεπερασμένα
 εἰσίν. ἐπεὶ οὖν ἐνταῦθα καὶ τὰ γένη ἄπειρά εἰσι καὶ τὰ
 5 εἶδη, διὰ τοῦτο ὡς παράδοξον αὐτὸ λέγει καὶ φησιν
 ὅτι τὰ κατὰ μέρος εἶδη τοῦ ἀριθμοῦ ἄπειρά εἰσι, καί-
 τοι καὶ τοῦ γένους ἀπείρου ὄντος· οὐ γὰρ ἔδει, εἴ γε
 τὰ εἶδη ἐπ' ἑλαττον. διὰ τί οὖν τοῦτο γίνεται; ἐπειδὴ
 ἐνεργεῖα οὐχ ὑφίστανται· ἐφ' ὧν δὲ ἐνεργεῖα τὰ εἶδη
 10 καὶ τὰ γένη, ἐπὶ τούτων ἐπ' ἑλαττον τὰ εἶδη· νῦν δέ,
 ἐπειδὴ ἐπ' ἄπειρον αὖξεται ὁ ἀριθμός, δυνάμει ἄπειρα
 καὶ τὰ εἶδη.

ριθ = Philop. ρλδ ρκ = Philop. ρλδ

ρκα = Philop. ρλε

ριθ,ι = Nicom. XVIII, 6. ρκ,ι = Nicom. XVIII, 7.

ρκα,ι = Nicom. XIX, 2.

ι3 δὲ A: om. M

ι7 αὐτὸς M: αὐτὸ A

21 καὶ οἱ ἐξῆς (Philop.)) ξξ AM

ριθ. ι πᾶσιν AM et Nicom. CSH: πάντας Nicom.

2 τετραπλάσιοις M: om. A

ρκα. ι γένους εἶδη ὄντα AM: εἶδη ὄντα γένους Nicom.

9 ὑφίστανται M: ὑφίσταται A

ρκβ. συμβαίνει τοὺς μὲν ὑπολόγους. ὑπολόγους μὲν
 καλεῖ τοὺς ἐλάττονας, προλόγους δὲ τοὺς μείζονας.
 καὶ ὑπόλογοι μὲν γίνονται πάντες οἱ εὐτάκτως ἀπὸ
 μονάδος ἄρτιοι, πρόλογοι δὲ οἱ εὐτάκτως τριπλασια-
 5 ζόμενοι· οἷον ὁ β ἄρτιος· οὐκοῦν ὑπόλογος καὶ ὁ δ
 καὶ ὁ ς καὶ ὁ η καὶ ὁ ι καὶ πάντες οἱ εὐτάκτως ἄρτιοι.
 πρόλογος δὲ τοῦ μὲν β ὁ γ, ἐπειδὴ τρεῖς μία τρεῖς, τοῦ
 δὲ δ ὁ ς, τρεῖς γὰρ β ς, τοῦ δὲ ς ὁ θ, τρεῖς γὰρ τρεῖς θ·
 καὶ ἐφεξῆς οὕτω τριπλασιάζων τὸ ἐφεξῆς χύμα εὐ-
 τάκτως ἀρτίων τε καὶ περιττῶν ποιήσεις τοὺς προ-
 10 λόγους. δεῖ δὲ συζῆσαι αὐτοὺς εὐτάκτους τὸν πρῶ-
 τον ὑπόλογον τῷ πρώτῳ προλόγῳ· καὶ τὸν δ δεύ-
 τερον ὑπόλογον τῷ ς δευτέρῳ <προλόγῳ>, καὶ ἐφε-
 ξῆς ὁμοίως.

ρκγ. οἱ ἀπὸ τετράδος συνεχεῖς. ἐπιτρίτους, φησίν, εὐ-
 ρίσκεις, ἕαν τετραπλασιάσης μὲν τοὺς ἀπὸ μονάδος,
 τριπλασιάσης δὲ τοὺς ἀπὸ μονάδος, οἷον τετράκις μία
 δ, τρεῖς μία γ, ὁ δ ἄρα τοῦ γ ἐπίτритος· πάλιν τετράκις β
 η, τρεῖς β ς, ὁ η τοῦ ς ἐπίτритος· ὡσαύτως τετράκις γ
 5 ιβ, τρεῖς γ θ, ὁ ιβ ἄρα τῶν θ ἐπίτритος. καὶ ἐπὶ τῶν
 λοιπῶν ὁμοίως εὐρήσεις, τὸν αὐτὸν ἀριθμὸν καὶ τε-
 τραπλασιάζων καὶ τριπλασιάζων· καὶ ὁ μὲν ὑπὸ τοῦ
 τετραπλασιασμοῦ γενόμενος ἐπίτритός ἐστιν, ὁ δὲ
 ὑπὸ τοῦ τριπλασιασμοῦ ὑποεπίτритος. 10

ρκδ. ὅτι οἱ μὲν πρῶτοι καὶ πυθμένες. πρώτους καὶ πυ-
 θμένες καλεῖ τοὺς ἐσχάτους μεθ' οὓς οὐκέτι ἔστι λαβεῖν
 μόριον ἢ ἡμιόλιον ἢ ἐπίτритον· οἷον ἐπὶ μὲν ἡμιολίων
 ὁ γ καὶ ὁ β ἐσχατοί, ἐπὶ δὲ ἐπιτρίτων ὁ δ καὶ ὁ γ.
 ἰστέον οὖν ὅτι οἱ μὲν ἐσχατοὶ οὗτοι οὐδὲν ἔχουσιν ἐν
 5 μέσῳ διεῖργον αὐτούς· οἷον τοῦ β καὶ τοῦ γ οὐδεὶς
 ἀριθμὸς ἐν μέσῳ· τοῦ μέντοι δευτέρου ἡμιολίου, ὃ
 ἐστὶ τοῦ ς καὶ τοῦ δ, ἔστιν εἰς μέσος ὁ ε· τοῦ δὲ γ (τοῦ
 θ καὶ τοῦ ς) β, ὁ ζ καὶ ὁ η· τοῦ δὲ τετάρτου τρεῖς
 εὐρεθήσονται μέσοι, τοῦ δὲ πέμπτου δ, καὶ ἐφεξῆς 10
 ὁμοίως. ὡσαύτως καὶ ἐπὶ τῶν ἐπιτρίτων· τῶν μὲν
 ἐσχάτων τοῦ δ καὶ τοῦ γ οὐδεὶς ἐν μέσῳ· τοῦ δὲ β
 (τοῦ η καὶ τοῦ ς) εἰς, ὁ ζ· τοῦ δὲ γ (τοῦ ιβ καὶ τοῦ θ)
 δύο, ὁ ι καὶ ὁ ια· καὶ τοῦ δ ὁμοίως γ ἐν τῷ μέσῳ, καὶ
 τοῦ ε τέσσαρα, καὶ ἐφεξῆς ὁμοίως. 15

ρκε. ὅτι δὲ φυσικῶς καὶ οὐχ ἡμῶν θεμένων. ἤδη εἰρή-
 καμεν ὅτι ια εἰσὶν αἱ πᾶσαι σχέσεις, α μὲν ἢ τῆς ἰσό-

ρκβ = Philop. ρλς ρκγ = Philop. ρλζ

ρκδ = Philop. ρλη ρκε = Philop. ρλθ-ρμγ

ρκβ,ι = Nicom. XIX, 2. ρκγ,ι = Nicom. XIX, 4.

ρκδ,ι = Nicom. XIX, 6. ρκε,ι = Nicom. XIX, 8.

ρκβ. 7 alt. τοῦ M: τοῦτο A

8 pr. γὰρ M: δὲ A

ι3 προλόγῳ (Philop.)) om. AM

τητος, τῆς δὲ ἀνισότητος ἰ· τὸ γὰρ ἄνισον ἢ μείζον
ἢ ἔλαττον· καὶ τὸ μείζον εἶχε ε· τὸ γὰρ μείζον ἢ πολ-
5 λαπλάσιον ἢ ἐπιμόριον ἢ ἐπιμερές <ἢ πολλαπλασι-
επιμόριον ἢ πολλαπλασιεπιμερές>· ὡσαύτως καὶ τὸ
ἔλαττον μετὰ τῆς ὑπὸ προθέσεως. ἐνταῦθα οὖν θέλει
εἰπεῖν ὅτι οὐ θέσει καὶ νόμῳ, ἀλλὰ φύσει τὸ πολλα-
πλάσιον τῶν ἄλλων πρῶτόν ἐστιν, εἴτα τὸ ἡμιόλιον·
10 καὶ οὕτω τὰ λοιπὰ, ἐπίτριτον λέγω καὶ ἐπιτέταρτον
καὶ ἐπίπεμπτον καὶ ἐφεξῆς. καὶ ἐνταῦθα μὲν περὶ τοῦ
πολλαπλασίου λέγει διὰ διαγράμματος, ὕστερον δὲ
γλαφυρώτατα δείξει ὅτι καὶ ἡ ἰσότης προτέρα τῆς
ἀνισότητος. δείκνυσιν οὖν ὅτι τὸ πολλαπλάσιον
15 πρῶτόν ἐστι τῶν ἄλλων, καὶ τοῦ πολλαπλασίου τὸ
διπλάσιον, εἴτα τὸ τριπλάσιον. πρόεισιν οὖν ἡ δειξίς
οὕτως· ἐκτίθεται πρῶτον στίχον ἔχοντα τοὺς ἀπὸ
μονάδος κατὰ τάξιν ἕως δεκάδος ἀριθμούς· α, β, γ, δ,
ε, ς, ζ, η, θ, ἰ· τοὺς αὐτοὺς δὲ καὶ ἐπὶ τὰ κάτω ἐκτίθε-
20 ται· εὐρεθήσεται τοίνυν τὸ διπλάσιον πρῶτον· ὁ γὰρ
β ἐπὶ τὴν μονάδα πολλαπλασιαζόμενος ποιεῖ τὸν β,
ἐπὶ δὲ τὴν δυάδα ποιεῖ τὸν δ, ἐπὶ δὲ τὸν γ τὸν ς, ἐπὶ
δὲ τὸν δ τὸν η, καὶ ἐπὶ τὸν ε τὸν ι, καὶ ἐπὶ τὸν ς τὸν
ιβ, καὶ ἐπὶ τὸν ζ τὸν ιδ, καὶ ἐπὶ τὸν η τὸν ις, καὶ τὸν ιη
25 ἐπὶ τὸν θ, καὶ τὸν κ ἐπὶ τὸν ι. ἐκθοῦ οὖν ἐν τῷ δευτέρῳ
στίχῳ τοὺς διπλασίους· β, δ, ς, η, ι, ιβ, ιδ, ις, ιη, κ.
πάλιν ὁ γ ἐπὶ τοὺς ἀπὸ μονάδος πολλαπλασιαζόμε-
νος, τουτέστιν ὁ τοῦ γ στίχου, ποιεῖ τοὺς τριπλα-
σίους, γ, ς, θ, ιβ, ιε, <ιη>, κα, κδ, κζ, λ· καὶ τούτους
30 οὖν ἀπόθου ἐν τῷ γ στίχῳ. ὁ δὲ δ πάλιν ἐπὶ τοὺς
ἀπὸ μονάδος πολλαπλασιαζόμενος ποιεῖ τοὺς τετρα-
πλασίους, δ, η, ιβ, ις, κ, κδ, κη, λβ, λς, μ· θὲς καὶ τού-
τους ἐν τῷ τετάρτῳ στίχῳ. καὶ ἐφεξῆς πάλιν ὁ μὲν ε
πενταπλασίους ποιήσει, καὶ θὲς ἐν τῷ ε στίχῳ. ὁ δὲ ς
35 ἑξαπλασίους, καὶ θὲς ἐν τῷ ς στίχῳ. καὶ ὁμοίως ἄχρι
δεκάδος. ἰδοὺ τοίνυν ὅτι οἱ μὲν τοῦ β στίχου ἀριθμοὶ
πρὸς τοὺς ἐν τῷ πρώτῳ πολλαπλασιαζόμενοι τοὺς
διπλασίους ποιοῦσιν, οἱ δὲ τοῦ γ πρὸς τοὺς τοῦ αὐτοῦ
τριπλασίους, οἱ δὲ τοῦ δ τοὺς τετραπλασίους, καὶ
40 ἐφεξῆς ἄχρι δεκάδος. ἰδοὺ οὖν πρῶτον ἀνεφάνη τὸ
πολλαπλάσιον· μετὰ τὸ πολλαπλάσιον τοίνυν εὐρίσ-
κεται τὸ ἐπιμόριον, καὶ τούτου τὸ ἡμιόλιον. οἱ γὰρ
τοῦ γ στίχου πάντες τῶν πρὸ αὐτῶν τῶν τοῦ δευτέ-
ρου ἡμιόλιοι εἰσιν· ὁ μὲν γ τοῦ β, ὁ δὲ ς τοῦ δ, ὁ δὲ θ
45 τοῦ ς, καὶ ὁ ιβ τοῦ η, καὶ ὁ ιε τοῦ ι, καὶ ὁ ιη τοῦ ιβ,
καὶ ἐφεξῆς τοῦτο εὐρήσεις. εἴτα μετὰ τοὺς ἡμιολίους
εἰσὶν οἱ ἐπίτριτοι· οἱ γὰρ τοῦ τετάρτου στίχου πάλιν
τῶν τοῦ τρίτου κατὰ τάξιν πάλιν ἐπίτριτοὶ εἰσιν·
ὁ μὲν δ τοῦ γ, ὁ δὲ η τοῦ ς, ὁ δὲ ιβ τοῦ θ, ὁ δὲ ις τοῦ
50 ιβ, ὁ δὲ κ τοῦ ιε, καὶ ἐφεξῆς ὡσαύτως. πάλιν μετ’
αὐτοὺς οἱ ἐπιτέταρτοι· οἱ γὰρ ἐν τῷ πέμπτῳ στίχῳ

ρκ.5-6 ἢ πολλαπλασιεπιμόριον ἢ πολλαπλασιεπιμερές (Philop.)] om. AM

10 οὕτω M: οὕτως τε A

24-25 τὸν ιη ἐπὶ τὸν θ M: ἐπὶ τὸν θ τὸν ιη A

29 ιη (Philop.)] om. AM

45 ὁ ιβ A: οἱ ιβ M

51 γὰρ M: om. A

τῶν ἐν τῷ τετάρτῳ ἐπιτέταρτοὶ εἰσιν· ὁ μὲν ε τοῦ δ,
ὁ δὲ ι τοῦ η, ὁ δὲ ιε τοῦ ιβ, ὁ δὲ κ τοῦ ις, ὁ δὲ κε τοῦ κ.
καὶ ἐφεξῆς κατὰ τὸν αὐτὸν τρόπον. καὶ οἱ τοῦ ς στί-
χου τῶν ἐν τῷ πέμπτῳ ἐπίπεμπτοι, καὶ οἱ τοῦ ζ τῶν 55
ἐν τῷ ς ἐπίεκτοι, καὶ ἐφεξῆς εὐρήσεις τοῦτο. πάλιν ὁ
πολλαπλασιεπιμόριος πρῶτός ἐστι τοῦ πολλαπλα-
σιεπιμεροῦς· πολλαπλασιεπιμόριος μὲν γὰρ ἐστιν ὁ
ε τοῦ β· διπλάσιος γὰρ ὢν αὐτοῦ ἔχει αὐτοῦ <καὶ ἐν
μέρος. πολλαπλασιεπιμερὴς δὲ ἐστιν ὁ η τοῦ γ· δι- 60
πλάσιος γὰρ ὢν αὐτοῦ ἔχει αὐτοῦ> καὶ δύο μέρη.
δέδεικται ἄρα ἡ τάξις τῶν σχέσεων τούτων θαυμα-
στή τις οὕσα, κάκεινο δὲ δεῖ εἰδέναι ὅτι ὑπὸ τῶν κα-
νονίων γάμμα πολλά γίνονται· δέκα γὰρ τὰ ὅλα.
πρῶτον μὲν τὸ ὑπὸ τοῦ πρώτου στίχου τοῦ κατὰ 65
μῆκος καὶ τοῦ κατὰ πλάτος περιεχόμενον, δεύτερον
δὲ τὸ ὑπὸ τῶν δύο τῶν δευτέρων στίχων, καὶ τρίτον
τὸ ὑπὸ τῶν τρίτων, καὶ τέταρτον τὸ ὑπὸ τῶν τετάρ-
των· ἀλλὰ τὸ μὲν α γάμμα ἐστὶ τὸ ὑπὸ τῶν ια στοι-
χείων, τὸ δὲ δεύτερον τὸ ὑπὸ τῶν κδ στοιχείων, τὸ 70
δὲ τρίτον τὸ ὑπὸ τῶν λθ στοιχείων· καὶ ἐφεξῆς ὁμοίως
ἐν παρ’ ἐν ἀμείβων κανόνιον. ἰστέον δὲ ὅτι τῶν γάμμα
τούτων χιαζομένων ἐφ’ ἑκάτερα γίνεται ὁ πολλαπλα-
σιασμός. κάκεινο δὲ γίνωσκε ὅτι οἱ διαγώνιοι ἀρι-
θμοὶ πάντες τετράγωνοι εἰσιν, ὁ δ, ὁ θ, ὁ ις, ὁ κε, ὁ λς, 75
ὁ μθ, ὁ ξδ, ὁ πα, ὁ ρ. κάκεινο δὲ γίνωσκε ὅτι καὶ οἱ
ὑπερέχοντες κατὰ τάξιν ὑπερέχουσιν· ὅσῳ γὰρ ὑπερ-
έχει ὅδε ὁ ἀριθμὸς τοῦδε, τοσούτῳ ὁ ὑπερέχόμενος
ἔλαττον ἐστίν· οἷον ὁ τοῦ γ στίχου τρίτος ἀριθμὸς
τῆς τοῦ πρώτου στίχου μονάδος ὑπερέχει δυάδι· καὶ 80
ἐστὶν ἐν τῷ δευτέρῳ στίχῳ μετὰ τῶν γ καὶ τῆς
μονάδος ὁ β. πάλιν ὁ ς τοῦ β τετράδι ὑπερέχει καὶ
ἐστὶν ἐν τῷ μέσῳ ὁ δ· ὡσαύτως καὶ ἐπὶ τῶν λοιπῶν.
πάλιν ὁ ἐν τῷ τετάρτῳ στίχῳ δ ἀριθμὸς τῆς τοῦ
πρώτου στίχου μονάδος τριάδι ὑπερέχει καὶ ἐστὶν ὁ 85
γ ἐπάνω τοῦ δ. ὡσαύτως ὁ η τοῦ β ἑξάδι ὑπερέχει
καὶ ἐστὶν ὁ ς ἐπάνω τῶν η. καὶ ἐπὶ τῶν ἄλλων πάντων
τὴν αὐτὴν τάξιν εὐρήσεις. ταῦτά ἐστιν ἅ βούλεται
διὰ τούτων εἰπεῖν. ἐκκείσθω δὲ τὸ διάγραμμα, ἵνα
σαφῆ γένωνται πάντα τὰ λεχθέντα. 90

ρκς. καὶ ἐπὶ τῶν ἀκολουθῶν. καὶ ἐπὶ πάντων φησὶν
ἀνάλογον· ἐκ τοῦ διαγράμματος οὖν ἔσαφηνίσθη τὸ
λεγόμενον.

ρκς = Philop. ρμδ

ρκς, I = Nicom. XIX, 13.

53 κε M: κς A

57 πρῶτός M (cf. p. 22 supra): ὁ πρῶτός A

59-61 ἔχει αὐτοῦ ... ἔχει αὐτοῦ scripsi: ἔχει αὐτοῦ AM

67 alt. τῶν M: καὶ τῶν A

71 λθ M: λθ λθ A

73 χιαζομένων M: ραχιζομένων A

74-75 ἀριθμοὶ πάντες M: πάντες ἀριθμοὶ A

78 ὅδε M: οἶδε A

85 πρώτου M: πρωτίστου A

ρκλ. πρὸς δὲ τὸν <ἐφ'> ἐκάτερα δεύτερον στίχον. περὶ τῶν αὐτῶν βούλεται διαλεχθῆναι περὶ ὧν ἤδη ἡμεῖς προφθάσαντες θεωρήσαμεν. ἀναγινώσκουσιν οὖν ἡ λέξις, καὶ εἴ τι ἀσαφές ἔχει, ἀξιούσθω ἐξηγήσεως.

ρκη. διαφορὰν δὲ καὶ οὗτοι ἔχουσι τοὺς ἀπὸ μονάδος. ἀν-
τὶ τοῦ ὑπερέχουσι καὶ οὗτοι τοῖς ἐν τῷ πρώτῳ στίχῳ
ἀπὸ μονάδος, οἷον ὁ γ τοῦ β ἡμιόλιος ἐστὶν ὑπερέχων
αὐτοῦ τῇ ἐν τῷ πρώτῳ στίχῳ μονάδι· ὁ δὲ πάλιν τοῦ
5 δ ἡμιόλιος ὑπερέχων τῷ ἐπάνω αὐτοῦ κατὰ τὸν
πρώτον στίχον β· καὶ ὁ θ τοῦ δ ἡμιόλιος ὑπερέχων τῇ
ἐπάνω αὐτοῦ τριάδι, καὶ ἐφεξῆς ὁμοίως. ὥσπερ οὖν ἡ
ἐπὶ τῶν πολλαπλασίων ὑπεροχή, οὕτω καὶ ἐπὶ τῶν
ἐπιμορίων· ἀλλ' ἐπὶ μὲν τῶν πολλαπλασίων ὑπεροχή
10 μέση ἦν, οἷον ὁ γ τῆς μονάδος τριπλάσιος μέσην ἔχων
τὴν ὑπεροχήν, τὸν β λέγω, καὶ ὁ δ τοῦ β τριπλάσιος
μέσην ἔχων τὸν δ, καὶ ἐφεξῆς ὡσαύτως. ἐνταῦθα δὲ
οὐ τὸ μέσην, ἀλλὰ τὸ ἐπάνω.

ρκθ. κακείνῳ δὲ οὐκ ἐλαχίστη. παρακολούθημα λέγει
ὅτι οἱ μὲν διαγώνιοι τοῦ διαγράμματος μονάδες εἰσὶν·
ἐν μὲν γὰρ τῇ ἀρχῇ ἀπλή ἐστὶν ἡ μονάς, ἐν δὲ τῷ
τέλει ἑκατοντάς, ἐν δὲ τῇ διαγωνίᾳ δύο δεκάδες. μο-
5 νάδες τοίνυν εἰσὶ πᾶσαι καὶ ἡ μονάς καὶ ἡ δεκάς καὶ ἡ
ἑκατοντάς, ἀλλ' ἡ μονάς τῷ ὄντι μονάς ἐστὶν ἀπλή,
ἡ δὲ δεκάς μονάς καλεῖται, ἀλλὰ δευτερωδουμένη.
μονάς μὲν ὅτι ὅσα δύναται ἡ μονάς ἀρχὴ δεκάδος, το-
σαῦτα καὶ ἡ δεκάς ἄχρι ἑκατοντάδος, δευτερωδου-
10 μένη δὲ ὅτι δευτέρα τῇ τάξει τῆς μονάδος. ὡσαύτως
καὶ ἡ ἑκατοντάς μονάς καλεῖται ὅτι καὶ αὕτη τοσαῦτα
δύναται ἕως χιλιάδος, ὅσα καὶ ἡ μονάς, τριωδουμένη
δὲ ὅτι τρίτην ἔχει τάξιν. ὡσαύτως καὶ ἡ χιλιάς μονάς
καλεῖται, ἐπειδὴ ἕως μυριάδος τοσαῦτα δύναται, ὅσα
15 μονάς, τετρωδουμένη δὲ ὅτι τετάρτη ἀπὸ μονάδος.
ὥστε ἀποτελεῖν τὸ ὑπὸ ἴσον τῷ ἀπὸ. ἐστὶ γὰρ ἐν τῇ
ἀρχῇ μονάς, εἶτα ἐν τῷ τέλει τοῦ πρώτου στίχου
δεκάς· καὶ πάλιν κάτω ἐν μὲν τῇ ἀρχῇ δεκάς ἐν δὲ τῷ
τέλει ἑκατοντάς. καὶ ἡ μὲν μονάς καὶ ἡ ἑκατοντάς τε-
20 τράγωνοι εἰσιν· ἅπαξ γὰρ α μία, καὶ δεκάκις ἑκατόν.
αἱ δὲ δύο δεκάδες τετράγωνοι μὲν οὐκ εἰσὶ, πλευραὶ

δὲ τετραγώνου ναί· δεκάκις γὰρ 1 ρ, ὥστ' ἐπεὶ καὶ
ἅπαξ ρ γίνονται ρ, καὶ δεκάκις 1 ρ, τὸ ὑπὸ ἴσον ἐστὶ
τῷ ἀπὸ. καὶ πάλιν ὁ μὲν πρώτος στίχος ἀπὸ μονάδος
ἄχρι δεκάδος ἐστίν, ὁ δὲ ἐπὶ τὰ κάτω καὶ αὐτὸς ἀπὸ 25
μονάδος ἄχρι δεκάδος. ὡσαύτως δὲ ὁ μὲν τελευταῖος
στίχος ὁ ἐπὶ τὰ κάτω 1 ἰ ὑπερβαίνει ἄχρι ἑκατοντά-
δος, ὁ δὲ τελευταῖος ὁ ἐπὶ μῆκος καὶ αὐτὸς δέκα δέκα
ὑπερβαίνει ἄχρι ἑκατοντάδος· ἔχουσι δὲ ἀμφοτέροι,
1, κ, λ, μ, ν, ξ, ο, π, ρ, ρ. 30

ρλ. καὶ οἱ μὲν διαγώνιοι. ὅτι πάντες τετράγωνοι εἰσιν
οἱ διαγώνιοι· δ, θ, ις, κε, λς, μθ, ξδ, πα, ρ. οἱ δὲ παρ'
ἐκάτερα τῶν τετραγώνων, οὓς παρασπίζοντας καλεῖ
διὰ τὸ ἐξ ἐκατέρωθεν ἴστασθαι καὶ οἰονεῖ ὑπερασπίζειν
αὐτῶν, οὗτοι οὖν συντιθέμενοι μετὰ τῶν τετραγώ- 5
νων πάντως τετραγώνους ποιοῦσιν· οἷον μετὰ τοῦ
θ καὶ τοῦ δ εἰσὶν ἑτερομήκεις ὑπερασπίζοντες ς καὶ ς·
ς οὖν καὶ ς γίνονται ιβ· πάλιν θ καὶ δ γίνονται ιγ· ιγ
δὲ καὶ ιβ γίνονται κε· ὁ κε δὲ τετράγωνός ἐστιν.
ὡσαύτως μετὰ τοῦ θ καὶ τοῦ ις εἰσὶ ιβ καὶ ιβ· ιβ δὲ 10
καὶ ιβ γίνονται κδ· θ δὲ καὶ ις κε· κε οὖν καὶ κδ γίνον-
ται μθ· ὁ δὲ μθ τετράγωνός ἐστιν. ὡσαύτως καὶ ἐπὶ
τῶν ἄλλων. καὶ πάλιν ἐστὶν ἄλλο παρακολούθημα.
οἱ δὲ τετράγωνοι πολλαπλασιασθέντες ποιοῦσιν ἀρι-
θμὸν τὸν αὐτὸν δὲ καὶ οἱ ἑτερομήκεις· οἷον τετράκις θ 15
λς, ἀλλὰ καὶ ἐξάκις ς λς· καὶ πάλιν ἐννάκις ις ρμδ,
ἀλλὰ καὶ δωδεκάκις ιβ ρμδ. ὡσαύτως καὶ ἐπὶ τῶν
ἄλλων εὐρήσεις τοῦτο. γίνεται δὲ τοῦτο ἐπειδὴ ἀνα-
λογία τίς ἐστιν· οἷον ὁ ς τοῦ δ ἡμιόλιος, ὁ δὲ θ τοῦ ς
ἡμιόλιος· οὐκοῦν ὥς ἔχει ὁ δ πρὸς τὸν ς, οὕτω καὶ ὁ 20
ἄλλος ς πρὸς τὸν θ. ἐὰν δὲ τέσσαρες ἀριθμοὶ ἀνάλογον
ᾧσι τὸ ὑπὸ τῶν ἄκρων ἴσον τῷ ὑπὸ τῶν μέσων, ὁ
ἄρα ὑπὸ τῶν δ καὶ τῶν θ ἴσος ἐστὶ τῷ ὑπὸ τῶν ς καὶ
τῶν ς.

ρλα. οὐδέπω γὰρ τὴν ἐπίγνωσιν αὐτῶν. ἔτι γὰρ εἰσα-
γωγικῶς ἐκτιθέμεθα, τελείαν ἐπίγνωσιν τῶν ἀριθμῶν
οὐκ ἔχομεν.

ρλβ. μετὰ γὰρ τὰς δύο γενικὰς ταύτας σχέσεις. [τετρά-
κις θ λς καὶ ἐξάκις ς λς.] εἰρηκῶς περὶ τοῦ πολλαπλα-

ρκλ = Philop. ρμε ρκη = Philop. ρμς

ρκθ = Philop. ρμη, ρν

ρκλ, ι = Nicom. XIX, 14. ρκη, ι = Nicom. XIX, 14.

ρκθ, ι = Nicom. XIX, 17. ιδ = Nicom. XIX, 17.

ρκλ. ι ἐφ' ἐκάτερα Nicom.: ἐκάτερα A: ἐκάτερον M
ρκη. ι διαφορὰν Nicom.: διαφορὰς AM et Nicom. H
4-5 πάλιν τοῦ δ M: τοῦ δ πάλιν A
ρκθ. ι ἐλαχίστης AM: ἐλάττωτος Nicom.
2 μονάδες A (ut vid.): μονάδος M
7 ff. δευτερωδουμένη etc. cf. p. 22 supra
10 τάξει i. m. P²: λήξει AM
12 et 15 μονάς AM: μονάς ἕως δεκάδος Philop.
17 ἐν M: ἡ A

ρλ = Philop. ρνβ ρλα = Philop. ρνε

ρλβ = Philop. ρνς

ρλ, ι = Nicom. XIX, 19. ρλα, ι = Nicom. XIX, 20.

ρλβ, ι = Nicom. XIX, 20.

26 ἄχρι δεκάδος M: ἄχρι δεκάδος ἐστὶν A

27-29 ἑκατοντάδος ... ἑκατοντάδος M: ἑκατοντάδος A

ρλ. 10 ιβ καὶ ιβ M: om. A

11 ις κε scripsi: ς ιε AM

14 οἱ δὲ A: οἱ M

23-24 καὶ τῶν ς M: om. A

ρλα. ι οὐδέπω AM: οὕτω Nicom. || τὴν M: εἰς A || ἔτι M: ὅτι A

ρλβ. ι γενικὰς ταύτας σχέσεις M: ταύτας γενικὰς σχέσεις Nicom.:
γενικὰς A

1-2 τετράκις ... alt. λς sunt gloss. in ρλ, 23-24

σίον καὶ τοῦ ἐπιμορίου, βούλεται λοιπὸν καὶ περὶ τῶν λοιπῶν εἰπεῖν, τοῦ τε ἐπιμεροῦς καὶ τοῦ πολλαπλασιασμοῦ καὶ τοῦ πολλαπλασιασμοῦ καὶ τῶν τούτοις ἀντικειμένων.

ρλγ. τὸ δὲ πλεῖον ἐνὸς πάλιν ἀρχεται ἀπὸ τῶν δύο. ἐπειδὴ εἶπεν ἐπιμερῇ τὸν ἔχοντα πλεῖον μέρη, λοιπὸν λέγει ὅτι τὰ μέρη ἀπὸ τῶν β ἀρχεται· ἐλάχιστα γὰρ τὰ β, μετὰ γὰρ τὴν μονάδα ταῦτα. ἰστέον οὖν ὅτι 5 ἐάν τι τέμνηται εἰς δύο, κατὰ μὲν τὸ ποσὸν ἐλάχιστον ἐστὶ, κατὰ δὲ τὸ ποιὸν μέγιστον. κατὰ μὲν τὸ ποσὸν ἐλάχιστον, ὅτι τῶν β οὐκ ἔστιν ἐλαχιστότερον, κατὰ δὲ τὸ ποιὸν μέγιστον, ἐπειδὴ ἡ μεγίστη τομὴ εἰς δύο ἐστὶ κατὰ τὸ ποιόν· οἷον εἰ τέμης κίονα εἰς δύο, μέγιστα 10 τὰ τμήματα· εἰ γὰρ εἰς γ ἢ εἰς δ ἢ εἰς ε, μικρότερα εὐρίσκονται. οὐκοῦν ἀπὸ τῶν δύο μερῶν δεῖ ἀρχεσθαι· οἷον ὁ ε τοῦ γ ἐπιμερῆς· ἔχει γὰρ αὐτὸν καὶ δύο αὐτοῦ μέρη· πρῶτος οὖν οὗτος ἐπιμερῆς. ἰστέον τοίνυν ὅτι ἐκεῖνοι λέγονται ἐπιμερεῖς οἱ ἔχοντες ἀριθμὸν 15 καὶ τὸ μέρος αὐτοῦ μὴ ἀπαρτίζον εἰς τέλειόν τι· εἰ γὰρ ἔχοι, οὐκέτι λέγεται· οἷον ὁ ζ ἔχει τὸν δ καὶ γ αὐτοῦ τέταρτα· τὰ τρία οὖν τέταρτα εἰς τέλειον ἐν οὐ λήγει, ἀλλ' εἰς δύο, ἡμισυ τε καὶ τέταρτον· ὥστε οὐ δύνασαι εἰπεῖν ὅτι ἔχει αὐτὸν καὶ δύο αὐτοῦ τέ- 20 τάρτα, ἐπειδὴ τὰ δύο αὐτοῦ τέταρτα ἐν τι ποιεῖ τὸ ἡμισυ, ἀλλ' οὐδὲ δύο ἔκτα· ἐν γὰρ τρίτον ποιεῖ· καὶ ἐφεξῆς ὁμοίως. οἷον οὐ δύνασαι εἰπεῖν ὅτι ὁ ς τοῦ δ ἐπιμερῆς ἐστίν· ἔχει γὰρ αὐτὸν καὶ β αὐτοῦ τέταρτα· λέγων γὰρ δύο τέταρτα ἡμισυ ποιεῖς καὶ οὐδὲν ἄλλο 25 λέγεις ἢ ἡμιόλιον, ἀλλ' οὐδὲ δύνασαι εἰπεῖν ὅτι ὁ δ τοῦ β ἐπιμερῆς ἐστίν· ἔχει γὰρ αὐτὸν καὶ β ἡμίση αὐτοῦ· τὰ γὰρ β ἡμίση οὐδὲν ἄλλο ἔστιν ἢ πάλιν αὐτὰ τὰ δύο καὶ εὐρίσκει οὐδὲν ἄλλο ἢ διπλάσιον λέγων ὥστε ζῆται τοῦτο. λέγε οὖν ὅτι ὁ ε τοῦ γ ἐπι- 30 μερῆς ἐστίν, ἐπειδὴ ἔχει αὐτὸν καὶ δύο αὐτοῦ μέρη. ποίου δὲ ὀνόματος ἔτυχεν; χρὴ γινώσκειν ὅτι ἐπιδίδριτος καλεῖται· ἔχει γὰρ αὐτὸν καὶ β αὐτοῦ τρίτα. ὁ δὲ ζ τοῦ δ ἐπιμερῆς ὢν ἐπιτριτέταρτος αὐτοῦ ἐστίν· ἔχει γὰρ αὐτὸν καὶ γ τέταρτα. ὁμοίως καὶ ἐπὶ τῶν 35 λοιπῶν. πάλιν ὁ ι τοῦ ς ἐπιμερῆς ὢν, ἔστιν ἐπιτετράεκτος· ἔχει γὰρ αὐτὸν καὶ δ αὐτοῦ ς. καὶ ἐφεξῆς ὁποσάκις αὐτὸν ἔχει ἐκεῖνον τῷ ὀνόματι ὀνομάζει.

ρλγ = Philop. ρνζ

ρλγ,ι = Nicom. XX, ι.

ρλγ. ι πάλιν ἀρχεται AM: ἀρχεται πάλιν Nicom. || τῶν AM: τοῦ Nicom.

16 ἔχοι M: ἔχει A

25 ἡ fec. M² (ut vid.): om. AM

26 et 27 ἡμίση scripsi: ἡμισυ AM

28 αὐτὰ τὰ scripsi: αὐτὰς τὰς AM

ρλδ. ὥστε τοῦ ἐπιμεροῦς πυθμὴν ἐστὶ. πυθμένης, ὡς ἤδη εἰρήκαμεν, καλεῖ τοὺς ἐσχάτους ἀριθμούς, οἷον ἡμιολίου μὲν τὸν γ καὶ τὸν β, ἐπιτρίτου δὲ τὸν δ καὶ τὸν γ, καὶ ἐπὶ τῶν ἄλλων ὁμοίως τοὺς ἐσχάτους. ἐπεὶ οὖν τοῦ ἐπιμεροῦς ἐκεῖνοί εἰσι πυθμένες οἱ ἔχοντες 5 β μέρη (ὑποκάτω γὰρ τῶν β οὐκ ἔστιν), ἐλάχιστα γὰρ ταῦτα· ὥστε ἐπιμερῆς ἐσχάτος ἐστὶν ὁ ε τοῦ γ· ἔχει γὰρ αὐτὸν καὶ οὐ πλεονα, ἀλλὰ δύο μέρη.

ρλε. τὰ δὲ μέρη ρίζαν ἔχει καὶ ἀρχήν. ὅτι δεῖ ἀπὸ τοῦ γ ἀρχεσθαι· εἰ γὰρ εἴπωμεν ἡμισυ, λήσομεν ἑαυτοὺς [τὸ] αὐτὸ λέγοντες (οἷον εἴπωμεν ὅτι ὁ δ τοῦ β ἐπιμερῆς ἐστίν· ἔχει γὰρ αὐτὸν καὶ β αὐτοῦ ἡμίση), παγ- 5 κάκως φαμέν· οὐδὲν γὰρ ἄλλο ἔστι τὰ β ἡμίση ἢ αὐτὰ πάλιν αἱ β, ὥστε οὐδὲν ἄλλο λέγομεν ἢ ὅτι ὁ δ τοῦ β διπλάσιός ἐστιν.

ρλς. εἴτα ἀπὸ δύο πέμπτων. οὐ γὰρ δύνασαι εἰπεῖν δύο τετάρτων· πάλιν γὰρ ἡμισυ εὐρίσκεται. οὐδὲ δύο ἔκτων· τρίτον γὰρ εὐρίσκεται. τριῶν δὲ τετάρτων καὶ τριῶν πέμπτων καὶ τετάρτων πέμπτων καὶ 5 τετάρτων ἔκτων καὶ πέντε ἔκτων δυνατὸν εἰπεῖν. οὐδὲ γὰρ τριῶν ἔκτων· ἡμισυ γὰρ πάλιν πίπτει.

ρλζ. τάξις δὲ ἀπ' ἀμφοτέρων καὶ ἀκόλουθος γένεσις. λοιπὸν τὴν γένεσιν θέλει εἰπεῖν τῶν ἐπιμερῶν καὶ λέγει ὅτι τοὺς ἀπὸ τριάδος ἀριθμούς πάντας ἐφεξῆς ἐκθοῦ καὶ ἀρτίους καὶ περιττούς, οἷον γ, δ, ε, ς, ζ, η, θ, ι, ια, ιβ, ιγ καὶ ἐφεξῆς, ἐκθοῦ δὲ καὶ τοὺς ἀπὸ πεντάδος 5 περιττούς μόνους, οἷον ε, ζ, θ, ια, ιγ, ιε, ιζ καὶ ἐφεξῆς τοὺς περιττούς, καὶ εὐρήσεις τὸν πρῶτον τῶν περιττῶν πρὸς τὸν πρῶτον τὸν ἀπὸ τριάδος ἐπιμερῆ, καὶ τὸν β^{ον} πρὸς τὸν β καὶ τὸν γ πρὸς τὸν γ καὶ ἐφεξῆς ὁμοίως· οἷον ὁ ε πρὸς τὸν γ ἐπιμερῆς ἐστίν, ἐπιδίδρι- 10 τος γὰρ ἐστίν· ὁ ζ πρὸς τὸν δ ἐπιμερῆς ἐστίν, ἐπιτριτέταρτος γὰρ ἐστίν· ὁ θ πρὸς τὸν ε ἐπιμερῆς ἐστίν, ἐπιτετράπεμπτos γὰρ ἐστίν, καὶ ἐφεξῆς ὁμοίως. ἰστέον δὲ ὅτι οὗτοι πάντες οἱ ἐκ τῆς τοιαύτης ἐκθέσεως γινόμενοι πυθμένες εἰσίν· ἐν μὲν γὰρ τοῖς ἐπιδιδιρίτοις 15 ἐσχάτος ἐστίν ὁ ε πρὸς τὸν γ, ἐν δὲ τοῖς ἐπιτριτετάρτοις ὁ ζ πρὸς τὸν δ· μετὰ γὰρ τοῦτον ἄλλος οὐκ ἔστιν· ἐν δὲ τοῖς ἐπιτετραπέμπττοις ὁ θ πρὸς τὸν ε·

ρλδ = Philop. ρνζ ρλε = Philop. ρνζ

ρλς = Philop. ρνζ ρλζ = Philop. ρνθ

ρλδ,ι = Nicom. XX, ι. ρλε,ι = Nicom. XX, 2.

ρλς,ι = Nicom. XX, 2. ρλζ,ι = Nicom. XXI, ι.

ρλε. 2 εἴπωμεν M: εἴπομεν A et M² (ο supr. ω scr., ut vid.)

4 ἡμίση scripsi: ἡμισυ AM

6 λέγομεν M: λέγωμεν A

ρλς. ι ἀπὸ AM et Nicom. G₂S: om. Nicom.

3 δὲ A: om. M

ρλζ. ι ἀπ' AM: om. Nicom.

16–17 ἐπιτριτετάρτοις scripsi: ἐπιτετάρτοις AM

ὑποκάτω γὰρ τούτων οὐκ ἔστι. καὶ ἐπὶ τῶν ἄλλων
 20 τὸ αὐτὸ εὐρήσεις. ἔαν δὲ τούτους πάντας τοὺς γινο-
 μένους ἢ διπλασιάξης ἢ τριπλασιάξης ἢ τετραπλα-
 σιάξης καὶ ἐφεξῆς ὁμοίως, ποιήσεις ἄλλους ἐπιμερεῖς,
 ἀλλ' οὐ πυθμένας· οἷον ὁ εἰ πρὸς τὸν γ ἐπιμερὴς ἔστιν,
 ἐπιδίτριτος γάρ, καὶ πυθμένες· διπλασίασον τὸν ε,
 25 γίνονται ι, καὶ τὸν γ, γίνονται ς· ὁ ι πάλιν πρὸς τὸν ς
 ἐπιμερὴς ἔστι καὶ ἐπιδίτριτος· ἔχει γὰρ αὐτὸν καὶ δύο
 αὐτοῦ τρίτα. καὶ πάλιν αὐτοὺς τούτους ἔαν διπλα-
 σιάσης, ἐπιμερεῖς καὶ ἐπιδίτριτους ποιῇς· ὁ ι διπλασια-
 ζόμενος ποιεῖ κ, καὶ ὁ ς ιβ· ὁ κ τοῦ ιβ ἐπιδίτριτός
 30 ἔστιν· ὁμοίως ἐπ' ἀπειρον προκόπτων εὐρήσεις τοῦτο.
 καὶ ἐπὶ τοῦ ἐπιτριτέταρτου δὲ εὐρήσεις τοῦτο. οἷον
 ὁ ζ τοῦ δ ἐπιτριτέταρτός ἔστι· διπλασίασον αὐτούς,
 γίνονται ιδ καὶ η· ὁ ιδ τοῦ η γίνεται ἐπιτριτέταρτος,
 κἂν τούτους διπλασιάσης, ποιήσεις ἐπιτριτέταρτους.
 35 καὶ ἐπὶ τῶν ἄλλων δὲ ἐπιμερῶν τὸ αὐτὸ εὐρήσεις,
 κἂν δὲ τριπλασιάσης ἢ τετραπλασιάσης ἢ ὅπως οὖν
 πολλαπλασιάσης, πάντως ἐπιμερεῖς ποιήσεις.

ρλθ. **προσεκτέον δὲ ὅτι ἐκ τῶν δύο μερῶν ἔστι.** περὶ αὐ-
 τῆς τῆς ὀνομασίας αὐτῶν θέλει εἰπεῖν καὶ φησιν ὅτι
 ἐπὶ τῶν ἐπιμερῶν δύο μερῶν λεγομένων· φαμέν γάρ
 ἐπιδίτριτον· ἰδοὺ γὰρ δύο μέρη εἶπον, τὸ δ καὶ τὸ γ.
 5 καὶ πάλιν ἐπιτριτέταρτος, τρίτον καὶ τέταρτον· καὶ
 ἐφεξῆς. λέγει οὖν ὅτι ἐπὶ μὲν τῶν ἐπιμερῶν τῶν ἐχόν-
 των β μέρη τὸ γον προσυπακούεται ὥς μείζον ὄν·
 φαμέν γάρ ἐπιδίτριτον· [τὸ δὲ τρίτον τοῦ τετάρτου
 μείζον] τὰ γὰρ γ τῶν β μείζονα. οὐκοῦν καθόλου τὸ
 10 μείζον προσυπακούεται. πάλιν γὰρ ἐπὶ τῶν γ μερῶν
 τὸ μείζον, ὃ ἔστι τὸ τέταρτον, προσυπακούεται, ἐπι-
 τριτέταρτος γάρ φαμεν· ἐπὶ δὲ τῶν δων τὰ ε προσ-
 υπακούεται, ἐπιτετράπεμπος γάρ φαμεν· καὶ ἐπὶ
 τῶν λοιπῶν ὁμοίως.

ρλθ. **ἀπλαῖ καὶ ἀσύνθετοι σχέσεις.** ὃ ἔστιν ἡ τε τοῦ
 πολλαπλασίου καὶ τοῦ ἐπιμορίου καὶ τοῦ ἐπιμεροῦς
 καὶ τῶν ἀντικειμένων τούτοις.

ρλθ = Philop. ρξ ρλθ = Philop. ρξα

ρλθ,ι = Nicom. XXI, 2. ρλθ,ι = Nicom. XXI, 3.

27–28 διπλασιάσης M: διπλασιάσεις A

31 ἐπιτριτέταρτου scripsi: ἐπιτετάρτου M: τετάρτου A

32 ἐπιτριτέταρτος (Philop.)] ἐπιτετάρτου AM

34 ἐπιτριτέταρτους scripsi: ἐπιτετάρτους AM

ρλθ. ι ἐκ τῶν AM: ἐκ μὲν τῶν Nicom. || ἔστι AM: om. Nicom.

3 ἐπὶ M: ἐκ A

4 γάρ A: om. M || εἶπον scripsi: εἰπὼν AM

7 προσυπακούεται A: προσεπακούεται M || ὄν M: ὄν A

12–13 ἐπὶ ... φαμεν A: ἐπὶ ... φαμεν iter. M

ρλθ. ι δ M: om. A

ρμ. **ἐκ δυοῖν εἰς μίαν.** ἐκ γὰρ τοῦ πολλαπλασίου καὶ
 τοῦ ἐπιμορίου γίνεται πολλαπλασιεπιμόριος, καὶ
 πάλιν ἐκ τοῦ πολλαπλασίου καὶ τοῦ ἐπιμεροῦς γίνε-
 ται πολλαπλασιεπιμερὴς. ἰστέον δὲ κἀκεῖνο ὅτι τῶν
 ἐπιμερῶν τε καὶ τῶν ἐπιμορίων πάντων οἱ πυθμένες
 5 πρῶτοι πρὸς ἀλλήλους εἰσὶ· κοινῶ γὰρ μέτρῳ τῇ
 μονάδι μετροῦνται, οἷον ὁ ε καὶ ὁ γ πρὸς ἀλλήλους
 πρῶτοί εἰσι, καὶ ὁ γ καὶ ὁ β, καὶ ὁ δ καὶ ὁ γ, καὶ πάν-
 τες οἱ ἐφεξῆς ἀριθμοί.

ρμα. **αἱ εἰδικαὶ ταῖς εἰδικαῖς.** ἀντὶ τοῦ πολλαπλασιε-
 πιδίτριτος ἢ πολλαπλασιεπιτέταρτος καὶ ἐφεξῆς ἐπὶ
 πάντων.

ρμβ. **πολλαπλασιεπιμερὴς οὖν ἔστιν.** εἰρηκῶς περὶ τῶν
 ἀπλῶν εἰδῶν, λέγω δὴ τοῦ τε πολλαπλασίου καὶ
 τοῦ ἐπιμορίου καὶ τοῦ ἐπιμεροῦς, νῦν περὶ τῶν συν-
 θέτων λέγει, φημὶ τοῦ τε πολλαπλασιεπιμορίου καὶ
 τοῦ πολλαπλασιεπιμεροῦς. περὶ τούτων οὖν βούλε-
 5 ται ἐν τούτοις διαλαβεῖν.

ρμγ. **διπλῶς δὲ ὡς ἂν δὴ σύνθετος.** διπλῇ γὰρ ἡ σύνθε-
 σις αὐτοῦ· ἡ γὰρ τοῦ πολλαπλασίου αὐξομένου τοῦ
 δὲ ἐπιμορίου μένοντος γίνεται ἡ σύνθεσις, ἡ τὸ ἀνά-
 παλιν τοῦ ἐπιμορίου μὲν αὐξομένου τοῦ δὲ πολλα-
 πλασίου μένοντος· οἷον ἔαν εἴπω διπλασιεπίτριτος,
 5 τριπλασιεπίτριτος, τετραπλασιεπίτριτος, πενταπλα-
 σιεπίτριτος καὶ ἐφεξῆς, τὸ μὲν πολλαπλάσιον αὐξων,
 λέγω γὰρ δῖς, τρίς, τετράκις, πεντάκις καὶ ἐφεξῆς, τὸ
 μέντοι ἐπιμόριον μένει, πανταχοῦ γὰρ τὸ ἐπίτριτον·
 εἰ δὲ εἴπω διπλασιεπίτριτος, διπλασιεπιτέταρτος,
 10 διπλασιεπιτέμπος καὶ ἐφεξῆς, τὸ ἐπιμόριον αὐξεται,
 τὸ δὲ πολλαπλάσιον πανταχοῦ τὸ αὐτό· τὸ διπλά-
 σιον γὰρ μένει.

ρμ = Philop. ρξβ ρμα = Philop. ρξγ

ρμβ = Philop. ρξδ ρμγ = Philop. ρξε

ρμ,ι = Nicom. XXI, 3. ρμα,ι = Nicom. XXI, 3.

ρμβ,ι = Nicom. XXII, ι. ρμγ,ι = Nicom. XXII, 2.

ρμ. ι δυοῖν M: δυεῖν A

ρμβ. ι πολλαπλασιεπιμερὴς οὖν ἔστιν AM: πολλαπλασιεπιμόριος
 μὲν οὖν ἔστι Nicom.

ρμγ. ι διπλῶς AM, Philop., et Nicom. CSH: διττῶς Nicom.

ι–2 διπλῇ γὰρ ἡ σύνθεσις M: διπλῇ γὰρ εἰσὶν θέσις A

2 et 4 αὐξομένου M: αὐξανομένου A

3 δὲ A: om. M

12–13 τὸ διπλάσιον γὰρ μένει, cf. n. ad ρμδ.

ρμδ. *παρά τὴν ποσότητα παρονομασθήσεται*. εἰ β διπλάσιος, εἰ γ τριπλάσιος, εἰ δ τετραπλάσιος, καὶ ἐφεξῆς ὁμοίως.

ρμε. *τοῖς ἀπὸ δυάδος ἐφεξῆς ἀρτίοις καὶ περιττοῖς*. εὐρήσεις κατὰ τάξιν τοὺς πολλαπλασιαστέμους, ἔαν ἐκθῆς τοὺς ἀπὸ δυάδος ἀρτίους καὶ περιττοὺς καὶ τοὺς ἀπὸ πεντάδος περιττοὺς μόνους καὶ παραβάλης πρῶτον πρῶτῳ καὶ δεύτερον δευτέρῳ καὶ ἐφεξῆς· οἷον ὁ ε τοῦ β διπλασιαστέμους, ὁ ζ τοῦ γ διπλασιαστέμους, ὁ θ τοῦ δ διπλασιαστέμους, ὁ ια τοῦ ε διπλασιαστέμους, καὶ ἐφεξῆς ὁμοίως.

ρμς. *ἀπὸ δὲ δυάδος τῶν ἐφεξῆς πάντων ἀρτίων*. εἰ δέ θέλεις εὐρεῖν πάντας τοὺς διπλασιαστέμους, ἐκτίθει πάντας τοὺς ἀπὸ δυάδος ἀρτίους, εἴτα τοὺς ἀπὸ πεντάδος <κατὰ> πεντάδα, εἰ ποτε ἐκτίθεις, ποιήσεις πάντως τοὺς διπλασιαστέμους, οἷον ὁ ε τῶν β διπλασιαστέμους, καὶ ὁ ι τῶν δ, καὶ ὁ ιε τῶν ς, καὶ ὁ κ τῶν η, καὶ ὁ κε τῶν ι, καὶ ἐφεξῆς. | *ἀπὸ δὲ τοῦ γ*. ἐπειδὴ δὲ ὁ ζ τοῦ γ πρῶτος διπλασιαστέμους ἦν, λάμβανε πάντας τοὺς ἀπὸ τριάδος τριάδι διαφέροντας καὶ τοὺς ἀπὸ ἐπτάδος ἐπτάδι, καὶ ποιήσεις τοὺς διπλασιαστέμους, οἷον ὁ ζ τοῦ γ διπλασιαστέμους· πρόσθεταῖς τρισὶ τρία καὶ τοῖς ζ ζ· οὐκοῦν ὁ ιδ τοῦ ς διπλασιαστέμους καὶ ὁ κα τοῦ θ καὶ ὁ κη τοῦ ιβ καὶ ὁ λε τοῦ ιε καὶ ὁ μβ τοῦ ιη καὶ ἐφεξῆς ὁμοίως. | *εἴτα πάλιν ἀπ' ἄλλης ἀρχῆς*. ὁ θ τοῦ δ πρῶτος διπλασιαστέμους ἦν· οὐκοῦν ἔαν τοῖς μὲν δ δ προσθῇς αἰ τοῖς δὲ θ θ, ποιήσεις τοὺς διπλασιαστέμους, οἷον ὁ θ τοῦ δ διπλασιαστέμους ἔστι, καὶ ὁ ιη τοῦ η καὶ ὁ κζ τοῦ ιβ καὶ ὁ λς τοῦ ις καὶ ὁ με τοῦ κ καὶ ἐφεξῆς ὁμοίως. 20 καὶ ἐπὶ τῶν ἄλλων δὲ πολλαπλασιαστέμων τῇ αὐτῇ μεθόδῳ κεχρημένος εὐρήσεις πάντα τὰ κατὰ μέρος εὐτακτα εἶδη.

ρμδ = Philop. ρξς ρμε = Philop. ρξζ

ρμς = Philop. ρξη, ρξθ, ρο

ρμδ,ι = Nicom. XXII, 2. ρμε,ι = Nicom. XXII, 3.

ρμς,ι = Nicom. XXII, 3. 7 = Nicom. XXII, 3.

14-15 = Nicom. XXII, 4.

ρμδ. ι *παρά*... παρονομασθήσεται AM: inter τὴν et ποσότητα Nicom. hab. τοσαύτην

ρμε. ι *ἐφεξῆς* AM: ἐξῆς Nicom.

4 *παραβάλης* (Philop.) παραλάβης AM

6 διπλασιαστέμους (Nicom. et Philop.) διπλάσιος ἡμιόλιος AM

6-7 διπλασιαστέμους (Nicom. et Philop.) διπλάσιος ἐπίτριτος AM

ρμς. ι *ἀπὸ δὲ δυάδος* AM et Philop.: ἀπὸ δυάδος δὲ Nicom.

3 alt. τοὺς (Philop.) τοῖς AM (ut vid.)

4 κατὰ scripsi: om. AM

5 διπλασιαστέμους A: διπλασμιόλιους M

8 δὲ M: om. A

ρμζ. *πρὸς μὲν γὰρ τὸν πρῶτον στίχον*. πάντες γὰρ οἱ ἐφεξῆς πρὸς τὸν πρῶτον στίχον παραβαλλόμενοι πάντα τὰ εἶδη τοῦ πολλαπλασίου ὁμοταγῶς ποιήσουσιν, οἷον ὁ β πρὸς τὴν μονάδα διπλάσιος, ὁ γ τριπλάσιος, ὁ δ τετραπλάσιος, ὁ ε πενταπλάσιος, 5 καὶ ἐφεξῆς ὡσαύτως. καὶ ὁ δ τῶν β διπλάσιος, ὁ δὲ ς τριπλάσιος, ὁ δὲ η τετραπλάσιος, ὁ δὲ ι πενταπλάσιος, καὶ ἐπὶ τῶν ἄλλων εὐρήσεις τὸ αὐτό.

ρμη. *πρὸς τὸν γείτονα*. πρὸς μὲν γὰρ τὸν πρῶτον στίχον τοὺς πολλαπλασίους ποιοῦσι, πρὸς δὲ τοὺς γείτονας τοὺς ἐπιμορίους, οἷον ὁ γ πρὸς τὸν β τὸν ἡμιόλιον, ὁ δ πρὸς τὸν γ τὸν ἐπίτριτον, καὶ ὁ ε πρὸς τὸν δ τὸν ἐπιτέταρτον, καὶ ἐφεξῆς ὡσαύτως. 5

ρμθ. *ἀπὸ δὲ τοῦ τρίτου στίχου*. ἔαν δὲ ἀπὸ τοῦ τρίτου στίχου ἄρξῃ καὶ λάβῃς τοὺς ἀπὸ πεντάδος συνεχεῖς περισσοὺς καὶ παραβάλης πρὸς αὐτὸν γ καὶ τοὺς ἐφεξῆς αὐτῷ περιττοὺς, τοὺς ἐπιμερεῖς ποιήσεις· οἷον ὁ ε τοῦ γ ἐπιμερῆς, ὁ ζ τοῦ ε, ὁ θ τοῦ ζ, ὁ ια τοῦ θ, 5 ὁ ιγ τοῦ ια, καὶ ἐπὶ πάντων ὁμοίως.

ρν. *ταῦτα δὲ οὐκ ἔστι μὲν ἡμίση διὰ τὰ προλεχθέντα*. ἐπεὶ ὡς εἴρηται εὐρεθήσεται τὸ αὐτό· τὰ γὰρ δύο ἡμίση ἔν ποιοῦσι καὶ τὰ δύο ἕκτα τρίτον, ὥστε δεῖ τηρεῖν· πλατικώτερον δὲ τοῦτο εἴρηται ἐν τοῖς προλαβοῦσιν. 5

ρνα. *ὡς ἐν πρώτῃ λαμβάνουσιν εἰσαγωγῇ*. ἀντὶ τοῦ ὡς ἐπιπολαιότερον εἰπεῖν· λέξει γὰρ καὶ γλαφυρότερον καὶ βαθύτερον.

ρνβ. *ἔστι δὲ τις γλαφυρώτερα ἔφοδος*. δείξας ἐκ τοῦ διαγράμματος πῶς προὔχει τὸ πολλαπλάσιον τῶν ἄλλων, ὅτι πρῶτον μὲν ἔστι τὸ πολλαπλάσιον καὶ τούτου τὸ διπλάσιον, εἴτα τὸ ἡμιόλιον καὶ τὸ ἐπίτριτον καὶ τὸ πολλαπλασιαστέμιον καὶ τὸ πολλαπλα- 5

ρμζ = Philop. ροβ ρμη = Philop. ρογ

ρμθ = Philop. ροδ ρν = Philop. ρος

ρνα = Philop. ροζ ρνβ = Philop. ροη, ροθ

ρμζ,ι = Nicom. XXII, 6. ρμη,ι = Nicom. XXII, 6.

ρμθ,ι = Nicom. XXII, 6. ρν,ι = Nicom. XXIII, 2.

ρνα,ι = Nicom. XXIII, 4. ρνβ,ι = Nicom. XXIII, 4.

ρμζ. 3 ὁμοταγῶς A: ὁμοιοταγῶς M

ρμη. 4 ὁ ε M: ὁ ιε A

ρμθ. 4 αὐτῷ M: αὐτοῦ A

6 ὁ ιγ τοῦ ια M: ὁ ιγ τοῦ ια τοῦ θ ὁ ιγ τοῦ ια A

ρν. ι ἡμίση A et fec. M² (ut vid.): ἡμέση M

ρνα. 2 ἐπιπολαιότερον scripsi: ἐπὶ παλαιότερον M et (ut vid.)

A || γάρ M: δὲ A

ρνβ 4 τούτου scripsi: τοῦτο AM

σιεπιμερές, νῦν ἐξ ἑτέρου θαυμαστοῦ προστάγματος δείκνυσι τὴν τάξιν, ἀναφαίνονται οὖν εὐτάκτως τὰ εἶδη. ἐκ τούτου οὖν τοῦ προστάγματος εὐρίσκονται ὅτι πρώτη μὲν τῷ ὄντι ἡ ἰσότης, εἴτα αἱ ἀνισότητες
 10 ἐξ αὐτῆς προέρχονται· καὶ κατὰ τὸ ἀληθές εἶδει ἐοίκασιν οἱ ἀριθμοὶ περιγράφοντες πάντα. πῶς οὖν εὐρίσκομεν πρῶτον τὸν διπλάσιον λόγον; ἐκθοῦ ἐφεξῆς τρεῖς μονάδας ὡς ὑποτέτακται α α α· εἴτα λαβὲ τὴν πρῶτην αὐτὴν καθ' αὐτήν· δεῖ γὰρ τὸν πρῶτον ἑαυτῷ
 15 ἴσον εἶναι, τὸν δὲ δεύτερον ἀριθμὸν τῷ πρῶτῳ ἅμα καὶ δευτέρῳ, τὸν δὲ τρίτον τῷ πρῶτῳ ἅμα καὶ δυσὶ τοῖς δευτέροις ἅμα καὶ τρίτῳ καὶ γενήσεται ὁ διπλάσιος· οἷον εἰσι μονάδες ἐφεξῆς γ· λαβὲ τὴν πρῶτην, γίνεται α, λαβὲ τὴν δευτέραν μετὰ τῆς πρώτης,
 20 γίνονται β, λαβὲ καὶ τὴν τρίτην μετὰ τῆς πρώτης καὶ δις τῆς δευτέρας, γίνονται δ· ἔχομεν οὖν α β δ· ἰδοὺ ὁ διπλάσιος λόγος. ἐὰν δὲ ἀντιστρόφως αὐτὰ ταῦτα κατὰ τὴν αὐτὴν μέθοδον ποιήσης, σχήσεις τὸν ἡμιόλιον λόγον· οἷον ἐστι α β δ. ἄρξαι ἀπὸ τῶν δ·
 25 ἰδοὺ δ ἔχομεν· λαβὲ τὸν δ μετὰ τῶν β, γίνονται ς· λαβὲ τὸν γ, ὃ ἐστι τὴν μονάδα, μετὰ τοῦ πρῶτου, ὃ ἐστι τοῦ δ, καὶ δις τοῦ δευτέρου, ὃ ἐστι τῶν δύο, γίνονται θ· εἰσὶν οὖν δ ς θ· οὗτοι τοῖνυν ἡμιόλιοι εἰσιν· ὁ μὲν γὰρ θ τοῦ ς, ὁ δὲ ς τοῦ δ. ὁμοίως καὶ ἐπὶ
 30 πάντων τῶν λοιπῶν εἰδῶν εὐτάκτως δείξει ὁ Νικόμαχος αὐτός.

ρνγ. ἐκ δὲ διπλασίου εὐθὺς τὸ τριπλάσιον. ἐξ ἀλλήλων γὰρ κατὰ τάξιν τίκτονται, ἀλλ' οὐκ ἀντεστραμμένως, ἀλλὰ κατὰ τὴν ἐξ ἀρχῆς θέσιν· οἷον ἐδείχθη ὁ δύο τῆς μονάδος διπλάσιος καὶ ὁ δ τῶν β. εἰσὶν οὖν α, β, δ·
 5 ἔστι τοῖνυν πρώτη μὲν ἡ μονάς, δεύτερος δὲ ὁ β, καὶ τρίτος ὁ δ· οὐκοῦν ποιήσον τὸν πρῶτον τῷ πρῶτῳ ἴσον, γίνεται ἔν· εἴτα τὸν δεύτερον τῷ πρῶτῳ, γίνονται γ· τὸν γ τῷ πρῶτῳ καὶ δις τῷ δευτέρῳ ἅμα καὶ τρίτῳ, γίνονται θ. εἰσὶν οὖν ἐφεξῆς α γ θ· ἰδοὺ τὸ
 10 τριπλάσιον εἶδος ἀνεφάνη. ὁμοίως ἐκ τούτου τὸ τετραπλάσιον γενήσεται· ἐστι γὰρ α· εἴτα α καὶ γ δ· καὶ θ καὶ α καὶ δις γ ις. εἰσὶν οὖν α δ ις, καὶ ἔστι τὸ τετραπλάσιον. καὶ ἐπὶ πάντων ὁμοίως προχωρῶν εὐρήσεις εὐτακτα τὰ εἶδη τῶν πολλαπλασίων.

ρνγ = Philop. ρπ

ρνγ,ι = Nicom. XXIII, 8.

14 ἑαυτῷ M: ἑαυτοῦ A
 30 τῶν λοιπῶν εἰδῶν M: εἰδῶν τῶν λοιπῶν A
 ρνγ. 2 οὐκ ἀντεστραμμένως A: οὐ κατεστραμμένως M
 3 ὁ δύο A et M² i. m.: ὁδὸς M
 8–9 ἅμα καὶ τρίτῳ M² s. v.: om. AM

ρνδ. ἐκ δὲ αὐτῶν τούτων τῶν εὐτάκτως πολλαπλασίων ἀναστραφέντων. ἐκ τούτων πάλιν κατὰ ἀναστροφὴν γίνονται τὰ εἶδη τῶν ἐπιμορίων· οἷον ἐστι πρῶτον εἶδος τῶν πολλαπλασίων τὸ διπλάσιον, θεωρούμενον κατὰ τὴν α καὶ τὰ β καὶ τὰ δ. ἀντίστροφον καὶ
 5 τῇ αὐτῇ μεθόδῳ ἀπὸ τῶν δ χρησάμενος, εὐρήσεις τὸ ἡμιόλιον εἶδος· εἰσὶ γὰρ δ, εἴτα δ καὶ β, γίνονται ς· α δὲ καὶ δ καὶ δις β, γίνονται θ· ὑπάρχουσιν οὖν δ ς θ· ἰδοὺ ἡμιόλιον εἶδος. πάλιν τριπλάσιος ἦσαν α γ θ· ἄρξαι ἀπὸ τῶν θ καὶ ποιήσον θ· καὶ πάλιν θ καὶ γ,
 10 γίνονται ιβ· εἴτα α καὶ θ καὶ δις γ, γίνονται ις· εἰσὶν οὖν θ, ιβ, ις· ἰδοὺ οἱ ἐπίτριτοι· ὁ γὰρ ις τοῦ ιβ ἐπίτριτός ἐστιν, ἀλλὰ καὶ ὁ ιβ τοῦ θ. ὅρα τοῖνυν θαυμαστὴν τάξιν ὁμοίως καὶ τοὺς τετραπλάσιους λαβὼν καὶ ἀντεστραμμένως συνθεῖς εὐρήσεις τοὺς ἐπιτετάρτους, 15 καὶ ἐφεξῆς ὁμοίως.

ρνε. ἀπὸ δὲ ἄλλης ἀρχῆς αὐτῶν τῶν ἐπιμορίων. πάλιν ἄλλην ὅρα τάξιν· ἐκ μὲν γὰρ τῶν ἡμιολίων ἀντιστρεφόμενον γίνονται ἐπιμερεῖς, οὐχ οἱ τυχόντες, ἀλλ' οἱ ἐπιδιμερεῖς, ἐκ δὲ τῶν ἐπιτρίτων οἱ ἐπιτριμερεῖς, ἐκ δὲ τῶν ἐπιτετάρτων οἱ ἐπιτετραμερεῖς, καὶ ἐφεξῆς. οἷον
 5 εἰσὶν ἡμιόλιοι δ, ς, θ. λαβὲ ἀπὸ τῶν θ τῇ αὐτῇ μεθόδῳ, γίνονται θ· εἴτα θ καὶ ς, γίνονται ιε, καὶ πάλιν δ καὶ θ καὶ δις ς, γίνονται κε. ἰδοὺ γεγόνασιν ἐπιδιμερεῖς· ὁ γὰρ κε τοῦ ιε ἐπιδιμερής· ἔχει γὰρ αὐτὸν καὶ δύο αὐτοῦ μέρη· δύο γὰρ τρίτα αὐτοῦ ἔχει. ὡσαύτως
 10 καὶ ὁ ιε τοῦ θ ἐπιδιμερής· ἔχει γὰρ αὐτὸν καὶ β αὐτοῦ μέρη· δύο γὰρ τρίτα. ὡσαύτως δὲ λαβὼν τοὺς ἐπιτρίτους καὶ ἀντιστρόφως τῇ μεθόδῳ χρησάμενος, ποιήσεις τοὺς ἐπιμερεῖς· οἷον εἰσὶν ἐπίτριτοι θ, ιβ, ις· ἄρξαι ἀπὸ τῶν ις, γίνονται οὖν ις καὶ κη (ις γὰρ καὶ
 15 ιβ κη) καὶ μθ (θ γὰρ καὶ ις καὶ δις ιβ μθ)· ὁ ις οὖν καὶ κη καὶ μθ εἰσὶν ἐπιτριμερεῖς· ὁ μὲν γὰρ μθ τοῦ κη ἐστὶν ἐπιτριμερής· ἔχει γὰρ αὐτὸν καὶ τρία αὐτοῦ μέρη· τρία γὰρ αὐτοῦ τέταρτα ἔχει· ὁ δὲ κη τοῦ ις ἐπιτριμερής καὶ αὐτός· ἔχει γὰρ αὐτὸν καὶ γ αὐτοῦ
 20 τέταρτα. πάλιν τοὺς ἐπιτετραμερεῖς εὐρήσεις λαμβάνων τοὺς ἐπιτετάρτους καὶ ἀντιστρόφως κεχρημένος τῇ μεθόδῳ· κατὰ τὸν αὐτὸν δὲ τρόπον καὶ ἐπὶ τῶν ἄλλων.

ρνδ = Philop. ρπα

ρνε = Philop. ρπβ

ρνδ,ι–2 = Nicom. XXIII, 9.

ρνε,ι = Nicom. XXIII, 10.

ρνδ. 1 εὐτάκτως Nicom.: εὐτάκτων AM et Nicom. GH
 8 α δὲ καὶ δ A: ἐν δὲ καὶ τέσσαρα ἐν δὲ καὶ δ M
 ρνε. 4 ἐπιδιμερεῖς (Philop.)] διμερεῖς AM || ἐπιτριμερεῖς (Philop.)] τριμερεῖς AM
 6 ς (cf. Philop.)] καὶ AM
 8–9 ἐπιδιμερεῖς M: ἐπιμερεῖς A
 15–17 κη ... πρ. κη M: κη A

ρνς. μὴ ἀντεστραμμένων δέ. ἐὰν δὲ χρήσῃ τῇ μεθόδῳ ἐπὶ τῶν ἐπιμορίων μὴ ἀντιστρέφων, πάλιν εὐτάκτως τοὺς πολλαπλασιασμοὺς ποιήσεις. ἐκ μὲν τοῦ ἡμιολίου τὸν πολλαπλασιασμήμισυν, ἐκ δὲ τοῦ ἐπιτρί- 5 του τὸν πολλαπλασιασπρίτον, καὶ ἐπὶ τῶν ἄλλων ὁμοίως. οἷον εἰσιν ἡμιόλιοι δ, ς, θ. μὴ ἀντιστρέψης, ἀλλὰ ποιήσων δ· καὶ δ καὶ ς [καί] ι· καὶ θ καὶ δ καὶ δις ς κε· γίνονται οὖν δ ι κε· ἰδοὺ οὗτοι πολλαπλασιασμη- 10 μίολιοι· ὁ γὰρ κε ἔχει τὸν ι δις καὶ τὸ ἡμισυν αὐτοῦ. ἵνα δὲ μὴ τὰ αὐτὰ πολλάκις λέγωμεν, τῇ αὐτῇ μεθόδῳ μὴ ἀντιστρέφων ἀπὸ τῶν ἐπιτρίτων, ποιήσεις τοὺς πολλαπλασιασπρίτους, καὶ ἀπὸ τῶν ἐπιτετάρ- των τοὺς πολλαπλασιασπιτετάρτους, καὶ ἐφεξῆς ὁμοί- 15 ως ἐπὶ πάντων.

ρνλ. πάντως δὲ οἱ ἄκροι τετράγωνοι. οἱ γὰρ ἄκροι πάν- τως τετράγωνοι εὐρεθήσονται, ὥς ἐπὶ μὲν τῶν ἡμιο- λίων τοῦ δ καὶ τοῦ ς καὶ τοῦ θ, ὁ δ καὶ ὁ θ· ἐπὶ δὲ τῶν ἐπιτρίτων τοῦ θ καὶ τοῦ ιβ καὶ τοῦ ις, ὁ θ καὶ ὁ ις· 5 καὶ ἐπὶ πάντων τῶν εἰδῶν τετράγωνοι εἰσιν οἱ ἄκροι, καὶ τοῦτο εὐλόγως, ἐπειδὴ δέδεικται γραμμικῶς ὅτι ἐὰν τρεῖς ἀριθμοὶ ἐλάχιστοι ὦσι πρὸς ἀλλήλους τὸν αὐτὸν λόγον ἔχοντες, οἱ ἄκροι αὐτῶν τετράγωνοι εἰσιν. ἐπεὶ οὖν καὶ ἐπὶ τῶν ἡμιολίων ὁ δ καὶ ὁ ς καὶ 10 ὁ θ ἐλάχιστοί εἰσι, διὰ τοῦτο οἱ ἄκροι τετράγωνοι εἰσιν. ἀλλ' ἴσως εἴποι τις ὅτι "οὐκ εἰσιν ἐλάχιστοι, οὐδὲ γὰρ πυθμένες εἰσὶ τῶν ἡμιολίων· ἰδοὺ γὰρ ὁ γ τοῦ β ἡμιόλιος." φαμέν ὅτι δύο μὲν ἀριθμοὶ ἡμιόλιοι ἐλαχι- στοὶ εὐρίσκονται, ὥς ὁ β καὶ ὁ γ, τρεῖς δὲ οὐκέτι· οὐκ 15 ἂν γὰρ ὑποκάτω τοῦ δ καὶ τοῦ ς καὶ τοῦ θ τρεῖς ἡμιόλιους εὕρης. ὥσαύτως δὲ καὶ δύο μὲν ἐπιτρίτους εὕρισκες, τὸν γ καὶ τὸν δ· τρεῖς δὲ ὑποκάτω τοῦ θ καὶ τοῦ ιβ καὶ τοῦ ις οὐκ ἂν εὔροις. καὶ ἐπὶ πάντων τῶν ἄλλων ὁμοίως ὥστε εἰκότως τοὺς ἄκρους τετρα- 20 γώνους ἔχουσιν.

ρνς = Philop. ρπη

ρνλ = Philop. ρπς

ρνς,ι = Nicom. XXIII, ιι.

ρνλ,ι = Nicom. XXIII, ις.

ρνς. ι ἀντεστραμμένων AM: ἀναστρεφόμενων Nicom.: ἀνεστραμ- μένων Nicom. SH
2 μὴ A: om. M
6 ς (cf. Philop.)] καὶ AM
7 pr. δ. καὶ scripsi: δις AM || ι A: η M
ρνλ. ι3 μὲν A: om. M

ΤΟΥ ΑΥΤΟΥ ΣΧΟΛΙΑ ΕΙΣ ΤΟ ΔΕΥΤΕΡΟΝ ΒΙΒΛΙΟΝ

α. ἐπειδὴ στοιχεῖον λέγεται. εἴρηται ἡμῖν ὅτι τοῦ πο- σοῦ τὸ πρὸς τι τὸ μὲν ἔστιν ἴσον τὸ δὲ ἄνισον, καὶ ὅτι τοῦ ἀνίσου πολλαὶ αἱ σχέσεις. ἐν μὲν οὖν τῷ τέλει τοῦ πρὸ τούτου γράμματος διὰ τινος θείου προστά- 5 γματος ἔδειξεν ὅτι ἐκ τῆς ἰσότητος προέρχεται ἡ ἀνι- σότης· ἐπειδὴ δὲ τὸ ἐκ τινος προερχόμενον καὶ εἰς αὐτὸ ἀναλύεται, στοιχεῖον γὰρ ἔστι, νῦν πάλιν διὰ τοῦ αὐτοῦ προστάγματος θέλει δεῖξαι τὴν ἀνάλυσιν. λαμβάνει οὖν τὸ αὐτὸ πρόσταγμα καὶ τὴν αὐτὴν 10 μέθοδον, ἀφαιρῶν μέντοι καὶ οὐ προστιθείς, οἷον ἦν πρῶτον τὸ διπλάσιον, εἴτα τὸ ἐπιμόριον καὶ τὸ ἐπι- μερές καὶ τὰ λοιπά. καὶ ἐγένετο ἐκ μὲν τοῦ διπλάσιου ὁ ἡμιόλιος, ἐκ δὲ τοῦ ἡμιολίου ὁ ἐπιμερής, καὶ ἐφεξῆς. λαβὲ τοῖνυν ἐπιμερεῖς, καὶ πάντως ἀναλύσεις αὐτοὺς εἰς ἡμιόλιους καὶ τούτους εἰς διπλάσιους καὶ τούτους 15 εἰς τὰς τρεῖς ἴσας μονάδας. θαυμαστὸν οὖν τὸ ἐπιχει- ρημα, οἷον εἰσιν ἐπιμερεῖς θ, ιε, κε· λαβὲ τοῖνυν τὰς θ· ἀπὸ τῶν θ γίνονται θ, ἐπειδὴ δεῖ τὸν πρῶτον ληφθῆναι· εἴτα ἀφαίρησον τὰς θ ἀπὸ τοῦ δευτέρου, ὃ ἔστι τοῦ ιε, καὶ γίνονται ς· εἴτα τὰς θ καὶ δις τὸν ς 20 ἀφαίρησον ἀπὸ τοῦ κε, γίνονται δ. ἐκθοῦ οὖν θ, ς, δ· ἰδοὺ εἰς τὸ ἡμιόλιον ἀνελύθη ὁ ἐπιμερής. πάλιν λαβὲ τὰς δ, εἴτα ἀπὸ τῶν ς λαβὲ τὰ δ, γίνονται δύο. λοιπὸν τὰ δ καὶ δις τὰ β ἀφαίρησον ἀπὸ τῶν θ, γίνεται α. ἐκθοῦ οὖν α, β, δ· ἰδοὺ τὸν ἡμιόλιον εἰς τὸν διπλάσιον 25 ἀνέλυσας, ἐξ οὗ καὶ ἐγένετο. καὶ πάλιν λαβὲ α, εἴτα τὴν μίαν ἀφελε ἀπὸ τῶν β, γίνεται μίαν· πάλιν τὴν α καὶ δις τὴν μίαν ἀφελε ἀπὸ τῶν δ. γίνονται α, α, α· ἰδοὺ ἀνελύσαμεν <εἰς> τὰς μονάδας, ὃ ἔστιν εἰς τὴν ἰσότητα τὴν ἐξ ἀρχῆς, ἐξ ἧς καὶ προήλθον αἱ ἀνισό- 30 τητες. καὶ πάντα τὰ λοιπὰ εἶδη ἀναλύσεις εἰς τὰ ἐξ ὧν συνετέθησαν τῇ αὐτῇ μεθόδῳ χρώμενος.

β. ἵνα ἐν τῷ αὐτῷ λόγῳ. ἀντὶ τοῦ ἵνα οἱ τρεῖς τὸν αὐτὸν ἔχωσι λόγον, ὃ ἔστιν ἢ ἡμιόλιον ἢ ἐπίτριτον ἢ τι ἕτερον, καὶ ἵνα μὴ τῶν λαμβανομένων τριῶν ὅρων ὁ μὲν ἡμιόλιος ἢ τοῦ ἄλλου, ὁ δὲ ἐπίτριτος ἢ 5 τις ἕτερος.

α = Philop. α

β = Philop. ς

α,ι = Nicom. II, I, ι.

β,ι = Nicom. II, ι.

α. 3 αἱ M: om. A
10 οὐ M: om. A
12 ἐγένετο AM (ut vid.)
29 pr. εἰς (Philop.)] om. AM
31 τὰ λοιπὰ M: τὰ λοιπὰ γὰρ A
32 συνετέθησαν M: συνετέθεισαν A || χρώμενος A² (γρ. i. m.) et M: χρησάμενος A

γ. *σχέσει προγενεστέρα*. ἀντὶ τοῦ ἐν ἐκείνῃ ἐξ ἧς ἐγένοντο, οἷον τῶν ἡμιολίων σχέσις προγενεστέρα ἐστὶν ἢ διπλασία· ἐκ ταύτης γὰρ γεγόνασι. τῶν δὲ ἐπιμερῶν ἢ ἡμιολία, καὶ ἐπὶ τῶν λοιπῶν ὁμοίως.

δ. εἰς <...> *τὴν ἰσότητα στοιχεῖον τοῦ πρὸς τι ποσοῦ*. εἰς γὰρ τὴν ἰσότητα τελευτήσαντες· οὐκέτι δυνάμεθα ἐπὶ τι ἄλλο προχωρῆσαι, ἀλλ' ὥς εἰς στοιχεῖον ἐκεῖ καταντῶμεν.

ε. *παρέπεται δὲ τῇ τοιαύτῃ θεωρίᾳ*. εἰρηκῶς πῶς ἀναλύονται οἱ ἐπιμόριοι εἰς ἐκείνους ἐξ ὧν συνετέθησαν, παραδίδωσι νῦν πάννυ χαριέστατον θεώρημα, πολλαχοῦ συμβαλλόμενον ἡμῖν καὶ ἐν τῇ ψυχογονίᾳ Πλάτωνος. σύμβολα γὰρ ἐπωφελῆ Πλάτων λέγει πῶς τίκτεται ψυχὴ. καὶ λέγει ὅτι κίρνανται κρατῆρες, καὶ ὥς ἐπὶ † πηλῶ † κανῶν τις ἐπιμήκης διαξάινεται καὶ ὑφαίνεται καὶ τοιαῦτά τινα ἐν τῷ Τιμαίῳ παραδίδωσιν, εἰς ἃ λέγει ὅτι πῶς ὀφείλομεν δύο ἐπογδόους 5 εὐρίσκειν. τοῦτο οὖν τὸ νῦν παραδιδόμενον συμβάλλεται ἡμῖν ἐκεῖ· ἐνταῦθα γὰρ λέγει πῶς μεθόδῳ τινὶ γ ἢ δ ἅμα ἡμιολίους ἢ ἐπιτρίτους ἢ ἐπιτετάρτους ἢ ἐπιπέμπτους ἢ ἐπογδόους ἢ τινας τοιούτους εὐρωμεν· τὸ μὲν γὰρ διπλασίους γ ἢ δ ἢ ε ἢ ὅπως οὖν 15 δῆποτε εὐρεῖν ἀνευ τέχνης ῥάδιον· ὡσαύτως καὶ ἄλλους πολλαπλασίους· τὸ δὲ ἐπιμορίου δύο ἢ πλείονας οὐ ῥάδιον. παραδίδωσιν οὖν μέθοδον δι' ἧς οὐκ ἂν ἡμᾶς ποτε ἐκφεύξεται ἐπιμόριος ἀριθμός, ἀλλὰ πάντως εὐρεθήσεται εὐτάκτως. | λέγει γοῦν οὕτως 20 ὅτι ἅπας πολλαπλασίος τοσοῦτων ἐπιμορίων ἡγήσεται λόγων ἀντιπαρωνυμούντων αὐτῷ, ὁπόστος ἂν αὐτὸς ὧν τυγχάνει ἀπὸ μονάδος, οὔτε δὲ πλείονων οὔτε ἐλαττόνων. τί δὲ ἐστὶν ἀντιπαρωνυμούντων; ἀντὶ τοῦ εἰ θέλεις ἡμιολίους εὐρεῖν, τοὺς διπλασίους λήτεις, εἰ ἐπιτρίτους, 25 τοὺς τριπλασίους, καὶ τοῦτο ἐφεξῆς. οἷον τί λέγω; λέγει τις ὅτι “εὐρέ μοι δ ἡμιολίους.” λαμβάνω τοῖνυν τέσσαρας διπλασίους· ἐστὶ δὲ β, δ, η, ις. οὐκοῦν ἐπειδὴ πρῶτος διπλασίος ἐστὶν ὁ β μετὰ τὴν μονάδα, ἕνα ποιήσῃ ἡμιόλιον τὸν γ· ἡμισυ γὰρ τῶν β α· ὁ 30 οὖν γ τοῦ β ἡμιόλιος· εἰς οὖν γίνεται ἐξ αὐτοῦ, οὐκέτι

γὰρ τοῦ γ ἔστιν ἄλλο ἡμιόλιος· ἡμισυ γὰρ οὐκ ἔχει. ἔλθωμεν ἐπὶ τὸν β διπλασίον, ὃ ἐστὶ τὸν δ· οὗτος δύο ἡμιολίους ποιεῖ· ἡμισυ γὰρ τῶν δ β γίνονται. ἰδοὺ οὖν ὁ ζ τοῦ δ ἡμιόλιος, ἀλλὰ καὶ τοῦ ζ ὁ θ ἐστὶν ἡμιόλιος· τῶν δὲ θ οὐκέτι. ἰδοὺ οὖν δύο οὗτος ἐποίησεν. ὁ δὲ η, ὃς τρίτος ἐστὶ διπλάσιος, τρεῖς ποιήσῃ, καὶ οὐδὲ πλείους οὐδὲ ἐλάττους· ἡμισυ γὰρ τῶν η δ, <ἐξ ὧν> γίνεται ὁ ιβ· ἰδοὺ εἰς ἡμιόλιος. πάλιν τῶν ιβ τὸ ἡμισυ ζ, <ἐξ ὧν> γίνονται ιη· ἰδοὺ καὶ ἄλλος ἡμιόλιος. πάλιν τῶν ιη τὸ ἡμισυ θ, <ἐξ ὧν> γίνονται 40 κζ· εἰσὶν οὖν τρεῖς ἡμιόλιοι· ιβ, ιη, κζ· ὁ δὲ κζ οὐκέτι ἡμιόλιον ἔχει, ἐπειδὴ οὐ διαιρεῖται εἰς ἡμισυ. οὕτως οὖν ἐφεξῆς προκόπτων εὐρήσεις πάντας τοὺς ἡμιολίους εὐτάκτως. οὐκοῦν εἰ ε θελήσεις εὐρεῖν, λαμβάνε τὸν ε διπλάσιον καὶ πάντως ἵππτουσι ε <ἡμιόλιος> 45 καὶ οὐδὲ πλείους οὐδὲ ἐλάττους. ὁμοίως καὶ ἐπὶ τῶν λοιπῶν ἡμιολίων, κατὰ τὸν αὐτὸν δὲ τρόπον καὶ ἐπὶ τῶν ἐπιτρίτων. | πάλιν γὰρ εἰ εἴπη σοί τις ὅτι “εὐρέ μοι τρεῖς ἐπιτρίτους,” λαβὲ τὸν γ τριπλάσιον, καὶ εὐρήσεις τοὺς τρεῖς· τίς γὰρ ἔστιν ὁ τρίτος τρι- 50 πλάσιος; ὁ κζ· ἰστέον γὰρ ὅτι ὡς περ ἐπὶ αὐτῶν ὧν λαμβάνεις, ὀφείλεις τὸ πολλαπλασίον ποιεῖν (οἷον ὁ β τῆς μιᾶς διπλάσιος πρῶτος, οὐκοῦν ὁ δεῦτερος τῆς δυάδος καὶ ὁ τρίτος οὐκέτι τῆς τριάδος, ἀλλὰ τῆς τετράδος, καὶ ἐφεξῆς οὕτως), ὡσαύτως οὖν καὶ ἐν- 55 ταῦθα ὁ γ πρῶτος τριπλάσιος· οὐκέτι δὲ τὸν ζ λαμβάνεις, ἐπειδὴ τρεῖς δύο ζ, ἀλλὰ τὸν θ, ἐπειδὴ τοῦ πρῶτου τοῦ γ τριπλάσιος ὁ θ· πάλιν οὖν γ ὁ κζ· τρεῖς γὰρ θ κζ· ἀπὸ τοῦ κζ γοῦν εὐρήσεις τοὺς τρεῖς ἐπιτρίτους, τούτου μὲν τὸν λς, τοῦ δὲ λς τὸν μη, 60 τοῦ δὲ μη τὸν ξδ. ἰδοὺ τρεῖς ἐπιτρίτοι· οὐκέτι δὲ ὁ ξδ ἔχει ἐπιτρίτον, οὐκ ἐπιδέχεται γὰρ τρίτον. καὶ ἐπὶ τῶν λοιπῶν δὲ πάντων ὡσαύτως. οὕτω γοῦν καὶ τοὺς ἐπογδόους ἐν τῇ ψυχογονίᾳ εὐρήσομεν. εἰ γὰρ θέλωμεν δύο ἐπογδόους εὐρεῖν, λαμβάνομεν τὸν δεύ- 65 τερον ὀκταπλάσιον· τίς δὲ ὁ δεῦτερος; ὁ ξδ. εὐρίσκονται οὖν δύο μόνοι· τοῦ μὲν γὰρ ξδ ἐπόγδοός ἐστὶν ὁ οβ, τοῦ δὲ οβ ὁ πα· τούτου δὲ οὐκέτι ἐστὶν ἄλλος ἐπόγδοος· οὐ γὰρ ἔχει ὄγδοον ὁ πα. θαυμαστὴ οὖν ἡ περὶ τούτων μέθοδος. | οἱ μὲν γὰρ ἐπὶ πλάτος στίχοι, 70 ἐὰν ὧσι διπλάσιοι. ἐὰν γὰρ ὧσι διπλάσιοι οἱ τοῦ

γ = Philop. ι δ = Philop. ια

ε = Philop. ιβ, ιγ, ιδ, ιζ, ιη

γ, ι = Nicom. II, ι. δ, ι = Nicom. II, 2.

ε, ι = Nicom. II, 3. 20–22 = Nicom. III, ι.

δ. ι pr. εἰς ... ποσοῦ, cf. n. ad loc.

3 ἐκεῖ M: ἐκεῖσε A

ε. 2 συνετέθησαν M: συνετέθεισαν A

8 τῷ M: om. A

19 γοῦν M: οὖν A

21 ἀντιπαρωνυμούντων AM et Nicom. H: ἀντιπαρωνύμων Nicom. || ὁπόστος M: ὁπόσος A

22 τυγχάνει AM et Nicom. P: τυγχάνη Nicom.

30 alt. οὖν M: om. A

48 cf. Nicom. III, 2.

70–71 = Nicom. IV, 3.

31 ἄλλο (Philop.)] ἀλλ' AM

32 τὸν δ A (ut vid.): τοῦ τετάρτου M

38, 39, 40 ἐξ ὧν (Philop.)] om. AM

39 ιη M: om. A

45 ἡμιόλιοι (Philop.)] om. AM

48 εἰ M: om. A

56 δὲ M: γὰρ A

58 ὁ κζ M: κζ A

59 γοῦν M: om. A

70 οἱ Nicom.: εἰ AM

70–71 στίχοι, ἐὰν AM: inter στίχοι et ἐὰν Nicom. hab. οἱ ἀνωτάτω

71 ἐὰν γὰρ ὧσι διπλάσιοι M: om. A

πρώτου στίχου κατὰ πλάτος πάντως, καὶ οἱ ὑποκάτω διπλάσιοι εἰσι κατὰ πλάτος. οἱ δὲ ὑποκάτω τῶν ἐπάνω ὁμοταγεῖς ἡμιόλιοι, οἱ δὲ ὑποτείνοντες, ὃ ἐστὶν 75 οἱ διαγώνιοι, πάντως τριπλάσιοι· ταῦτα συμβαίνει, ἔαν ὥσιν οἱ ἄνω διπλάσιοι. εἰ δὲ τριπλάσιοι, καὶ οἱ ὑπ' αὐτοὺς πάντες κατὰ πλάτος τριπλάσιοι, οἱ δὲ ὑποκάτω τῶν ἐπάνω ὁμοταγῶν ἐπίτριτοι, ὁμοταγεῖς ὁμοταγῶν· ἐκ γὰρ τῶν τριπλασίων οἱ ἐπίτριτοι. 80 καὶ οἱ διαγώνιοι τετραπλάσιοι εὐρίσκονται. ἔαν δὲ ὥσι τετραπλάσιοι, οἱ πρῶτοι κατὰ πλάτος καὶ οἱ ὑπ' αὐτοὺς τετραπλάσιοι πάντες εἰσίν, οἱ δὲ ὑποκάτω τῶν ἐπάνω ἐπιτέταρτοι, οἱ δὲ διαγώνιοι πενταπλάσιοι, καὶ ἐπὶ πάντων δὲ τῇ αὐτῇ μεθόδῳ κέχρησο. 85 ὑπόδειγμα δέ σοι παρατίθω ἐπὶ διπλασίων καὶ τριπλασίων. ὅρα τοίνυν πῶς πάντα τὰ εἰρημένα ἐπὶ τῶν παραδειγμάτων εὐτάκτως εὐρίσκεται· ἐπὶ μὲν γὰρ τῶν διπλασίων, πάντες μὲν οἱ κατὰ πλάτος διπλάσιοι, οἱ δὲ διαγώνιοι τριπλάσιοι, οἱ δὲ ὑποκάτω 90 τῶν ἐπάνω ἡμιόλιοι· ἐπὶ δὲ τῶν τριπλασίων, πάντες μὲν οἱ κατὰ πλάτος τριπλάσιοι, οἱ δὲ διαγώνιοι τετραπλάσιοι, οἱ δὲ ὑποκάτω τῶν ἐπάνω ἐπίτριτοι. τῇ αὐτῇ μεθόδῳ κεκρημένος ἐπ' ἄπειρον εὐρήσεις ἀσφαλῶς προερχομένην τὴν τῶν ἀριθμῶν τούτων 95 θεωρίαν.

5. λοιπὸν προσαφηνίσαντες. εἰρηκῶς πῶς δεῖ εὐρίσκειν πλείους ἢ ἡμιόλιους ἢ ἐπιτρίτους ἢ ἐπιτέταρτους ἢ ἐπογδόους καὶ ἐπ' ἄπειρον, νῦν θέλει λοιπὸν εἰπεῖν ἕτερόν τι. καὶ φησιν ὅτι τὰ πρῶτα εἶδη τοῦ ἐπιμορίου 5 συλληφθέντα πάντως τὸν διπλάσιον ποιεῖ. πρῶτα δὲ εἶδη ἐπιμορίου τὸ ἡμιόλιον καὶ τὸ ἐπίτριτον. οἶον τί λέγω; ὁ δ τοῦ γ ἐπίτρίτος ἐστίν, ὁ δὲ γ τοῦ β ἡμιόλιος. οὐκοῦν ἄρα ὁ δ τοῦ β διπλάσιος. ὡσαύτως καὶ ἐφεξῆς λαμβάνων ἐπίτριτον καὶ ἡμιόλιον εὐρήσεις 10 τοῦτο. οἶον ὁ ιβ τοῦ θ ἐπίτριτος, ὁ θ τοῦ ζ ἡμιόλιος· ὁ ιβ ἄρα τοῦ ζ διπλάσιος· καὶ τοῦτο ἐπ' ἄπειρον εὐρήσεις. καλῶς οὖν ἐλέγομεν ὅτι ὁ διπλάσιος εἰς ἡμιόλιον καὶ ἐπίτριτον ἀναλύεται· συντιθέμενον γὰρ αὐτὸν ἐξ ἡμιολίου καὶ ἐπιτρίτου γίνεσθαι. πάλιν δὲ 15 τὸ γεννηθὲν πρῶτον εἶδος τοῦ πολλαπλασίου, ὃ ἐστὶ τὸ διπλάσιον, μετὰ τοῦ ἡμιολίου πάντως τριπλά-

ς = Philop. ιθ, κ, κγ, κδ

ς, ι = Nicom. V, ι.

74 ὁμοταγεῖς A: ὁμοταγεῖς ὁμοταγεῖς M

76 εἰ M: οἱ A

78 ὁμοταγῶν (Philop.)] ἐπίτριτοι AM

79 ὁμοταγῶν (Philop.)] ὁμοταγοῖς (ut vid.) AM

82 πάντες A (ut vid.): πάντως M

88 τῶν διπλασίων scripsi: τοῦ διπλασίου AM

88–89 διπλάσιοι M: διπλάσιον A

94 προερχομένην A: προερχόμενα M

5. ι λοιπὸν προσαφηνίσαντες AM: λοιπὸν δεῖ, σαφηνίσαντας Nicom.: προσαφηνίσαντας Nicom. PCSH

9–10 ἐφεξῆς ... τοῦτο A: ἐφεξῆς εὐρήσεις τοῦτο λαμβάνων ἐφεξῆς ἐπίτριτον καὶ ἡμιόλιον M

σιον ποιεῖ· οἶον ὁ ιη τοῦ ιβ ἡμιόλιος, ὁ ιβ τοῦ ζ διπλάσιος· ὁ ἄρα ιη τοῦ ζ τριπλάσιος. καὶ ἐπ' ἄπειρον τοῦτο εὐρήσεις· οἶον ὁ κζ τοῦ ιη ἡμιόλιος, ὁ ιη τοῦ θ διπλάσιος· ὁ ἄρα κζ τοῦ θ τριπλάσιος· τοῦτο οὖν ἐπ' 20 ἄπειρον εὐρήσεις. | ἔαν δὲ καὶ ὁ τριπλάσιος δεύτερος ὢν τοῦ πολλαπλασίου τῷ δευτέρῳ εἶδει τοῦ ἐπιμορίου, ὃ ἐστὶ τῷ ἐπιτρίτῳ, συντεθῇ, τετραπλάσιον ποιήσει· οἶον ὁ ιβ τοῦ θ ἐπίτριτος, ὁ δὲ θ τοῦ γ τριπλάσιος, ὁ ἄρα ιβ τοῦ γ τετραπλάσιος, καὶ ἵνα μὴ μακρηγο- 25 ρῶμεν, καὶ ἐπὶ τῶν ἐφεξῆς. ὁ μὲν τετραπλάσιος μετὰ τοῦ ἐπιτετάρτου πενταπλάσιον ποιεῖ, ὁ δὲ πενταπλάσιος μετὰ τοῦ ἐπιπέμπτου ἑξαπλάσιον, καὶ τοῦτο μέχρις ἄπειρων. ἐπειδὴ δὲ τοιούτων λόγων ἐμνήσθη ὁ Νικόμαχος, εἴπωμεν τοῦ στοιχειωτοῦ καθολικὸν 30 λόγον, ᾧ κεκρημένοι εὐρήσομεν πάντας. φησὶν ὁ Εὐκλείδης ὅτι λόγος ἐκ λόγου συγκεῖσθαι λέγεται, ὅταν αἱ πηλικότητες αὐτοῦ ἐφ' ἑαυτὰς πολλαπλασιασθεῖσαι ποιῶσιν τινα. ὁ τοίνυν τῶν δύο ὁρων μέ- 35 σος, εἴτε ἐλάττων εἴτε εἴτε μείζων, ποιήσει τὸ ζητού- μενον. πηλικότητες δὲ λέγονται αἱ ἀφ' ὧν παρωνύμους καλοῦνται ἀριθμοί· οἶον τοῦ διπλασίου αἱ β μονάδες, τοῦ τριπλασίου αἱ τρεῖς, καὶ ἐφεξῆς. ἴδωμεν οὖν τί ἐστὶ τὸ λεγόμενον· ἔστωσαν ἄκροι ὄροι η καὶ 40 β, μέσον δὲ αὐτῶν εἰλήφθω ἐλάττων τοῦ ἐνός, εἰ τύχοι ὁ ζ· ὁ τοίνυν η τοῦ ζ ἐπίτρίτος ἐστίν, ὁ δὲ ζ τοῦ β τριπλάσιος. οὐκοῦν ἐπειδὴ ἐστὶ α γον μέρος καὶ τρία διὰ τὸ τριπλάσιον, πολλαπλασιασὸν τὰ τρία ἐπὶ τὸ ἐν 45 τρίτον, γίνονται δ· ἰδοὺ οὖν τετραπλάσιον λόγον ἔχει ὁ η πρὸς τὸν β. πάλιν ἔστω ὁ μέσος μείζων· ἔστω- σαν οὖν ἄκροι ὁ κζ, εἰ τύχοι, καὶ ὁ ιη, μέσος δὲ μείζων αὐτῶν ὑπόθου ὁ λς· ὁ τοίνυν κζ τοῦ λς ἐστὶν ὑφημιό- 50 λιος· ὁ οὖν κζ ἔχει τὸ ἡμισυ καὶ τὸ τέταρτον τοῦ λς. πάλιν ὁ λς τοῦ ιη διπλάσιός ἐστιν· οὐκοῦν ποιήσωμεν δις τὸ ἡμισυ <καὶ> τέταρτον, γίνονται ἐν ἐν ἡμισυ· τὸ ἐν ἐν ἡμισυ ἡμιόλιόν ἐστιν· ὁ οὖν κζ τοῦ ιη ἡμιόλιός ἐστι. κατὰ τὸν αὐτὸν δὲ τρόπον λαβὲ ἀμφοτέρων ἐλάττωνα τὸν μέσον, οἶον ἔστωσαν οἱ ἄκροι κδ καὶ ιβ, τούτων μέσος ὁ ζ ἀμφοτέρων ὢν ἐλάττων· τοῦ ζ τοίνυν ὁ κδ τετραπλάσιος, ὁ δὲ ιβ διπλάσιος· οὐκοῦν 55 ἡμισυ ἐπὶ τέτταρα γίνονται β, διπλάσιος τοίνυν ὁ κδ τοῦ ιβ. αὕτη τοίνυν ἡ μέθοδος πάντα σοι τὰ εἶδη παραδίδωσιν. | ἐπεὶ δὲ ποικίλον ἐστὶ τὸ πρὸς τι πο- σόν, πάλιν ἐπαγγέλλεται διδάσκειν περὶ τοῦ ἀσχέτου, ἵνα ἐκ τῶν διδασκομένων περὶ αὐτοῦ σαφῆς ἡμῖν τὰ 60 προτιθέμενα γένηται. καὶ ἐκτίθεται κατὰ γεωμετρίαν ἀριθμούς, ἐπειδὴ δι' ἀλλήλων τὰ μαθήματα γνωρίζονται. διαλέξεται οὖν περὶ κύβου ἀριθμοῦ καὶ τρι-

21–23 = Nicom. V, 5.

58 cf. Nicom. VI, ι.

24 pr. θ M: θ δὲ (ut vid.) A

34 ὁρων (Philop.)] χωρῶν AM

42 α γον (Philop.)] πρῶτον AM

47–48 ὑφημιόλιος scripsi: ὑπὸ ἐφημιόλιος AM

50 καὶ scripsi: om. AM

56 τέτταρα scripsi: τέταρτον AM

γώνου καὶ τετραγώνου καὶ δοκίδος καὶ πυραμίδος
 65 καὶ τῶν τοιούτων. τούτων οὕτως εἰρημένων σαφὴς ἡ
 λέξις πᾶσα τυγχάνει. | ἃ δὲ χρῆ προεπισκοπῆσαι. δια-
 λεχθεὶς περὶ τοῦ ἀσκέτου ποσοῦ τοῦ παντός καὶ ἐλ-
 θῶν εἰς τὸ ἐν σχέσει καὶ εἰρηκῶς μέρος αὐτοῦ καὶ
 εὐρηκῶς ὅτι εἰς τὰ λοιπὰ αὐτοῦ ποικιλώτερα ὄντα
 70 χρεῖα τινῶν τοῦ ἀσκέτου, προστίθῃσι κάκεινα, οἷον
 περὶ τῶν τετραγώνων ἀριθμῶν καὶ κύβων καὶ σφη-
 νίσκων καὶ δοκίδων καὶ τῶν τοιούτων. ταῦτα δὲ ἀρ-
 μόζει μὲν γεωμετρία, πλὴν ἐπειδὴ ἀρχικωτέρα ἐστὶν
 ἡ ἀριθμητική, ζητεῖ αὐτὰ καὶ αὕτη. ταῦτα τοίνυν τὰ
 75 σχήματα, τετράγωνα λέγω καὶ τὰ λοιπὰ, μεγέθη μὲν
 εἰσι. τῶν δὲ μεγεθῶν γραμμὴ μὲν ἐφ' ἐν ἐστὶ διαστατή·
 θεωρεῖται δὲ αὕτη ἐν ὁδῷ κατὰ μῆκος μόνον λαμβαν-
 ομένη τοῦ πλάτους μὴ ἐπινοουμένου παρ' ἡμῶν.
 ἐπιφάνεια δὲ ἐπὶ δύο ἐστὶ διαστατή· ἐν χωρίοις δὲ
 80 αὕτη ὁράται· ταῦτα γὰρ καὶ μῆκος ἔχει καὶ πλάτος.
 τὸ δὲ στερεὸν σῶμα ἐπὶ τρία ἐστὶ διαστατόν· θεωρεῖ-
 ται δὲ τοῦτο ἐν φρέασι, τὸ γὰρ φρέαρ πρὸς τῷ μήκει
 καὶ πλάτει καὶ βάθος ἔχει. ἐπεὶ δὲ πάντων τῶν σχη-
 μάτων συντομωτέρα ἐστὶν ἡ εὐθεῖα (ἀμέλει καὶ τοῖς
 85 μὴ κατ' εὐθὺ βαδίζουσιν φαμεν· τί μὴ διώκεις τὴν
 εὐθεῖαν, ἀλλὰ πλανᾷ;), ὑπὸ ταύτης οὖν μετροῦνται
 τὰ μεγέθη. οὐκοῦν μία μὲν εὐθεῖα κατὰ μῆκος, ὥς ἦδε,
 ποιεῖ τὴν γραμμὴν, ἑτέρα δὲ πρὸς ὀρθὰς τὴν ἐπιφά-
 νειαν, ὥς ἦδε. εἰ δὲ καὶ κατὰ βάθος ἄλλην πρὸς ὀρθὰς
 90 ἀγάγῃς, ποιεῖς τὸ στερεόν· ἐπεὶ τοίνυν καὶ ἄλλη παρὰ
 ταύτας ὀρθὴ κατὰ τὸ αὐτὸ σημεῖον οὐ συνίσταται,
 διὰ τοῦτο τρία μόνα εἰσὶ διαστήματα καὶ οὐ πλείονα.
 ἰστέον δὲ ὅτι ὀρθὰς φέρομεν, ἐπειδὴ εἰ λοξὰς ἐποιοῦ-
 μεν τὰς εὐθείας, ἀπειρα διαστήματα ἐν μέσῳ συνί-
 95 σταντο ἄν. γινώσκουν τοίνυν δεῖ ὅτι αὐτὸ μὲν τὸ
 χύμα τῶν μονάδων ἐν διάστημα ποιεῖ καὶ μιμεῖται
 γραμμὴν, εἰ δὲ καὶ κατὰ πλάτος ἀποθῇ <τις> μονάδας,
 ποιεῖ δύο διαστήματα, ὃ ἐστὶν ἐπιφάνειαν, εἰ δὲ καὶ
 κατὰ βάθος, τὸ στερεὸν ἀποτελεῖται. | ὅτι ἕκαστον
 100 γράμμα ᾧ σημειούμεθα. τὰ γὰρ γράμματα οἷον τὸ α
 καὶ τὸ ω καὶ τὸ β καὶ τὰ τοιαῦτα θέσει εἰσί, καὶ οὐ
 φύσει. ἀμέλει ἄλλα ἄλλοι γράφουσι· οἷς οὖν σημειού-
 μεθα γράμμασι, ταῦτα οὐ φύσει εἰσί· σημειούμεθα δὲ
 τὸν μὲν ὀκτακόσια ἀριθμὸν διὰ τοῦ ω, τὸν δὲ τέσσαρα
 105 διὰ τοῦ δ· φυσικὴ δὲ μέθοδος σημειώσεως καὶ οὐ κατὰ
 θέσιν γινομένη ἢ διὰ τῶν στιγμῶν πᾶσι κοινή· οἷον
 εἰ θέλεις τρεῖς ἀριθμοὺς σημειώσασθαι, ποιήσων τρεῖς
 στιγμὰς, καὶ εἰ πέντε πέντε, καὶ εἰ δέκα δέκα.

66 = Nicom. VI, 1.

99 cf. Nicom. VI, 2.

66 προεπισκοπῆσαι A: προσεπισκοπῆσαι M
 67 alt. τοῦ (Philop.) οὐ M: om. A
 76 διαστατή A: διαστατόν M
 90 ἀγάγῃς M: ἀγάγεις A || παρὰ M: περὶ A
 91 κατὰ M: καὶ A
 96 χύμα (Philop.) σχῆμα AM
 97 τις (Philop.) om. AM
 98 διαστήματα A: συστήματα M

ζ. **παράλληλος ἔκθεσις.** παράλληλον ἔκθεσιν καλεῖ οὐ
 τὴν γραμμικὴν, τὸ παράλληλον εὐθεῖαν κείσθαι, ἀλλὰ
 τὸ πλησίον ἀλλήλων κατὰ πλάτος κείσθαι, ὥς ὑπο-
 τέτακται, ααα. | ὥσπερ εἰ τις τὸ οὐθεν οὐθενί. τὸ γὰρ
 οὐδὲν μετὰ τοῦ οὐδενὸς πάλιν οὐδὲν ποιήσῃ.

5

η. **οὐ μὴν διάστημα γεννᾶται τι.** τὸ αὐτὸ γὰρ ἔσται
 καὶ οὐδὲν σχήσῃ διάστημα. εἰ γὰρ λάβοις δύο μονά-
 δας, ἐπειδὴ ἴσαι εἰσὶν ἀλλήλαις, μονάδες γάρ, καὶ
 πολλαπλασιάσῃς, διάστημα οὐ ποιήσῃς, ἀλλὰ τὸ
 αὐτὸ γενήσεται· ἅπαξ γὰρ μία μία. καὶ πάλιν ἔαν
 5 λάβῃς δύο καὶ δύο καὶ πολλαπλασιάσῃς, ἄλλος μὲν
 γίνεται ἀριθμός, ἡ δὲ ἀναλογία ἢ αὐτὴ· δις γὰρ δύο
 τέσσαρες· νῦν δὲ οὐ περὶ ἀριθμῶν ζητοῦμεν, ἀλλὰ
 περὶ ἀναλογίας, ὥστε ἐν τῇ ἰσότητι ἢ αὐτῇ ἀναλο-
 γία φυλάττεται καὶ οὐ τίκεται ἄλλο τι.

10

θ. **ἐξ περιστάσεις ὀρίζονται.** εἰ γὰρ ἔστι μῆκος καὶ πλά-
 τος καὶ βάθος, τὸ μὲν μῆκος καὶ εἰς τὸ ἄνω καὶ κάτω,
 τὸ δὲ πλάτος τὰ δεξιὰ καὶ ἀριστερά, τὸ δὲ βάθος τὸ
 πρόσω καὶ ὀπίσω.

ι. **ἅπαντες γὰρ οἱ ἀπὸ δυάδος ἀρχόμενοι.** ὅσοι γὰρ ἀπὸ
 δυάδος ἀρχονται μονάδα προσλαμβάνοντες γραμμὴν
 μιμοῦνται· μίαν γὰρ διάστασιν ἔχουσιν. ἐπίπεδοι δὲ
 οἱ ἀπὸ τριάδος ἀρχόμενοι καὶ ἐφεξῆς. καὶ λοιπὸν τὴν
 ἐπινομίαν κέκτῃνται, οἱ μὲν οὖν ἀπὸ τριάδος ἀρχό- 5
 μενοι τρίγωνοι εἰσιν, οἱ δὲ ἀπὸ τετράδος τετράγωνοι,
 οἱ δὲ ἀπὸ πεντάδος πεντάγωνοι. πρῶτος οὖν ἀριθμὸς
 ἐπίπεδος ὁ τρίγωνος· οὕτω δὲ ὅτι πρῶτός ἐστιν, ὅτι
 πάντες εἰς τοῦτον ἀναλύονται· οἷον ἔαν τοῖς ἐπιπέδοις
 τοῖς ἄλλοις σχήμασιν ἀπὸ τῶν γωνιῶν ἐπὶ τὰ μέσα 10
 εὐθεῖαι ἀχθῶσι, πάντως ἕκαστον εὐθύγραμμον εἰς
 τοσαῦτα ἀναλυθήσεται τρίγωνα, ὅσαι αἱ πλευραὶ
 αὐτοῦ εἰσιν. οἷον ἐπὶ παραδείγματος λάβωμεν τετρά-
 γωνον, καὶ ἐπὶ τὰ μέσα αὐτοῦ ἀπὸ τῶν γωνιῶν ἡ-
 χθῶσαν εὐθεῖαι, εὐρεθήσονται ἄρα πάντα τρίγωνα. 15
 ἔστω οὖν τετράγωνον τὸ ΑΒΓΔ, μέσον δὲ αὐτοῦ τὸ
 Ε, καὶ ἐπελεύχθῶσαν αἱ ΔΕ, ΒΕ, ΑΕ, ΓΕ· ἐπεὶ τοίνυν

ζ = Philop. κε, κς

η = Philop. κς

θ = Philop. κη

ι = Philop. κθ, λ

ζ, ι = Nicom. VI, 2.

4 = Nicom. VI, 3.

η, ι = Nicom. VI, 3.

θ, ι = Nicom. VI, 4.

ι, ι = Nicom. VII, 3.

ζ. 2-3 τὸ et τὸ (Philop.) τῷ et τῷ AM

4 cf. n. ad loc.

η. ι γεννᾶται Nicom.: γεννᾶσθαι AM

4 πολλαπλασιάσῃς scripsi: πολλαπλασιάσας AM

ι. ι pr. γὰρ AM: om. Nicom.

5 κέκτῃνται M: κέκτῃται A

12 ἀναλυθήσεται M: ἀναλυθήσονται A

17 ΑΕ A: om. M

τετράγωνον ὑπεθέμεθα, τοσαῦτα τρίγωνα γίνεται, ὅσαι πλευραί· τέσσαρες δὲ ἦσαν πλευραί, τέσσαρα
 20 ἄρα καὶ τὰ τρίγωνα, τὸ ΑΕΓ, τὸ ΑΒΕ, τὸ ΒΕΔ, τὸ ΔΕΓ. ὁμοίως καὶ ἐπὶ πενταγώνου ἀπὸ τῶν γωνιῶν ἔαν ἐπὶ τὸ μέσον ἀνάγωμεν εὐθείας, πάντως πέντε τρίγωνα γενήσονται, ἐπειδὴ δὲ πέντε πλευράς ἔχει τὸ πεντάγωνον· καὶ ἐπὶ πάντων ὁμοίως. | τοῦτο οὖν
 25 ἔστι τὸ εἰς τοσαῦτα τρίγωνα λύεται ἕκαστον εὐθύγραμμον, ὅσαι καὶ πλευραί, ὅτι τὸ μὲν τετράγωνον εἰς τέσσαρα τρίγωνα, τὸ δὲ πεντάγωνον εἰς ε καὶ τὸ ἑξάγωνον εἰς ἕξ. ἰδοὺ οὖν εἰς τρίγωνα ἀναλύονται πάντα, ὥστε πρωτεύει τὸ σχῆμα τὸ τρίγωνον. εἰ δὲ ἐπὶ τοῦ τρι-
 30 γώνου ἀπὸ τῶν γωνιῶν ἐπὶ τὸ μέσον ἀγάγῃς εὐθείας, οὐ ποιήσεις ἄλλο σχῆμα, ἀλλὰ τρίγωνα πάλιν γ, ἐπειδὴ καὶ τρεῖς αἱ πλευραὶ τοῦ τριγώνου. πῶς τοίνυν δεῖ σημειοῦσθαι τοὺς τριγῶνους; ἄρξαι ἀπὸ μονάδος καὶ πρόταξον τὴν μονάδα, εἴτα παραλλήλους δύο
 35 μονάδας, καὶ γίνεται ὁ γ ἀριθμὸς τριγώνου, ὡς ὑποτέτακται, $\frac{\alpha}{\alpha-\alpha}$, ἔχων ἴσας τὰς τρεῖς πλευράς· ἕκαστη γὰρ πλευρὰ μονάδος ἐστί. πάλιν ποιήσον τρεῖς μονάδας ὑποκάτω τούτων, καὶ εὐρεθήσεται ὁ ζ τρίγωνος, καὶ πάλιν δ, καὶ ἐφεξῆς ἕως οὗ βούλει. παράδειγμα δὲ ἐν
 40 διαγράμματι τοῦ ζ τριγώνου ἔστω τόδε· τοῦ δὲ δέκα τὸ ὑποτεταγμένον, καὶ ἐφεξῆς ὁμοίως κέχρησο μέχρις ἀπείρων.

ια. τρίγωνος μὲν οὖν ἀριθμὸς ἐστί. λοιπὸν τὴν γένεσιν αὐτῶν παραδίδωσι καὶ φησιν ὅτι τρίγωνοι μὲν ἀριθμοὶ γίνονται παντὸς τοῦ χύματος τῶν μονάδων παραλλήλως λαμβανομένων καὶ ἀπλῶς καθ' ὑπερο-
 5 χὴν μονάδος εὐρήσεις τοὺς τριγῶνους· οἷον ἡ μονὰς τρίγωνός ἐστι δυνάμει· ἀπὸ ταύτης γὰρ δεῖ ἄρχεισθαι ἐπὶ πάντων, ἐπειδὴ δυνάμει πᾶς ἀριθμὸς ἐστί. σκοπῶ τοίνυν τίς ὑπερέχει αὐτῆς μονάδι, εὐρίσκω ὅτι ὁ β· συντίθημι τὸν β καὶ τὴν α καὶ γίνεται τρεῖς· ὁ γ ἄρα
 10 τρίγωνός ἐστι. πάλιν, ἐπειδὴ ὁ β ἦν ὁ συντεθείς, ζητῶ τίς μονάδι αὐτοῦ ὑπερέχει, εὐρίσκω ὅτι ὁ γ· συντίθημι οὖν τὸν γ καὶ τὰ γ, τὸν ἤδη τρίγωνον ὄντα, γίνονται 5· ὁ ζ ἄρα τρίγωνος. πάλιν ζητῶ τοῦ γ τίς ὑπερέχει μονάδι, εὐρίσκω ὅτι ὁ δ. <...> συντί-
 15 θημι τὸν ε καὶ τὸν ι, γίνονται ιε· ὁ ιε ἄρα τρίγωνος·

ια = Philop. λα

25–26 = Nicom. VII, 4.

ια, ι = Nicom. VIII, ι.

α
 40 τόδε, sc. α α
 α α α
 41 ὑποτεταγμένον, sc. α α
 α α α
 α α α α

ια ιο ἦν Α: om M || συντεθείς (Philop.) || συνθείς AM

ι3 τρίγωνος Μ: τρίγωνός ἐστι Α

ι3–ι4 ζητῶ ... ὁ δ Μ: τῆς τετράδος ὑπερέχει μονάδι ὁ ε Α

ι4 cf. n. ad loc.

καὶ ἐπὶ πάντων τῶν λοιπῶν ὁμοίως. καὶ τὰ σχήματα δὲ αὐτοῖς τὰ γραμμικὰ ἔξωθεν περιέγραφε τοὺς ἀριθμοὺς ἐκτιθέμενος, ὥστε μέσους μὲν εἶναι τοὺς ἀριθμούς, ἔξωθεν δὲ τὸ τρίγωνον σχῆμα. οὕτω μὲν οὖν ἡ τῶν τριγῶνων γένεσις. | ἐπὶ δὲ τῶν τετραγώνων τὸν 20 δυνάδι ὑπερέχοντα τοῦ συντιθεμένου ζητῶν, ποιήσεις τοὺς τετραγῶνους· οἷον ἡ μονὰς δυνάμει τετράγωνος. ζητῶ τίς αὐτῆς ὑπερέχει δυνάδι, εὐρίσκω ὅτι ὁ γ· οὗτος γὰρ δυνάδι μὲν αὐτῆς ὑπερέχει, μονάδι δὲ ἐλλείπει, ἐν μέσῳ γὰρ εἰς μόνος ὁ β ἔστι, καθ' ὃν ἐλλείπει· 25 ποιῶ τοίνυν γ καὶ μία, γίνονται δ· ὁ δ τοίνυν τετράγωνος. πάλιν ζητῶ τίς τριάδος δυνάδι ὑπερέχει, εὐρίσκω ὅτι ὁ ε· οὗτος γὰρ δυνάδι μὲν ὑπερέχει, μονάδι δὲ ἐλλείπει, μέσος γὰρ τῶν γ καὶ τῶν ε εἰς ἀριθμὸς ὁ δ· ὁ τοίνυν ε μετὰ τοῦ δ συντιθέμενος ποιεῖ τὸν θ, ὅς 30 ἔστι τετράγωνος. καὶ ἀπλῶς πάντες οἱ κατὰ τάξιν περιττοὶ συντιθέμενοι τοῖς γινομένοις τετραγῶνους ἄλλον τετράγωνον ποιοῦσιν. ἐπὶ τῶν τετραγῶνων οὖν ὁ δυνάδι μὲν ὑπερέχων τοῦ συντιθεμένου, μονάδι δὲ ἐλλείπων, συντιθέμενος μετὰ τοῦ ἤδη γενομένου 35 τετραγώνου ποιεῖ τετράγωνον, καὶ τοῦτο μέχρις αἰ. ἔστι δὲ καὶ ἄλλη μέθοδος τετραγῶνων, ἣτις ὀνομάζεται δίαυλος, εἴρηται δὲ καὶ ἐν ταῖς Φυσικαῖς· ἄρξαι ἀπὸ μονάδος καὶ λῆξαι ὅπου θέλεις, καὶ εἰς οἷον λήξεις ἐκεῖνος γενήσεται πάντως τοῦ μέλλοντος γίνεσθαι 40 τετραγώνου πλευρά. μετὰ δὲ τὸ λῆξαι πάλιν ὑποστρεψον ἄχρι μονάδος καὶ γενήσεται ὁ τετράγωνος. οἷον ἄρχομαι ἀπὸ μονάδος, λήγω εἰς δυνάδα· ποιῶ οὖν α β, γίνονται γ. πάλιν ὑποστρέφω εἰς μονάδα, γίνονται δ· ἰδοὺ ὁ δ τετράγωνος. εἰ δὲ λήξω εἰς δυνάδα, 45 αὕτη ἄρα πλευρὰ τοῦ δ· δις γὰρ β δ. ὡσαύτως προκόπτω ἄχρι τριάδος· καὶ ποιῶ α β γ, γίνονται 5· ὑποστρέφω πάλιν, λέγω δύο μία, γίνονται θ· ὁ θ ἄρα τετράγωνος· καὶ ἐπειδὴ ἔληξα εἰς τριάδα, ὁ γ πλευρὰ αὐτοῦ γίνεται. τὸ αὐτὸ ἐπ' ἀπειρον εὐρήσεις. 50 τοῦτο μὲν ἔξωθεν τοῦ κειμένου. | ὥσπερ δὲ οἱ τετράγωνοι ἐγίνοντο, λαμβανόντων ἡμῶν τὴν δυνάδι ὑπεροχὴν τοῦ συντιθεμένου, οὕτως οἱ πεντάγωνοι λαμβανόντων ἡμῶν τὴν τριάδι μὲν ὑπεροχὴν, δυνάδι δὲ ἐλλειψιν· οἷον ἡ μονὰς δυνάμει πεντάγωνός τις, ὑπερ- 55 ἔχει ταύτης τριάδι ὁ δ, ἐλλείπει δὲ δυνάδι· δύο γὰρ εἰσι μέσοι ἀριθμοὶ ὁ β καὶ ὁ γ. ποιῶ οὖν δ καὶ α, γίνεται ε· ὁ ε ἄρα πεντάγωνός ἐστι. πάλιν τίς ὑπερέχει τοῦ δ τριάδι, ἐλλείπει δὲ δυνάδι; <ὁ ζ>, μέσοι γὰρ ὁ ε καὶ ὁ 5· ἑπτὰ οὖν καὶ πέντε γίνονται δώδεκα· ὁ ιβ 60 ἄρα πεντάγωνος. καὶ ἐφεξῆς ὁμοίως. | πάλιν ἐπὶ τῶν ἑξαγώνων λάμβανε τοὺς τετράδι μὲν ὑπερέχοντας, τριάδι δὲ ἐλλείποντας, ἐπὶ δὲ τῶν ἑπταγώνων τοὺς

20 cf. Nicom. IX, ι.

51 cf. Nicom. X, ι.

61 cf. Nicom. XI, ι.

38 ἐν ταῖς Φυσικαῖς ΑΜ: (ἐν τοῖς Φυσικοῖς[?])

52 τὴν (Philop.) || τῇ ΑΜ

59 ὁ ζ (Philop.) || om. ΑΜ

63–64 ἐλλείποντας ... ἐλλείποντας Μ: ἐλλείποντας Α

πεντάδι μὲν ὑπερέχοντας, τετράδι δὲ ἐλλείποντας,
65 καὶ ἐπὶ πάντων ὁμοίως αὖξων, ποιήσεις πάντας.
ὅπως δὲ θέλεις, ἐκτίθου αὐτούς, εἴτε ἀριθμούς ποιῶν
καὶ ἔξωθεν τὸ σχῆμα γράφων, εἴτε γνώμονας ποιῶν
καὶ προστιθείς τοὺς ἀριθμούς. τούτων οὕτω προθεω-
ρηθέντων οὐδὲν ἔστιν ἀσαφές κατὰ τὸ κείμενον, εἰ μὴ
70 ἐν ὃ ἀξιώσεται ἐξηγήσεως.

ιβ. ἡ κατὰ τὴν ἐν τῷ ὀνόματι ποσότητα. ὁ λέγει τοῦτο
ἔστιν ὅτι ἐπειδὴ ἀπὸ τῶν ὑπεροχῶν συντιθεμένων,
ὡς εἴρηται, γίνονται οἱ ἀριθμοί· ἐὰν πολλάκις ἀνα-
δοθῇ ἡμῖν πολὺς ἀριθμός, ὁ ἔστιν ἑκατοντάγωνος ἢ
5 τις ἕτερος, τί ποιοῦμεν; λέγει ὅτι λήτει τὸν ἀφ' οὗ
ὠνομάσθη ὁ ἀναδοθεὶς σοι καὶ λάμβανε ἐξ ἐκείνου δύο
καθόλου ἐπὶ πάντων καὶ τὸν καταλειφθέντα ὑπεροχὴν
λέγε. οἶον ἀνεδόθη μοι ἑκατοντάγωνον εὐρεῖν, λαμ-
βάνω τὸν ρ· ἀπὸ τούτου γὰρ παρωνομάσθη· ἐπαίρω
10 β, μένουσιν ρη· λέγω ρη ἔστιν ὑπεροχὴ αὐτοῦ, καὶ
λοιπὸν συνθεὶς ποιῶ τὸν ἑκατοντάγωνον. ὁμοίως καὶ
ἐπὶ πάντων. ὅτι δὲ ἀληθές ἔστιν ἐκ τῶν ἤδη εἰρημένων
πιστοῦμαι. ὁ τρίγωνος ἐξ ὑπεροχῆς μονάδος ἐγένετο·
ὅτι οὖν οὕτως ἔστιν, ἔπαρον τῶν γ β, γίνεται α·
15 ἰδοὺ ὑπεροχὴ. πάλιν ὁ τετράγωνος ἐξ ὑπεροχῆς
δυάδος· ἔπαρον οὖν τῶν δ β, ἰδοὺ καταλείπονται β.
πάλιν ὁ πεντάγωνος ἐξ ὑπεροχῆς τριάδος· ἀφαίρησον
β τῶν ε, γίνεται γ. καὶ ἐπὶ πάντων εὐρήσεις τοῦτο
δυάδα ἀφαιρῶν. κάκεινο δὲ γίνωσκε ὅτι κατ' εὐτακτον
20 μονάδα τὰ σχήματα γίνεται· τὸ μὲν τρίγωνον ἀπὸ
τριάδος, τὸ δὲ τετράγωνον ἀπὸ δ, τὸ δὲ πεντάγωνον
ἀπὸ ε, καὶ ἐφεξῆς ὁμοίως· ὁ μὲν γὰρ γ τρίγωνος ἔστιν,
ὁ δὲ δ τετράγωνος, ὁ δὲ ε πεντάγωνος, ὁ δὲ ζ ἑξάγω-
νος, ὁ δὲ ζ ἑπτάγωνος, ὁ δὲ η ὀκτάγωνος, καὶ τοῦτο
25 μέχρις ἀπείρου. | ὅτι δὲ συμφωνοτάτη ἡ ἀπ' αὐτῶν διδα-
σκαλία. ἥδη εἰρήκαμεν ὅτι βούλεται σχήματα ἀρι-
θμητικὰ παραδοῦναι συμφωνοῦντα τῇ γεωμετρίας·
παραδέδωκεν οὖν. πάλιν δὲ δείκνυσιν ὅτι ὥσπερ τὸ
τετράγωνον διαιρεῖται εἰς δύο τρίγωνα, οὕτω καὶ ὁ
30 τετράγωνος ἀριθμὸς εἰς δύο τρίγωνα, οἶον ὁ θ εἰς
τὸν γ τρίγωνον καὶ τὸν ζ. εἰ δὲ τις εἴποι “ἀλλὰ τὸ
τετράγωνον εἰς ἴσα δύο τρίγωνα ἐτέμνετο, νῦν δὲ ἐπὶ
τῶν ἀριθμῶν εἰς ἄνισα, οὐ ταυτὸν γὰρ εἰπεῖν γ καὶ
ζ,” εἶπε πρὸς αὐτὸν ὅτι ἐὰν μοναδικῶς ἐκθῇ σχῆμα
35 τετράγωνον καὶ ἀγάγῃς διαγώνιον, διαιρεθήσεται
εἰς ἰσόπλευρα τρίγωνα. παραδείγματος δὲ χάριν ἐκ-
θώμεθα τὸν δ ἀριθμόν, ὡς ὑποτέτακται. ἰδοὺ ὅτι δύο

τρίγωνα γίνεται ἀπὸ δύο μονάδων ἔχοντα τὰς πλευ-
ράς. ἐκθοῦ δὲ καὶ ἐπὶ θ, καὶ εὐρήσεις τὸ αὐτό· ἰδοὺ γὰρ
δύο τρίγωνα ἔχοντα ἐκάστην πλευρὰν ἀπὸ τριῶν 40
μονάδων. καὶ ἐπὶ πάντων δὲ τοῦτο γενήσεται, ὥστε
ἴστέον ὅτι ἐὰν ἐκθῇ πολυγώνων ἀριθμῶν πλῆθος
παραλλήλως, ἐκ μὲν τῶν τριγώνων συντιθεμένων
ὁμοταγῶς γίνονται οἱ τετράγωνοι, ἐκ δὲ τῶν τετρα-
γώνων καὶ τῶν τριγώνων οἱ πεντάγωνοι, ἐκ δὲ τῶν 45
πενταγώνων καὶ τῶν τριγώνων οἱ ἑξάγωνοι, ἐκ δὲ
τῶν ἑξαγώνων καὶ τῶν τριγώνων οἱ ἑπτάγωνοι, ἐκ
δὲ τῶν ἑπτάγωνων καὶ τῶν τριγώνων οἱ ὀκτάγω-
νοι, καὶ τοῦτο ἐπ' ἀπειρον. ὑποδείγματος δὲ χάριν
ὑποκείσθω τὸ διάγραμμα. ἰδοὺ τοίνυν οἱ μὲν τρίγω- 50
νοι ἐφεξῆς συντιθέμενοι τοὺς τετραγώνους ποιοῦσιν·
ὁ μὲν γ τρίγωνος ἐνεργεία τῇ μονάδι τριγώνῳ οὕτῃ
δυνάμει συντιθέμενος, ποιεῖ τὸν δ, ὃς ὑποτέτακται
τετράγωνος ὦν. πάλιν ὁ ζ τῷ γ συντεθείς, ποιεῖ τὸν
θ, καὶ ἐφεξῆς ὡσαύτως. καὶ τετράγωνος ὁ δ ἐνεργεία 55
δυνάμει <τριγώνῳ> τῇ μονάδι συντεθείς, ποιεῖ πεν-
τάγωνον τὸν ε· ὁ δὲ θ τῷ γ ποιεῖ πεντάγωνον τὸν ιβ·
καὶ ἐπ' ἀπειρον ὡσαύτως. καὶ ὁ ε πεντάγωνος ἐνε-
ργεία τῇ μονάδι δυνάμει τριγώνῳ συντεθείς, ποιεῖ τὸν
ζ ἑξάγωνον, καὶ ὁ ιβ τῷ γ τὸν ιε, καὶ ἐπὶ πάντων 60
ὁμοίως προχωρήσει. σαφὴς οὖν αὕτη πᾶσα ἡ θεωρία
ἔστιν ἐκ τῶν εἰρημένων· πάντα γὰρ παραδίδωσιν
ἀκριβῶς ὁ Νικόμαχος.

ιγ. καὶ γὰρ καὶ κατὰ τὸ βάθος καὶ κατὰ τὸ πλάτος ἐν τῷ
διαγράμματι. λέγει ὅτι ἡ γένεσις τῶν προειρημένων
καὶ κατὰ τὸ πλάτος καὶ κατὰ τὸ βάθος ἐστί. τῶν μὲν
γὰρ τετραγώνων κατὰ πλάτος· ὁ γὰρ γ τῇ μονάδι
ἐποίησε τὸν δ, ὁ ζ τῷ γ τὸν θ, καὶ ὁ ι τῷ ζ τὸν ις, 5
καὶ ἐφεξῆς ὁμοίως. ἰδοὺ κατὰ πλάτος τῶν τριγώνων
ληφθέντων οἱ τετράγωνοι γεγόνασιν· οἱ μὲν ἄλλοι
πάντες κατὰ βάθος γίνονται· ὁ γὰρ δ τῇ μονάδι
συντεθείς ποιεῖ τὸν πεντάγωνον· κατὰ βάθος δὲ κείν-
ται ὁ δ καὶ ἡ μονάς. κατὰ τὸν αὐτὸν λόγον καὶ ἐπὶ 10
πάντων. τοῦτο οὖν ἐστί τὸ κατὰ βάθος καὶ κατὰ
πλάτος. | πληρώσας δὲ τὸν περὶ τῶν ἐπιπέδων ἀρι-
θμῶν λόγον μετέρχεται ἐπὶ τοὺς στερεοὺς καὶ ἄρχεται
ἀπὸ τῆς πυραμίδος, ἐπειδὴ καὶ τὰ τρίγωνα τῶν
ἄλλων σχημάτων πρότερά εἰσιν, ἡ δὲ πυραμὶς τὴν 15
κορυφὴν ἀπομιμουμένην ἔχει τριγώνῳ, ὡς τρίγωνα
γὰρ τὰ πλευρά. δεῖ δὲ εἶδέναι ὅτι ἔστιν ἡ πυραμὶς
κατὰ πάντα τὰ πολύγωνα· καὶ γὰρ ὥσπερ ἐπὶ τῶν

ιβ = Philop. μα, μβ

ιβ, ι = Nicom. XI, 4.

25–26 = Nicom. XII, ι.

ιβ. ι ἢ Nicom.: ἢ AM

7 καταλειφθέντα M: καταληφθέντα A

16 τῶν M: τῷ A

17 τριάδος M: τελάδος A

25–26 ἢ ἀπ' αὐτῶν διδασκαλία AM: διδασκαλία ἢ περὶ αὐτῶν
Nicom. (παρ' αὐτῶν Nicom. C)

ιγ = Philop. μδ, με, μζ, μη

ιγ, ι–2 = Nicom. XII, 8.

12 cf. Nicom. XIII, ι.

56 τριγώνῳ scripsi: om. AM

ιγ. ι pr. et alt. τὸ AM: om. Nicom.

11 alt. κατὰ M: om. A

14 τὰ M: om. A

17 τὰ πλευρά scripsi: νεῦρα AM

γραμμικῶν σχημάτων ἀνιστῶν τὰς κατὰ γωνίαν
 20 εὐθείας ἐπὶ ἓν τι σημεῖον δίκην καλύβης ποιεῖ τὴν
 πυραμίδα, οὕτω καὶ ἐνταῦθα. καὶ εὐρίσκεται τὸ μὲν
 πολύγωνον βάσις αὐτῆς, ὅθεν καὶ ὁ πολὺς ἀριθμὸς
 κάτω ἐστίν, ἡ δὲ μονὰς κορυφή· ἡ γὰρ πυραμὶς βάσιν
 μὲν ἔχει εὐρεῖαν, κορυφήν δὲ ὀξεῖαν. ἔστιν οὖν καὶ
 25 τρίγωνος αὐτῆς βάσις, καὶ τετράγωνον, καὶ πεντά-
 γωνον, καὶ ἑξαγώνον. καὶ ἡ μὲν πυραμὶς ἡ ἐκ τριγώνων
 συγκειμένη κατὰ τὴν εὐτακτον πρόβασιν τῶν τριγώ-
 νων γίνεται· συντιθεμένων αἰ τῶ γινομένων, οἷον ὁ γ
 τρίγωνος ἀλλὰ καὶ ἡ μονὰς· τρεῖς καὶ μία τέσσαρες,
 30 ὁ δ' ἄρα πυραμὶς. πάλιν μετὰ τὸν γ ἔστιν ὁ ζ τρίγω-
 νος· ζ καὶ δ' ὁ ι' ὁ ι' ἄρα πυραμὶς. πάλιν μετὰ τὸν ζ ἔστι
 τρίγωνος ὁ ι' ὁ ι' δὲ καὶ ε' ἰε' ὁ ιε' ἄρα πυραμὶς. πάλιν
 μετὰ τὸν ι' ἔστιν ὁ ιε' τρίγωνος· ὁ ιε' καὶ ζ κα' ὁ κα' ἄρα
 πυραμὶς. αἱ δὲ πυραμίδες αἱ ἔχουσιν τετράγωνον
 35 βάσιν ἀπὸ τῶν τετραγώνων γίνονται· οἷον ὁ δ' τῇ
 μονάδι συντιθέμενος ποιεῖ τὸν ε'· ὁ ε' ἄρα πυραμὶς ἔστι
 τετράγωνον ἔχων βάσιν. πάλιν ὁ θ' συντιθέμενος τῶ
 ε' ποιεῖ τὸν ιδ'· ὁ ιδ' ἄρα ἔστι πυραμὶς τετράγωνον
 ἔχων βάσιν. καὶ ἐπὶ πάντων ὁμοίως. καὶ πάλιν τὰς
 40 πυραμίδας τὰς ἐχούσας πεντάγωνον βάσιν ἀπὸ τῶν
 πενταγώνων ποιεῖ, καὶ τὰς ἑξάγωνον ἐχούσας βάσιν
 ἀπὸ τῶν ἑξαγώνων, καὶ ἐπὶ πάντων ὁμοίως τῇ
 αὐτῇ μεθόδῳ κέκρησο. ταῦτά ἐστιν ἃ βούλεται διὰ
 τῆς παρούσης θεωρίας διδάξαι· ἡ δὲ λέξις τούτων
 45 θεωρημένων οὐδὲν ἀσαφές ἔχει.

ιδ. ἵνα δὲ μὴ ἀνήκοι ὦμεν καὶ κολούρων καὶ δικολούρων.
 εἰρηκῶς περὶ πυραμίδος καὶ εὐρηκῶς πάθη αὐτῆς,
 λέγει καὶ περὶ αὐτῶν· ἰστέον γὰρ ὅτι, ὡς εἴρηται,
 ἔχει κορυφήν εἰς μονάδα λήγουσαν. αὕτη τοίνυν ἐὰν
 5 ἀφαιρεθῇ, κολοβὸς γίνεται ἡ πυραμὶς· ἀλλ' εἰ μὲν ἡ
 μία μονὰς ἀφαιρεθῇ, κόλουρος γίνεται, εἰ δὲ δύο δι-
 κόλουρος, εἰ δὲ τρεῖς τρικόλουρος λέγεται, καὶ εἰ τέσ-
 σαρες τετρακόλουρος· καὶ τοῦτο μέχρις ἀπειροῦ. ἐν
 συγγράμμασι μάλιστα τοῖς θεωρηματικοῖς, ἐν θεολο-
 10 γικοῖς γὰρ βιβλίοις, εὐρήσεις τὰ τοιαῦτα ὀνόματα·
 τῶν γὰρ συγγραμμάτων τὰ μὲν εἰσιν ἠθικά, τὰ δὲ
 θεωρηματικά.

ιε. ἑτέρα δὲ τις στερεῶν ἑτερογενῶν. πληρώσας τὸν
 περὶ τῶν πυραμίδων λόγον νῦν ἐπὶ τὰ ἑτερα στερεὰ
 μεταβαίνει, κύβον καὶ δοκίδα καὶ πλινθίδα καὶ σφη-
 νίσκον καὶ σφαῖραν καὶ τὰ τοιαῦτα. ἰστέον τοίνυν ὅτι

ιδ = Philop. ν ιε = Philop. να, νβ

ιδ, ι = Nicom. XIV, 5. ιε, ι = Nicom. XV, ι.

32 ff. cf. n. ad loc.

ιδ. ι pr. καὶ AM: om. Nicom.

9 ἐν M: τοῖς A

10 βιβλίοις M: βιβλίῳ A

ιε. ι ἑτερογενῶν Nicom.: τετραγώνων AM

4 τὰ A: om. M

τετραγώνου ληφθέντος καὶ ἀναστάσης εὐθείας κατὰ 5
 βάθος, αὕτη ἡ ἀναστᾶσα ἡ ἴση ἐστὶ τῇ τοῦ τετραγώ-
 νου πλευρᾷ ἡ ἀνισος· καὶ εἰ ἀνισος ἡ μείζων ἡ ἐλάτ-
 των. εἰ μὲν οὖν ἴση ἐστὶ, ποιεῖ τὸν κύβον, εἰ δὲ ἐλάτ-
 των, ποιεῖ τὴν πλινθίδα. καὶ γὰρ αἱ πλινθοὶ, τὰ μὲν
 κάτω μείζονα ἔχουσι, τὰ δὲ ἄνω ἐλάττονα. εἰ δὲ 10
 μείζων, ποιεῖ τὰς δοκίδας· οὕτω γὰρ καὶ αἱ δοκοὶ τὰ
 μὲν κάτω ἐλάττονα ἔχουσι, τὰ δὲ ἄνω μείζονα. γίνε-
 ται δὲ ὁ κύβος ἀριθμοῦ ἐφ' ἑαυτὸν πολλαπλασιαζο-
 μένου, καὶ πάλιν ἐκείνου ἐπὶ τὸν γενόμενον· οἷον ὁ η'
 κύβος ἐστίν, ἐπειδὴ δις δύο δ καὶ δις δ η' καὶ πάλιν ὁ 15
 κζ, ἐπειδὴ τρίς τρεῖς θ, καὶ τρίς θ κζ· καὶ πάλιν ὁ ξδ
 κύβος, τετράκις γὰρ δ ις, καὶ τετράκις ις ξδ· καὶ ἐφε-
 ξῆς ὁμοίως.

ις. παρὰ τοῦτο δὲ εἰκὸς καὶ τὸ σφήκωμα ὠνομάσθαι. βού-
 λεται τὴν ιδιωτικὴν φωνὴν ἐτυμολογήσαι, ἐπειδὴ
 ὅπου ἂν ἀποσφίγῃ τις, ἐκεῖνο τὸ μέρος μιμεῖται τὴν
 τοῦ σφήκος τομήν.

ιζ. μέσοι εἰσὶ στερεοὶ ἀριθμοὶ <οἱ> λεγόμενοι παραλλη-
 λήπεδοι. οὐ μόνον οἱ μέσοι, ἀλλὰ καὶ ἅπας κύβος παραλ-
 ληλεπίπεδός ἐστι καὶ πάντες οἱ ἔχοντες παράλληλα
 τὰ ἐπίπεδα· ἀλλὰ τὸν κύβον οὐ συνηρίθμηνεν, ὥς
 διὰ τὸ ἴσον τετευχότα ὀνόματος ἰδίου καὶ αὐτῶν 5
 τούτων κύβου ὀνομαζομένου. ἰστέον δὲ ὅτι δεῖ προσ-
 ἔχειν τῶ ὕψει. πολλαπλασιαζόμενον γὰρ τὸ μήκος
 καὶ τὸ πλάτος ἐπ' αὐτῶν, ἄλλο τι ποιεῖ. ἀμέλει καὶ ὁ
 Ἀπόλλων ἐχρησμάδῃσιν Δηλίοις λοιμώττουσιν ὅτι
 “εἰ θέλετε τοῦ λοιμοῦ παύσασθαι, ποιήσατε διπλα- 10
 σίονα τὸν βωμόν.” ἐκεῖνοι δὲ διπλασιάσαντες, τετρα-
 πλασίονα ἐποίησαν. καὶ ἐπιμένειντος τοῦ λοιμοῦ
 ἠναγκάσθησαν τὸν Πλάτωνα ἐρωτᾶν· κἀκεῖνος ἔφη
 αὐτοῖς, ὡς ἔοικεν “ὁ Δῆλιος ὀνειδίζει ὑμῖν, ὅτι γεω-
 μετρίας καταφρονεῖτε,” καὶ τότε προέβαλε τοῖς ἐταί- 15
 ροῖς αὐτοῦ, ὅτι οὐκ ἂν εὐροιμεν τοῦτο, εἰ μὴ δύο δο-
 θείσων εὐθειῶν δύο μέσοι ἀνάλογον εὐρεθῶσιν· ἐὰν
 γὰρ εὐροιμεν τοῦτο, ἔσται τὸ ἀπὸ τῶν ἄκρων ἴσον
 τῶ ἀπὸ τῶν μέσων· καὶ λοιπὸν τὸ ἀπὸ τῆς πρώτης
 καὶ τρίτης ἴσον τῶ ἀπὸ τῆς δευτέρας καὶ τετάρτης. 20
 καὶ οἱ μὲν γραμμικῶς εὗρον, ἄλλοι δὲ κωνικῶς. καὶ
 ἀπλῶς ἕκαστος ὡς ἐπέβαλλεν εὔρε· δυσχερές γὰρ
 πάνυ τὸ πρόβλημα.

ις = Philop. νδ ιζ = Philop. νδ

ις, ι = Nicom. XVI, 2. ιζ, ι = Nicom. XVI, 3.

5 ἀναστάσης scripsi: ἀναστάσαν AM

16 τρίς τρεῖς scripsi: τρεῖς τρίς AM

ις. ι δὲ AM: om. Nicom. || ὠνομάσθαι A et Nicom.: ὠνομάσθη M

ιζ. ι οἱ Nicom.: om. AM

2 ἅπας M: αὐτὸς δ A

5 διὰ scripsi: δὴ AM

22 εὔρε M: εὔρεν A (ut vid.)

ιη. πάλιν οὖν ἄνωθεν ἑτερομήκης ἀριθμὸς λέγεται. περὶ
 παραλληλεπιπέδων ἦν αὐτῷ ὁ λόγος. ἰστέον ὅτι καὶ
 ὁ κύβος παραλληλεπίπεδός ἐστιν, ἀλλ' ἐξ ἴσων σύγ-
 5 κείται πλευρῶν· νῦν δὲ βούλεται εἰπεῖν περὶ παραλ-
 ληλεπιπέδων ἐξ ἀνίσων πλευρῶν ὄντων. καὶ φησιν
 ὅτι τῶν παραλληλεπιπέδων τούτων οἱ μὲν εἰσιν
 ἑτερομήκεις, οἱ δὲ προμήκεις. καὶ ἑτερομήκεις μὲν εἰσιν
 οἱ ἔχοντες μονάδι ἀνίσους μόνῃ τὰς πλευράς· οἶον ὁ ς
 ἑτερομήκης, τρίς γὰρ β ς , ὁ δὲ γ τῆς δυάδος μονάδι
 10 μόνῃ μείζων ἐστί· καὶ ἐφεξῆς ὁμοίως. προμήκεις δὲ
 εἰσιν οἱ πλείοσι μονάσιν ἔχοντες τὸ ἄνισον. οἶον ὁ $\iota\epsilon$
 προμήκης, τρίς γὰρ ϵ $\iota\epsilon$, ὁ δὲ ϵ τοῦ γ δυάδι μείζων,
 καὶ ἐπὶ πάντων ὁμοίως. ταῦτα μὲν οὖν περὶ τούτων.
 ἰστέον δὲ ὅτι πλινθίδες μὲν εἰσιν ὧν ἡ βᾶσις μὲν
 15 ἰσάκεις ἴση ἐστίν, ὃ ἐστὶ τετράγωνος, ἡ δὲ κορυφή
 ἐλάττω· δοκίς δὲ τὸ ἀνάπαλιν ἥς ἡ κορυφή μείζων.
 | κἀκεῖνο δὲ δεῖ εἰδέναι ὅτι εἰκότως οἱ Πυθαγόρειοι τὴν
 μὲν μονάδα ταύτου καὶ ταυτότητος αἰτίαν ἔλεγον
 εἶναι, τὴν δὲ δυάδα ἐτέρου καὶ ἐτερότητος· ἡ μὲν γὰρ
 20 μονὰς τοὺς περιττοὺς ἔχουσα κατὰ τάξιν, γεννᾷ πάν-
 τας τοὺς τετραγώνους ἐξ αὐτῆς εὐτάκτως· οἱ δὲ ἀπὸ
 δυάδος πάντες ἄρτιοι τοὺς ἑτερομήκεις ποιοῦσι. τὸ
 ἕτερον οὖν ἐν δυάδι τυγχάνει· διὰ τοῦτο καὶ τὸ ἕτερον
 ἐπὶ δύο λέγει, τὸ δὲ ἄλλο ἐπὶ τριῶν. ἰστέον δὲ ὅτι
 25 εὐτάκτως κατὰ τὰς πλευράς γίνονται οἱ ἑτερομήκεις·
 ἰδοὺ γὰρ πρώτη μὲν ἡ δυὰς ἑτερομήκης ἐστί· μονάδι
 γὰρ μόνῃ ἡ ἀνισότης· δις γὰρ ἐν δύο· ὅρα οὖν ὅτι
 δύο καὶ ἐν εἰσιν αἱ πλευраὶ· πρόσθεσ ταῖς δύο δ , ὃ
 γίνεται ς . ὅρα ἄλλον ἑτερομήκη· τρίς δύο ς , καὶ σκόπει
 30 πῶς εὐτάκτως ἡ προκοπή· ὁ μὲν γὰρ β εἶχε β καὶ
 μίαν πλευράν· ὁ δὲ ς γ καὶ β . πάλιν ταῖς ς πρόσθεσ ς ,
 γίνονται $\iota\beta$ · ἰδοὺ ἑτερομήκης τὸν δ καὶ τὸν γ ἔχων
 πλευράς. καὶ ἐπὶ πάντων ὁμοίως προστιθεὶς τοὺς
 κατὰ τάξιν ἄρτιους εὐρήσεις τοῦτο. ἔστω δὲ ἐπὶ δια-
 35 γράμματος σαφὲς τὸ λεγόμενον· α , γ , ϵ , ζ , θ , $\iota\alpha$, $\iota\gamma$,
 $\iota\epsilon$, $\iota\zeta$, $\iota\theta$, κα· β , δ , ς , η , ι , $\iota\beta$, $\iota\delta$, $\iota\varsigma$, $\iota\eta$, κ , $\kappa\beta$. | ἐπεὶ
 τοίνυν καλῶς εἴρηται περὶ τούτων, ἔλθωμεν ἐπὶ τοὺς
 κυκλικούς καὶ τοὺς σφαιρικούς. ἰστέον τοίνυν ὅτι ἐκ
 τῶν κύκλων γίνονται· συμβολικῶς δὲ λέγονται κυ-

κλικοί καὶ σφαιρικοί, ἐπεὶ κατὰ ἀλήθειαν, πῶν δυνα- 40
 τὸν ποιῆσαι κύκλον ἢ σφαῖραν ἀριθμητικῶς; ἐπεὶ
 τοίνυν εἴρηται ἐκ κύκλων γίνεσθαι, ἴδωμεν τί ἐστὶ
 κύκλος· καὶ οὕτως εὐρίσκομεν τὸν τρόπον· κύκλος
 ἐστὶν ὁ ἀπὸ τοῦ αὐτοῦ ἐπὶ τὸ αὐτὸ λήγων· οὐκοῦν
 ἀριθμὸς ὁ ἀπὸ τοῦ αὐτοῦ ἐπὶ τὸ αὐτὸ λήγων κύκλος 45
 ἐστίν, οἶον ὁ κε· οὗτος γὰρ ἐστὶ πεντάκεις πέντε· ἰδοὺ
 οὖν ὅτι αἱ πλευραὶ αὐτοῦ ἐκ πέντε εἰσίν· ἀπὸ ϵ οὖν
 ἀρχόμεθα λέγοντες πεντάκεις ϵ , ἀλλὰ καὶ λήγομεν εἰς
 ϵ · κε γὰρ· ὁμοίως καὶ ὁ $\lambda\varsigma$ κύκλος ἐστίν· ἀπὸ γὰρ ς
 ἀρχόμεθα καὶ εἰς ς λήγομεν· φάμεν γὰρ ὅτι ἑξάκεις ς 50
 ἰδοὺ ἀπὸ ς ἡρξάμεθα καὶ εἰς ς δὲ λήγομεν· αἱ γὰρ $\lambda\varsigma$
 εἰς ς λήγουσιν. οὗτοι οὖν κύκλοι εἰσίν, ἐπειδὴ β δια-
 στάσεις εἰσίν· ἔαν μέντοι τρεῖς διαστάσεις λάβωμεν,
 ποιοῦμεν σφαῖραν· οἶον ὁ κε ἀπὸ ϵ πλευρῶν ἐστίν·
 ἔαν ποιήσωμεν πάλιν πεντάκεις κε, γίνονται ρκε. οὗτος 55
 τοίνυν σφαῖρά ἐστι· καὶ πάλιν ὁ $\lambda\varsigma$ ἀπὸ ς πλευρῶν
 ἐστίν· ἔαν ποιήσωμεν ἑξάκεις $\lambda\varsigma$, γίνονται σισ· οὗτος
 ἐστὶ σφαῖρα. ταῦτά ἐστιν ἃ βούλεται διὰ τούτων
 εἰπεῖν. ἐπεὶ οὖν εὖ τεθεώρηται οὐδὲν κατὰ τὴν λέξιν
 ἐστὶν ἄπορον, ὅθεν οὐδὲ ἐξηγήσεως χρεῖα τυγχάνει. 60

ιβ. ἐπεὶ δὲ ἀρχὰς τῶν ὄλων. τὰ μὲν μέλλοντα λέγεσθαι
 ἤδη εἴρηται, γλαφυρώτερον δὲ αὐτὰ διδάσκει. ἰστέον
 γὰρ ὅτι φησὶν ὡς ἐκ ταυτότητος καὶ ἐτερότητος οἱ
 ἀριθμοὶ εἰσι. καὶ οἱ μὲν ἀπὸ μονάδος περιττοὶ ταυτό- 5
 τητός εἰσιν· οἱ γὰρ περιττοὶ ἀδιαιρέτοί εἰσιν, ὅπερ
 ἴδιον ταυτότητος ποιοῦσι δὲ οἱ περιττοὶ τοὺς τετρα-
 γώνους ἰσοπλεύρους ὄντας, ὃ καὶ αὐτὸ ἴδιον τῆς
 ταυτότητος. οἱ δὲ ἀπὸ δυάδος τῆς ἐτερότητος, γίνον-
 ται γὰρ οἱ ἄρτιοι, διαιρέσεως καὶ ἐτερότητος ὄντες
 δεκτικοί· ποιοῦσι δὲ καὶ τοὺς ἑτερομήκεις καὶ προμή- 10
 κεις, οἵτινες ἀνισόπλευροί εἰσι. δείκνυσιν οὖν λοιπὸν
 ὅτι κατὰ τὸν κόσμον προέρχονται οἱ ἀριθμοί, ὥσπερ
 γὰρ ἐν τῷ κόσμῳ ἔστι καὶ ταυτότης καθὼς ἐξ ἐνός
 προῆλθεν, ἔστι καὶ ἐτερότης διὰ τὸ πλῆθος (εἰ μὴ γὰρ
 ἦν ἐτερότης, οὐκ ἂν πλῆθος ἐγένετο. ἔδει γὰρ ἐξ ἐνός 15
 προελθεῖν καὶ οὕτω πληθυνθῆναι), οὕτω καὶ οἱ ἀρι-
 θμοὶ ἔχουσι καὶ ταυτότητα καὶ ἐτερότητα. καὶ λοιπὸν
 παραφέρει τὴν Πλατωνικὴν χρῆσιν, ὅτι ἐστὶν ἀμερὴς
 ὁ κόσμος καὶ τὰ ἐν αὐτῷ μεριστά· οὐ γὰρ εἶπεν ὅτι
 αὐτὰ καθ' αὐτὰ εἰσι μεριστά, ἀλλὰ διὰ τὸ σῶμα· οἶον 20
 ἡ λευκότης αὐτῇ καθ' αὐτὴν μεριστὴ οὐκ ἐστίν, ἀλλὰ
 διὰ τὸ σῶμα, μεριστὸν ὄν, λέγεται μεριστή. λέγει
 τοίνυν ἀρμονίαν ἐπομένην τοῖς ἀριθμοῖς θαυμαστήν·
 ἐκθοῦ γὰρ, φησί, δύο στίχους κατὰ μήκος· τὸν μὲν
 πρῶτον ἔχοντα τοὺς τετραγώνους μόνους ἀπὸ μονά- 25
 δος, τὸν δὲ δεύτερον τοὺς ἑτερομήκεις ὡς ὑποτέτακται·
 α , δ , θ , $\iota\varsigma$, κε, $\lambda\varsigma$, μθ, ξδ· β , ς , $\iota\beta$, κ , λ , μβ, υς, οβ· παρά-
 βαλε τοίνυν πρῶτον τετράγωνον πρῶτῳ ἑτερομήκει,

ιη = Philop. νε-νθ

ιη, ι = Nicom. XVII, ι.

14 cf. Nicom. XVII, 6. 17 cf. Nicom. XVII, ι et
 XVIII, ι. 36 cf. Nicom. XVII, 7.

ιη. 2 παραλληλεπιπέδων M: παραλληλοεπιπέδων A || ἰστέον M:
 ἰστέον τοίνυν A (ut vid.)

3 παραλληλεπιπέδους M: παραλληλοεπιπέδους A

4-5 παραλληλεπιπέδων M: παραλληλεπίδων A

9 δυάδος (Philop.)] μονάδος AM

11 τὸ ἄνισον M: om. A

27 alt. γὰρ M: καὶ A

30 γὰρ M: om. A

34 ἐπὶ M: διὰ A

36 ιδ A: ιδ ιδ M

ιβ = Philop. ξ, ξα

ιβ, ι = Nicom. XVIII, ι

ιβ. 9 γὰρ M: δὲ A

καὶ δεύτερον δευτέρῳ, καὶ τρίτον τρίτῳ, καὶ εὐρήσεις
 30 πρῶτον μὲν τὸν διπλάσιον, εἴτα κατὰ τάξιν τοὺς
 ἐπιμορίους, ἡμιόλιον καὶ ἐπίτριτον καὶ ἐφεξῆς· λαβὲ
 γὰρ τὸν β καὶ τὴν α, ἰδοὺ τὸ διπλάσιον εἶδος· εἴτα
 τὸν ζ καὶ τὸν δ, ἰδοὺ τὸ ἡμιόλιον· πάλιν τὸν ιβ καὶ
 τὸν θ, ὅρα τὸν ἐπίτριτον, καὶ ἐφεξῆς ὡσαύτως. μία
 35 τοῖνυν αὕτη διαφορὰ, δευτέρα δὲ ἐκείνη. λαβὲ πρῶ-
 τον ἑτερομήκη καὶ δεύτερον τετράγωνον καὶ τρίτον
 τετράγωνον καὶ δεύτερον ἑτερομήκη καὶ τέταρτον
 τετράγωνον καὶ τρίτον ἑτερομήκη καὶ πέμπτον τε-
 τράγωνον καὶ τέταρτον καὶ ἐφεξῆς ὁμοίως. καὶ εὐρή-
 40 σεις πάλιν τὴν αὐτὴν ἀναλογίαν, οἷον λαβὲ τὸν β
 καὶ τὸν δ· ἰδοὺ ὁ διπλάσιος λόγος· τὸν θ καὶ τὸν ζ·
 ἰδοὺ ὁ ἡμιόλιος· τὸν ις καὶ τὸν ιβ· ὅρα τὸν ἐπίτριτον·
 καὶ ἐπὶ πάντων ὡσαύτως. | ὅρα δὲ καὶ ἑτέραν ἀρμονί-
 45 α· λαβὲ τὰς ὑπεροχὰς τῆς πρῶτης διαφορᾶς καὶ τῆς
 δευτέρας, καὶ πάλιν ἡ αὕτη ἀναφανήσεται ἀναλογία·
 οἷον τί λέγω; ἐν τῇ πρώτῃ διαφορᾷ, ὁ β πρὸς τὴν
 μονάδα παρεβάλλετο· τίνι τοῖνυν ὑπερέχει; μονάδι·
 ἐκθοῦ α. πάλιν ἐν τῇ δευτέρᾳ διαφορᾷ, ὁ δ πρὸς τὸν
 β παρεβάλλετο· ὑπερέχει δὲ ὁ δ τοῦ β δυάδι, ἐν δὲ τῇ
 50 πρώτῃ διαφορᾷ ὁ β τῆς μονάδος μονάδι· ὑπεροχαὶ
 ἄρα μονὰς καὶ δυάς. ἰδοὺ τοῖνυν ὅτι ἡ μονὰς τῆς δυά-
 δος διπλασία. πάλιν ὁ ζ τοῦ δ ὑπερέχει κατὰ τὴν
 πρώτῃν διαφορὰν δυάδι· ὁ δὲ θ τοῦ ζ κατὰ τὴν δευτέ-
 ραν διαφορὰν τριάδι· διὰ τοῦτο ὁ γ τοῦ β ἡμιόλιος.
 55 ὁμοίως καὶ ἐπὶ πάντων εὐρήσεις εὐτακτον τὴν πρό-
 οδον. ταῦτά ἐστιν ἃ βούλεται διὰ τούτων εἰπεῖν· ἰστέον
 δὲ ὅτι οὐδὲν ἄσαφές ἔχει ἡ λέξις.

κ. ἂν δὲ καὶ πρῶτον ἑτερομήκη μέσον ἀμφοτέρων. πάλιν
 περὶ ταυτότητος καὶ ἑτερότητος διαλέγεται, καὶ φη-
 σιν ὅτι οἱ μὲν ἀπὸ μονάδος περιττοὶ πρὸς τῆς ταυτό-
 τητός εἰσιν, ἐπειδὴ καὶ ἡ μονὰς καὶ οἱ περιττοὶ ἀδιαί-
 5 ρετοι, οἱ δὲ ἀπὸ δυάδος ἄρτιοι πρὸς τῆς ἑτερότητος,
 ἐπειδὴ καὶ ἡ δυὰς καὶ οἱ ἄρτιοι διαιρετοί. λέγει τοῖνυν
 γλαφυρά τινα παρακολουθοῦντα αὐτοῖς. φησὶ γὰρ
 ὅτι ἐὰν μὲν λάβῃς ἑτερομήκεις καὶ μεταξὺ αὐτῶν ἀποθῇ
 τετράγωνον, ἡ ὑπεροχὴ αὐτῶν ἔσται ἡ αὕτη, οὐκέτι
 10 δὲ ἡ ἀναλογία ἡ αὕτη· ἐὰν δὲ λάβῃς τετραγώνους
 καὶ μεταξὺ αὐτῶν ἑτερομήκη, ἡ μὲν ὑπεροχὴ ἐνταῦθα
 οὐκ ἔσται ἡ αὕτη, ἡ ἀναλογία δὲ ναί. οἷον ἔστω ἑτε-
 ρομηκῶν τῶν β καὶ τῶν ζ μέσος τετράγωνος ὁ δ· ὡς
 εἶναι οὕτως, β δ ζ· ἰδοὺ ἀναλογία μὲν οὐ σώζεται ἡ

κ = Philop. ξδ, ξε

43 cf. Nicom. XIX, 3.

κ,ι = Nicom. XIX, 4.

37–39 τέταρτον ... καὶ τέταρτον M: πέμπτον καὶ τέταρτον A
 52 ζ τοῦ δ scripsi: δ τοῦ ζ AM

κ. ι καὶ πρῶτον AM: καὶ τὸν πρῶτον Nicom.

4–5 ἀδιαίρετοι M: ἀδιαίρετος A

7 γλαφυρά τινα M: τινὰ γλαφυρά A

13 alt. τῶν A: om. M

αὐτή· ὁ γὰρ ζ τοῦ δ ἡμιόλιός ἐστιν, ὁ δὲ δ τοῦ β 15
 οὐκέτι, ἀλλὰ διπλάσιος· ἡ μὲντοι ὑπεροχὴ ἡ αὕτη·
 ὁ γὰρ δ τοῦ β δυάδι ὑπερέχει, ἀλλὰ καὶ ὁ ζ τοῦ δ
 δυάδι. καὶ ἐφεξῆς εὐρήσεις τοῦτο. καὶ ἡ ὑπεροχὴ δὲ
 εὐτακτός ἐστι κατὰ μονάδα αὐξανόμενη. πάλιν γὰρ
 μεταξὺ τοῦ ζ καὶ τοῦ ιβ ἑτερομηκῶν ὄντων ἀπόθου 20
 τὸν θ τετράγωνον· καὶ ἡ ὑπεροχὴ τριάς ἐστιν· εἴτα
 τετράς καὶ πεντάς καὶ ἐφεξῆς. σαφηνείας δὲ χάριν
 τέλειος ἐκκείσθω στίχος· β, δ, ζ, θ, ιβ, ις, κ, κε, λ, λς,
 μ, μβ, μθ, νς· ἐπὶ δὲ τῶν τετραγώνων, ἐὰν ἑτερομήκης
 ληφθῇ ἐν τῷ μέσῳ, ἀναλογία μόνῃ φυλαχθήσεται 25
 οἷον ἔστω ὁ δ καὶ ὁ θ, τούτων ἐν τῷ μέσῳ ὁ ζ, ὡς
 ὑποτέτακται δ, ζ, θ· ἰδοὺ ὑπεροχὴ μὲν οὐκ ἔστιν ἡ
 αὕτη, ἀναλογία δὲ ναί, ὁ τε γὰρ θ τοῦ ζ ἡμιόλιος καὶ
 ὁ ζ τοῦ δ· πάλιν δὲ κἀνταῦθα ἡ ἀναλογία κατὰ τάξιν.
 πάλιν γὰρ οἱ ἐφεξῆς ἐπίτριτοι ἔσονται καὶ ἐπιτέταρ- 30
 τοι καὶ ἐφεξῆς· λαβὲ γὰρ θ καὶ ις καὶ ἐν τῷ μέσῳ τὸν
 ιβ ἑτερομήκη· ἰδοὺ ὁ τε ις τοῦ ιβ ἐπίτριτός ἐστι καὶ ὁ
 ιβ τοῦ θ· καὶ ἐφεξῆς ὁμοίως. ἔστω δὲ καὶ τούτων στί-
 χος διὰ τὸ σαφές· δ, ζ, θ, <ιβ, ις,> κ, κε, λ, λς, μβ, μθ·
 ἐπεὶ τοῖνυν καὶ τοῦτο εἴρηται, ἰστέον κάκεινο· ὅτι 35
 τοσοῦτον ὡς ἀπὸ περιττῶν γίνονται οἱ τετράγωνοι,
 ὅτι καὶ ἐπὶ πάντων τῶν εἰδῶν, οἷον ἡ διπλασίῳ ἢ
 τριπλασίῳ ἢ τετραπλασίῳ, πάντες οἱ ἐν περιτταῖς
 χώραις κείμενοι τετράγωνοί εἰσι καὶ οὐδεις ἐν ἀρτίᾳ χώρα
 κείται· οἷον ἐκκείσθωσαν οἱ διπλάσιοι ἐν ἐνὶ στίχῳ· 40
 α, β, δ, η, ις, λβ, ξδ, ρκη, σνς· ἰδοὺ τοῖνυν ὁ δ τετρά-
 γωνος ὦν ἐν περιττῇ χώρᾳ κείται· ἀπὸ γὰρ μονάδος
 ἐκεῖ χώρα τρίτη ἐστὶ, τὰ δὲ γ περιττά· ὡσαύτως καὶ
 ὁ ις τετράγωνος ὦν ἐν περιττῇ χώρᾳ ἐστὶ· πέμπτη
 γὰρ ἡ χώρα ἀπὸ τῆς μονάδος· καὶ ἐφεξῆς ὁμοίως. 45
 ὡσαύτως καὶ ἐπὶ τῶν τριπλασίῳ· α, γ, θ, κζ, πα,
 σμγ, ψκθ· ἰδοὺ καὶ ἐνταῦθα οἱ τετράγωνοι ἐν περιτ-
 ταῖς χώραις κεῖνται· τὸν αὐτὸν τρόπον καὶ ἐπὶ πάν-
 των εὐρήσεις. ἔστι δὲ κάκεινο θαυμαστὸν ὅτι οἱ κύβοι
 κατὰ τάξιν τῶν περιττῶν γίνονται· οἷον ἡ μονὰς 50
 πρῶτος κύβος ἐστὶ· λοιπὸν μετ' αὐτὴν ὁ η· πόθεν
 δῆλον; ἐπειδὴ μετὰ τὴν μονάδα εἰσὶ δύο περιττοὶ ὁ
 γ καὶ ὁ ε· συντιθέμενοι δὲ οὗτοι ποιοῦσι τὸν η· καὶ
 λοιπὸν κατὰ πρόσβασιν μονάδος οὕτω γίνονται
 πάντες· τὸν γὰρ ἐφεξῆς τρίτον περιττοὶ ποιήσουσιν 55
 ὁ ζ, ὁ θ, ὁ ια· γίνονται γὰρ κζ· οὗτος δὲ κύβος· τὸν δὲ
 ἄλλον δ· ὁ ιγ, ὁ ιε, ὁ ιζ, ὁ ιθ· γίνονται ξδ· οὗτος κύβος·
 τὸν δὲ ἄλλον ε, καὶ τὸν μετ' αὐτὸν ζ, καὶ τὸν μετ'
 ἐκείνον οἱ κατὰ τάξιν ἑπτὰ περιττοί, καὶ τοῦτο ἐπ'
 ἄπειρον, ὥστε ἡ ταυτότης πρὸς τῆς μονάδος καὶ τῶν 60
 περιττῶν. ἰστέον δὲ ὅτι, ὅταν μεταξὺ τετραγώνων
 ἀποθῇ ἑτερομήκη, τὸ ὑπὸ τῶν ἄκρων ἴσον γίνεται
 τῷ ἀπὸ τοῦ μέσου· οἷον μεταξὺ τοῦ δ καὶ τοῦ θ
 κείσθω ὁ ζ· τετράκις θ, ποιήσουν λς· ἰδοὺ τὸ ὑπὸ τῶν
 ἄκρων. ποιήσουν καὶ ἐξάκις ζ, τὸ ἀπὸ τοῦ μέσου, 65
 γίνεται λς· ἰδοὺ ἴσον τὸ ὑπὸ τῶν ἄκρων τῷ ἀπὸ τοῦ

25 ληφθῇ M: om. A

34 ιβ, ις scripsi: om. AM

37–38 ἡ τριπλασίῳ M: om. A

μέσου. πάλιν τοῦ θ καὶ τοῦ ις τετραγώνων ὄντων μέσος ἐστὶν ἑτερομήκης ὁ ιβ· ἰδοὺ τὸ ὑπὸ τῶν ἄκρων ἴσον ἐστὶ τῷ ἀπὸ τοῦ μέσου· ἐννάκις γὰρ ις ρμδ, ἀλλὰ
70 καὶ δωδεκάκις ιβ ρμδ. καὶ ἐπὶ πάντων τοῦτο εὐρήσεις. τούτων τοίνυν οὕτω προτεθεωρημένων, πᾶσα ἡ λέξις σαφὴς τυγχάνει καὶ οὐδεμιᾶς χρήζει ἐξηγήσεως.

κα. ἐπὶ τούτοις καιρὸς ἂν εἴη. πληρώσας τὸν περὶ τῶν ἀριθμῶν λόγον, λοιπὸν θέλει περὶ μεσοτήτων διαλεχθῆναι, θεωρουμένων ἐν τε ἀριθμητικῇ καὶ γεωμετρικῇ καὶ ἀρμονικῇ καὶ ἰστέον ὅτι γλαφυρὰ θεωρήματα
5 τὰ τῶν ἀναλογιῶν τούτων συμβαλλόμενα πανταχοῦ. καὶ γὰρ φυσικοὶ χρήλουσιν αὐτῶν καὶ μαθηματικοί, καὶ ἀπλῶς πάντες· ἀμέλει καὶ ὁ Τίμαιος ἐν τῇ ψυχονομικῇ κέχρηται ἀναλογίαις τισίν· ἐὰν οὖν μὴ εἰδείμεν αὐτάς, οὐ μόνον τὰ αἰνιγματωδῶς ἐκέισε λεγόμενα οὐ νοοῦμεν, ἀλλ' οὐδὲ τὰ κατὰ τὸ φαινόμενον
10 παραδιδόμενα. ἰστέον τοίνυν ὅτι ἐν μὲν τῇ ἀριθμητικῇ ἀναλογία θεωρεῖται κατὰ τὴν ὑπεροχὴν μόνην· ἀδύνατον γὰρ ἐν τῇ αὐτῇ ὑπεροχῇ ἀναλογίαν λόγων φυλαχθῆναι· οἷον ἐκθοῦ τὸ φυσικὸν χύμα τῶν ἀριθμῶν ἀπὸ μονάδος. οὐκοῦν ἡ μὲν δυάς τῆς μονάδος
15 ὑπερέχει μονάδι, ἡ δὲ τριάς τῆς δυάδος μονάδι, καὶ ἡ τετράς τῆς τριάδος μονάδι, καὶ τοῦτο ἐπ' ἄπειρον. ἰδοὺ τοίνυν ἀναλογία μὲν καθ' ὑπεροχὴν ἐστίν, οὐκέτι δὲ κατὰ λόγον· οὐ γὰρ ὃν λόγον ἔχει ἡ δυάς πρὸς τὴν
20 μονάδα, τοῦτον τὸν λόγον ἔχει ἡ τριάς πρὸς τὴν δυάδα ἢ τὴν αὐτὴν ἢ τετράς πρὸς τὴν τριάδα· ἡ μὲν γὰρ δυάς διπλάσιον ἔχει λόγον πρὸς τὴν μονάδα, ἡ δὲ τριάς πρὸς τὴν δυάδα τὸν ἡμιόλιον, ἡ δὲ τετράς πρὸς τὴν τριάδα τὸν ἐπίτριτον, καὶ ἐφεξῆς ὁμοίως.
25 ἐν μέντοι τῇ γεωμετρικῇ ἀναλογίᾳ ἀνάπαλιν· ὁ μὲν λόγος ὁ αὐτός, ἡ δὲ ὑπεροχὴ οὐχ ἡ αὐτή· οὗτος δὲ ὁ λόγος ἢ συνεχὴς ἐστίν ἢ διηρημένος· συνεχὴς μὲν ὅταν ὁ μέσος ὁρος δις παραλαμβάνηται· οἷον ὡς ὁ ρ πρὸς τὸν ν, οὕτως ὁ ν πρὸς τὸν κε· διηρημένος δὲ ὡς
30 ὁ ρ πρὸς τὸν ν, οὕτως ὁ ις πρὸς τὸν η· καὶ ἰδοὺ λόγος μὲν ὁ αὐτός, ὑπεροχὴ δὲ οὐκέτι. τοῦτο δὲ συμβαίνει, ἐπειδὴ ἐπὶ μὲν τοῦ ἀριθμοῦ τὸ ἐλάχιστον ὠρίσται (μονὰς γάρ) καὶ δυνάμεθα καταντῆσαι εἰς ἐλάχιστον, οὐ οὐκ ἔστι μεσότης· οἷον τῶν γ καὶ τῶν β· τούτων
35 γὰρ οὐδεὶς μέσος, τοῦ μὲν γ ὅτι οὐ διαιρεῖται δίχα

ἵνα ποιήσῃ ἡμιόλιον λόγον, τοῦ δὲ β ὅτι ἄλλος αὐτοῦ οὐκ ἔστιν ἡμιόλιος, εἰ μὴ ὁ γ. ἐπὶ μέντοι τῶν μεγεθῶν, ἐπειδὴ εἰς ἄπειρα διαιρετὰ εἰσι, δυνατόν λαμβάνειν μέσα. ἰστέον δὲ ὅτι τινὰ μὲν τῶν μέσων εἰσὶ μὲν, οὐ λέγονται δέ, τινὰ δὲ ὅλως οὐδέποτε εἰσιν, 40 ἀλλὰ ἄλογα τυγχάνουσι καὶ ἀνυνόμαστα. ἵνα δὲ γινώμεν τοῦτο, δεῖ προσλαβεῖν ἐκεῖνο. ἰστέον ὅτι πᾶσα μονὰς μετὰ μορίου τετραγωνιζομένη εἰς μόριον λήγει· οἷον τὰς β ἡμισυ τετραγώνισον, γίνεται ς δ'ον· δις γὰρ β ἡμισυ καὶ τὸ ἡμισυ τῶν δύο ἡμισυ ποιοῦσιν 45 ς δ'ον· ἰδοὺ εἰς μόριον τὸ δ'ον ἔλθῃ· ἰδοὺ τοίνυν αὕτη ἡ μεσότης ἐστίν, εἰ καὶ μὴ παραλαμβάνεται διὰ τὸ μόριον· εἰσὶ μέντοι τινὰ μὴδὲ ὅλως ὀνομαζόμενα, καὶ δεῖ εἰδέναι ὅτι, ἐὰν λάβωμεν τετράγωνον οὐ τὸ μήκος ἐστὶ πέντε πηχῶν, τὸ ὅλον γίνεται κε, ἐπειδὴ καὶ τὸ 50 πλάτος ε, καὶ γίνονται πεντάκις ε κε. ἐὰν τοίνυν διάμετρον ἀγάγωμεν ἐν τῷ τετραγώνῳ, ὃ ἐστὶ διαγώνιον, τὸ ἀπ' αὐτῆς ἀναγραφόμενον τετράγωνον ἴσον ἔσται τοῖς ἀπὸ τῶν δύο πλευρῶν τετραγώνοις, ἐπειδὴ ἐν τοῖς ὀρθογώνοις τριγώνοις τὸ ἀπὸ τῆς τῆν 55 ὀρθῆς γωνίας ὑποτείνουσας πλευρᾶς τετράγωνον ἴσον ἐστὶ τοῖς ἀπὸ τῶν τῆν ὀρθῆς γωνίας περιεχουσῶν πλευρῶν τετραγώνοις. τὰ δὲ ἀπὸ τῶν δύο πλευρῶν γίνονται ν πηχῶν κε καὶ κε· καὶ τὸ ἀπὸ τῆς διαγώνου ἄρα ἔσται ν· τούτου τοίνυν τὸ μέσον, ἐὰν 60 μείνης τρισχιλία ἔτη, οὐ δύνασαι εὑρεῖν· διὰ τί; ἐπειδὴ πλέον μὲν ἐστὶν ἡ κατὰ ἑβδομον, ἔλαττον δὲ ἡ κατὰ ὄγδοον· εἰ μὲν γὰρ ἦν τελείως ἑβδομον, ἔδει εἶναι μθ· ἐπτάκις γὰρ ζ μθ· νῦν δὲ ν ἐστίν. εἰ δὲ πάλιν ἦν η, ἔδει ξδ· ὀκτάκις γὰρ η ξδ· ὥστε τὸ μέσον ἀνυνό- 65 μαστόν ἐστὶ καὶ οὐ δυνατόν εὑρεῖν. ταῦτα μὲν οὖν καὶ περὶ τούτου. εἴπωμεν λοιπὸν περὶ τῆς μουσικῆς ὃ ἐστὶ περὶ τῆς ἀρμονικῆς ἀναλογίας. ἰστέον ὅτι ἐν τῇ γεωμετρικῇ ἡ ὑπεροχὴ πρὸς τὰ μέρη λαμβάνεται τοῦ τε μέσου καὶ τοῦ ἐλαχίστου· οἷον ἐστίν, θ, ς, δ· 70 ἐνταῦθα τοίνυν τὰ θ τῶν ς τριάδι ὑπερέχει, ἐπειδὴ ἡμισυ τῶν ς γ· ἰδοὺ μέρος τοῦ μέσου, ὃ ἐστὶ τοῦ ς, ὑπεροχὴ γίνεται· πάλιν τὰ ς τῶν δ ὑπερέχει δυάδι, ἐπειδὴ ἡμισυ τῶν δ β ἐστίν. ἰδοὺ τὸ μέρος τοῦ ἐλαχίστου, ὃ ἐστὶ τοῦ δ, ὑπερέχει. ἐπὶ μέντοι τῆς ἀρμονικῆς 75 οὐχ οὕτως, ἀλλ' ἡ ὑπεροχὴ κατὰ τὰ μέρη τῶν ἄκρων τοῦ τε μεγίστου καὶ τοῦ ἐλαχίστου· οἷον ἐστὶ ιβ, η, ς· ἐνταῦθα ὁ ιβ τοῦ η ὑπερέχει τετράδι, ἐπειδὴ τρίτον τῶν ιβ δ· ἰδοὺ τοίνυν ὅτι τοῦ ἄκρου τὸ μέρος ὑπεροχὴ γίνεται· ἀλλὰ καὶ ὁ η τοῦ ς ὑπερέχει δυάδι, ἐπειδὴ 80 τρίτον τοῦ ς, ὃ ἐστὶ τοῦ ἄκρου τοῦ ἐλαχίστου, ἐστὶ δύο. ἡ οὖν ὑπεροχὴ τῶν ἄκρων ἐστὶ τὰ μέρη. καὶ ἰδοὺ ὅτι ὁ μὲν ιβ τοῦ η ἡμιόλιός ἐστιν, ὁ δὲ η τοῦ ς ἐπίτριτος· ἰστέον γὰρ ὅτι ἀρμονία ἐκ τούτων γίνεται. ἐκ

κα = Philop. ο

κα, I = Nicom. XXI, I.

69 ἐστὶ M: om. A

κα. I ἐπὶ AM: ἐπὶ δὲ Nicom.

15 alt. μονάδος M: δυάδος A

23 δυάδα M: μονάδα A

28 alt. ὁ M: om. A

29 alt. ν M: ιε A

33 εἰς M: εἰ A (ut vid.)

34 μεσότης M: μονάς A

35 γὰρ M: δὲ A

41 ἀνυνόμαστα M: ἀνυνόματα A

68 περὶ A: om. M

69 γεωμετρικῇ scripsi: γεωμετρικῇ AM

70 ς scripsi: καὶ AM

77 alt. τοῦ M: om. A

79 δ M: om. A

85 μὲν τοῦ ἡμιολίου ἡ διὰ ε, ἐκ δὲ τοῦ ἐπιτρίτου ἡ διὰ δ, ἐκ δὲ τοῦ διπλασίου ἡ διὰ πασῶν, ἥτις καλλίστη ἐστὶ καὶ συμφθέγγεται. ἀμέλει ἐὰν οὕτω κατασκευασθῇ ἡ χορδή, ἐπιτιθεῖς εἰς τὴν σύμφωνον αὐτῇ κάρφος καὶ κρούης ταύτην, καὶ ἐκ τῆς ἐτέρας ἀποπάλλεται τὸ
90 κάρφος· οὕτω συμφθέγγονται· κεράννυνται οἱ φθόγγοι, ἐπειδὴ συμμετρία φυλάττεται. ἔστω γὰρ ἐπίτριτος λόγος, οἶον ὁ δ καὶ ὁ γ· ἰδοὺ μονάδι ὁ δ τοῦ γ ὑπερέχει· μετρεῖ τοῖνυν ἡ μονὰς τὸν γ τρισσάκις, τὸν δὲ δ τετράκις· καὶ πάλιν ἔστω ἡμιόλιος ὁ θ καὶ ζ· ὑπερ-
95 ἔχει ὁ θ τριάδι· ὁ γ τοῖνυν τὴν μὲν ἐξάδα δις μετρεῖ, τὸν δὲ θ τρισσάκις· διὰ τοῦτο οὖν ἡ συμμετρία φυλάττεται. περὶ τούτων τοῖνυν τῶν ἀναλογιῶν διαλέγεται. πάντα τοῖνυν σαφῆ ἐστι, μηδεμιᾶς ἐξηγήσεως δεόμενα.

κβ. ἔστιν οὖν ἀριθμητικὴ μεσότης, ὅταν τριῶν ὄρων. ἥδη φθάσαντες εἰρήκαμεν τὰς μεσότητας· ἀρχεται τοῖνυν ἀπὸ τῆς ἀριθμητικῆς καὶ λέγει τὴν εὐτακτον αὐτῶν ὑπεροχὴν τὴν κατὰ τὸ χύμα τὸ φυσικὸν τῶν μονά-
5 δων.

κγ. κειμένων ἢ ἐπινοουμένων. κειμένων μὲν, ὡς ἐπὶ ἐκθέσεως· ἐπινοουμένων δὲ ὅταν χωρὶς ἐκθέσεως διαλεγώμεθα περὶ τῆς μεσότητος. | ἐπιστάμεθα δὲ ὡς ἐν τῇ
τοιαύτῃ ἐκθέσει. εἰ μὲν γὰρ ὁ μέσος αὐτὸς λαμβάνεται,
5 ὡς τοῦ μὲν εἶναι πρόλογον, τοῦ δὲ ὑπόλογον, συνεχῆς ἢ ἐκθεσις· εἰ δὲ ἄλλος καὶ ἄλλος διηρημένη.

κδ. ἐὰν μὲν οὖν ἐκ τῆς ἐκθέσεως ταύτης. ὁ θέλει εἰπεῖν τοῦτό ἐστιν· ὅτι ἐὰν ἐκ τῆς φυσικῆς ἐκθέσεως τρεῖς λάβῃς παραλλήλους, ὃ ἐστὶ μηδένα παραλιμπάνων ἀλλὰ συνεχεῖς, οἶον α, β, γ (τοῦτο γὰρ δηλοῖ τὸ
5 κατὰ τὴν συνημμένην), μονάδα εὐρήσεις τὴν ὑπεροχὴν· ὁ γὰρ β τῆς μονάδος μονάδι ὑπερέχει, καὶ ὁ γ τῆς δυάδος μονάδι. εἰ δὲ καὶ δ καὶ πλείους λάβῃς, ὡς διεzeugμένην ποιῆσαι ἐκθεσιν, καὶ οὕτω μονάδι ἔσται ἡ ὑπεροχὴ γινομένη· ὡσαύτως γὰρ ἡ τετράς τῆς
10 τριάδος μονάδι ὑπερέχει, καὶ ὁ ε τοῦ δ, καὶ ἐφεξῆς ὁμοίως.

κβ = Philop. οζ κγ = Philop. οζ

κδ = Philop. οη

κβ, I = Nicom. XXIII, 1. κγ, I = Nicom. XXIII, 1

3-4 = Nicom. XXIII, 2. κδ, I = Nicom. XXIII, 3.

5 = Nicom. XXIII, 3.

87 συμφθέγγεται M: συμφέγγεται A

89 ἀποπάλλεται scripsi (cf. n. ad loc.): ἀπατ ... M: ἀπαῖ A: ἀφαιρῆς P² i. m.

95 δις scripsi: ἐξάκις AM

96 τρισσάκις scripsi: ἐννάκις AM

κβ. I τριῶν ὄρων AM: τριῶν ἢ πλείονων ὄρων Nicom.

4 τῇν M: om. A

κδ. 4 τὸ M: om. A

8 διεzeugμένην M: διαzeugμένην A

κε. ἐὰν δὲ μὴ παραλλήλους, ἀλλὰ διεχεῖς. ἐὰν δέ, φησί, μὴ κατὰ τάξιν ἐκθῇς, ἀλλὰ διεzeugνύων. εἰ μὲν ἴση ἐστὶν ἡ παράλειψις καὶ ὥσι τρεῖς ἀριθμοὶ οἱ ἐκτεθέντες ἢ καὶ πλείονες, εἰ μὲν εἰς ἐστὶν ὁ παραληφθεὶς, δυὰς ἔσται ἡ ὑπεροχὴ, καὶ εἰ μὲν τρεῖς ὥσιν οἱ ἐκτεθέντες, 5 συνημμένη λέγεται ἡ ἐκθεσις, ὅτι εἰς ἐστὶν ὁ μέσος ὄρος, εἰ δὲ δ διεzeugνυμένη· οἶον ἔστωσαν μὴ παράλληλοι, ἀντὶ τοῦ μὴ συνεχεῖς, τρεῖς ἀριθμοὶ ἐνὸς παραλειπομένου. α, γ, ε· ἰδοὺ τοῖνυν δυὰς ἡ ὑπεροχὴ· αὕτη δὲ ἡ ἐκθεσις συνημμένη ἐστίν, ἐπειδὴ ὁ αὐτὸς μέσος 10 ὄρος· διηρημένη δὲ α, γ, ε, ζ· ἰδοὺ τοῖνυν κἀνταῦθα δυὰς ἡ ὑπεροχὴ, ἐπειδὴ εἰς ὁ παραλειπόμενος· εἰ δὲ δύο ὥσιν οἱ παραλειπόμενοι, εἴτε κατὰ συνέχειαν, εἴτε κατὰ διέχειαν, τριάς πάντως ἡ ὑπεροχὴ· οἶον κατὰ μὲν συνέχειαν, ὅταν τρεῖς ὥσιν οἱ ἐκτεθέντες, 15 οἶον α, δ, ζ· ἰδοὺ γὰρ συνεχῆς μὲν, ὅτι ὁ αὐτὸς μέσος ὄρος, τριάς δὲ ἡ ὑπεροχὴ, ὅτι δύο διαλιμπάνουσι. κατὰ διέχειαν δὲ καὶ οὕτω πάλιν τριάς, οἶον α, δ, ζ, ι· εἰ δὲ τριάδα παραλείποιεν, τετράς ἡ ὑπεροχὴ· καὶ εἰ τετράδα, πεντάς, καὶ ἐφεξῆς εὐρήσεις τοῦτο. | 20 μετέχει ἄρα αὕτη ποσοῦ μὲν ἴσου. ἡ ἄρα ἀριθμητικὴ ποσοῦ μὲν ἀντὶ τοῦ τῆς αὐτῆς ὑπεροχῆς μετέχει. οὐκέτι δὲ ποιοῦ ἀντὶ τοῦ λόγου τοῦ αὐτοῦ.

κς. ἴδιον δὲ ὑπάρχει ταύτης τῆς μεσότητος. ἀντὶ τοῦ τῆς ἀριθμητικῆς, τὸ τοῖς ἄκροις συντιθεμένοις ἴσον γίνεσθαι τὸ μέσον καὶ κατὰ συνέχειαν καὶ κατὰ διέχειαν. ἀλλ' εἰ μὲν κατὰ συνέχειαν, ἑαυτῷ συντίθεται ὁ μέσος, 5 εἰ δὲ κατὰ διαίρεσιν, τῷ ἄλλῳ· οἶον ἔστω κατὰ συνέχειαν α, β, γ· ἰδοὺ γ καὶ α δ, ἀλλὰ καὶ δις β δ. ἀλλὰ καὶ κατὰ διαίρεσιν· α, β, γ, δ· δ καὶ α ε, ἀλλὰ καὶ β καὶ γ ε. | κἀν τε ἐναλλάξ. κἀν τε, φησὶν, ἀντιστρέψης, καὶ ἀπὸ τοῦ τέλους ἄρξῃ καὶ ποιήσης γ, β, α, καὶ οὕτω τὸ ὑπὸ τῶν ἄκρων ἴσον ἐστὶ τῷ ἀπὸ τοῦ μέσου. 10

κζ. ἔτι δὲ καὶ ἄλλο ἔχει ἴδιον. οἶον γὰρ, φησὶν, ἔχει λόγον ἕκαστος ὄρος πρὸς ἑαυτόν, τοῦτον καὶ αἱ ὑπεροχαί, οὐχ ὅτι ὁ αὐτὸς λόγος φυλάττεται, ἀλλ' ὅτι

κε = Philop. οθ κς = Philop. πα κζ = Philop. πβ

κε, I = Nicom. XXIII, 3. 2I = Nicom. XXIII, 4.

κς, I = Nicom. XXIII, 5. 8 = Nicom. XXIII, 5.

κζ, I = Nicom. XXIII, 6.

κε. I παραλλήλους Nicom.: πρὸς ἀλλήλους AM

4 παραληφθεὶς (ut vid.) M: παραλειφθεὶς A

5 ἐκτεθέντες A: ἐκτιθέντες M

16 γὰρ M: om. A

19 ι M: om. A || παραλείποιεν M: παραλίποιεν A

2I αὕτη AM et Nicom. SH: ἡ τοιαύτη Nicom.

κς. I ταύτης AM et Nicom. S: τῆσδε Nicom.

7 pr. δ A: om. M

8 pr. κἀν AM: ἂν Nicom.

10 τὸ A: τὸ μὲν M || τῷ scripsi: τὸ AM

κζ, I δὲ AM: om. Nicom.

κάκει ἡ ἰσότης μένει, οἶον α, β, γ· ἰδοὺ ὁ γ πρὸς ἑαυ-
5 τὸν λόγον ἔχει τὸν τοῦ γ, καὶ ὁ β τὸν τοῦ β, οὕτως
καὶ ἡ ὑπεροχὴ πανταχοῦ μονὰς ἴση τις οὔσα.

κη. ἔτι τὸ γλαφυρώτατον καὶ τοὺς πολλοὺς λεληθός. ἄλ-
λο παρακολούθημα ὅτι τὸ ὑπὸ τῶν ἄκρων ἑλαττόν
ἔστι τοῦ ἀπὸ τοῦ μέσου ἐκείνῳ ᾧ ἔστιν ἡ διαφορὰ,
οἶον α, β, γ· ἅπαξ γ γίνεται γ· δις δὲ β γίνεται δ·
5 ἰδοὺ τὸ ὑπὸ τῶν ἄκρων ἑλαττόν ἔστι τοῦ ἀπὸ τοῦ
μέσου, ἀλλὰ τοσούτῳ ἑλαττον, ὅσῳ τὸ ὑπὸ τῶν
ὑπεροχῶν ἔστιν· ἦν δὲ ἡ ὑπεροχὴ μονὰς· ἅπαξ μία
γίνεται α· ἰδοὺ μονάδι τὸ ὑπὸ τῶν ἄκρων ἑλαττόν
ἔστι τοῦ ἀπὸ τοῦ μέσου. καὶ πάλιν ἔστω α, γ, ε·
10 πεντάκις μία ε· τρίς δὲ γ θ· ἰδοὺ τὸ ὑπὸ τῶν ἄκρων
ἑλαττόν ἔστι τοῦ ἀπὸ τοῦ μέσου τετράδι. διὰ τί τε-
τράδι; ἐπειδὴ καὶ ἡ ὑπεροχὴ οὕτως ἔστι· τὰ γὰρ γ
τῆς μονάδος δυάδι ὑπερέχει καὶ τὰ ε τῶν γ δυάδι
ὑπερέχει· δις οὖν β γίνονται δ· ὅρα ὅτι καλῶς τετράδι
15 ἑλαττον τὸ ὑπὸ τῶν ἄκρων τοῦ ἀπὸ τοῦ μέσου.

κθ. τέταρτον δέ, ὃ καὶ οἱ πρόσθεν ἐσημειώσαντο. ἄλλο
παρακολούθημα. ἰστέον ὅτι οἱ λόγοι τῶν ἑλαττόνων
ὄρων μείζους εἰσὶ τῶν μείζονων· οἶον τί λέγω; ἔστιν
α, β, γ· ἐνταῦθα, ὡς δέδεικται, τὸ ὑπὸ τῶν α γ ἑλατ-
5 τόν ἔστι τοῦ ἀπὸ τοῦ β· ὁ λόγος τοίνυν ἐκ τῶν α γ
μείζων ἔστι τοῦ ἀπὸ τοῦ β· τρίς γὰρ μία γ, δις δὲ β δ·
ὅρα τοίνυν ὅτι ὁ μὲν γ τῆς μονάδος τριπλάσιος, ὁ δὲ
δ τῆς δυάδος διπλάσιος· μείζον δὲ τὸ τριπλάσιον
τοῦ διπλασίου. ὡσαύτως καὶ ἐπὶ πλειόνων, οἶον ἀπὸ
10 β, γ, δ· δις δ η, τρίς δὲ γ θ· ἰδοὺ τὸ ὑπὸ τῶν ἄκρων
ἑλαττον τοῦ ἀπὸ τοῦ μέσου· ἀλλ' ὁ μὲν η τῆς δυάδος
τετραπλασίων, ὁ δὲ θ τῶν τριῶν τριπλασίων. καὶ
ἐπὶ πάντων εὐρήσεις τοῦτο. ἐπὶ μέντοι τῆς ἀρμονι-
κῆς ἐναντίως δειχθήσεται, οἱ γὰρ ἐν τοῖς μείζουσιν
15 ὅροις λόγοι μείζους ἔσονται, οἱ δὲ ἐν τοῖς ἐλάττοσιν
ἐλάττους· ἐν μέντοι τῇ γεωμετρικῇ οἱ τε ἐν τοῖς μείζο-
σιν ὅροις λόγοι καὶ οἱ ἐν τοῖς ἐλάττοσιν οἱ αὐτοὶ
εἰσιν· οἶόν ἐστιν α, β, δ· καὶ πάλιν ἔστω [α], β, δ, η·
ὥσπερ τοίνυν δις η ις, οὕτω καὶ τετράκις δ ις, ὥστε
20 ἐν μεταίχμῳ ἔστιν ἡ γεωμετρικὴ, τὸ δὲ ἴσον ἐν μεσό-
τητι τυγχάνει. τοσαῦτα εἰρήσθω περὶ τῆς ἀριθμητι-
κῆς μεσότητος.

κη = Philop. πγ κθ = Philop. πδ

κη, I = Nicom. XXIII, 6. κθ, I = Nicom. XXIII, 6.

κη. I γλαφυρώτατον M et Nicom.: γλαφυρώτερον A
2 τὸ A: om. M

3 pr. τοῦ scripsi: τὸ AM

κθ. I πρόσθεν AM: πρόσθεν πάντες Nicom.

14 γὰρ scripsi: τρεῖς (fortasse ex γ) AM

16 γεωμετρικῇ scripsi: γεωμετρία AM

20 γεωμετρικῇ scripsi: γεωμετρία AM

λ. ἡ δὲ ἐπὶ ταύτῃ συνεχὴς γεωμετρικὴ μεσότης. πληρώ-
σας τὸν περὶ τῆς ἀριθμητικῆς μεσότητος λόγον, νῦν
τὸν περὶ τῆς γεωμετρικῆς λέγει. καὶ ἤδη εἴρηται ὅτι
ἡ μὲν ἀριθμητικὴ κατὰ τὴν ὑπεροχὴν θεωρεῖται, ἡ δὲ
γεωμετρικὴ κατὰ τὴν ἀναλογίαν. καὶ τοῦτο, ὡς
5 ἔφαμεν, εἰκότως, ὅτι τὸ μὲν ἐλάχιστον τοῦ ἀριθμοῦ
ὠρισταί, καὶ διὰ τοῦτο δύο ἀριθμῶν οὐκ ἔστιν αἰ
μέσον λαβεῖν· τῶν γὰρ γ καὶ τῶν δ τίς μέσος; τῶν δὲ
μεγεθῶν αἰ δυνατόν. | λέγει τοίνυν ὅτι ἐκκείσθωσαν
οἱ ἀπὸ μονάδος κατὰ διπλάσιον λόγον ἀριθμοὶ (ἢ οἱ διπλά-
10 σιοι), ἢ οἱ τετραπλάσιοι καὶ ἐπ' ἀπειρον. πάντως
τοίνυν ἡ αὐτὴ ἀναλογία εὐρεθήσεται, οἶον ἔστω η,
δ, β, α· ἰδοὺ ὡς ἔχει ὁ η πρὸς τὸν δ, οὕτως ὁ β πρὸς
τὴν α. καὶ ἐναλλάξ δέ, τοῦτο εὐρήσεις καὶ ἀπὸ τοῦ
μέσου, οἶον ὡς ἔχει ὁ δ πρὸς τὸν η, οὕτως ἡ α πρὸς
15 τὸν β. καὶ ἐπὶ τῶν τριπλασίων δὲ καὶ τῶν ἄλλων
εὐρήσεις τοῦτο. | ἔχει δὲ ἰδίον τι ἡ γεωμετρικὴ μεσό-
της, ὃ μηδεμία ἄλλη ἔχει, τὸ τὰς διαφορὰς τῶν λό-
γων, ὃ ἔστι τὰς ὑπεροχάς, ἐν τῷ αὐτῷ λόγῳ εἶναι·
οἶόν ἐστι λόγος ὁ αὐτὸς τῶν η πρὸς τὸν δ καὶ τῶν δ
20 πρὸς β· διπλάσιος γὰρ οὗτος. ὑπεροχὴ δὲ τοῦ μὲν η
πρὸς τὸν δ ὁ δ, τοῦ δὲ δ πρὸς τὸν β ὁ β· ὁ δ τοίνυν
πρὸς τὸν β διπλάσιον λόγον ἔχει. καὶ πάλιν ὁ θ καὶ
ὁ ς καὶ ὁ δ· ἰδοὺ ὁ ἡμιόλιος λόγος· καὶ ἔστιν ὑπεροχὴ
μὲν τοῦ θ πρὸς τὸν ς ὁ γ, τοῦ δὲ ς πρὸς τὸν δ ὁ β· ὁ
25 τοίνυν γ πρὸς τὸν β τὸν ἡμιόλιον λόγον ἔχει, ὥστε
καὶ αἱ ὑπεροχαὶ τὸν αὐτὸν λόγον φυλάττουσιν ὃν
ἔχουσιν ἐκεῖνοι οἱ ἀριθμοὶ ὧν εἰσὶν αἱ ὑπεροχαί.

λα. καὶ τὸ ἀνάπαλιν δέ. ἀντὶ τοῦ κἂν ἀπὸ τοῦ ἐλάττο-
νος ἄρξη· ἔτι δὲ καὶ ἄλλο ἰδίωμα ἔστι τὸ τοὺς μείζονας
ὄρους τῶν ἐλαττόνων αὐτῶ τῷ ἐλάττοσι διαφέρειν
ἐπὶ διπλασίων λόγων· οἶόν ἐστιν ὁ ις, ὁ η, ὁ δ· ὁ
τοίνυν ις τοῦ η ὑπερέχει αὐτῷ τῷ η καὶ ὁ η τοῦ δ
5 αὐτῷ τῷ δ, καὶ αὐταὶ αἱ διαφοραὶ τὸν αὐτὸν λόγον
ἔχουσιν. ἐπὶ διπλασίων δὲ ἔστι μόνων τοῦτο. ἐπὶ δὲ
τῶν τριπλασίων ὁ μείζων ἔστι δις τοῦ ἐλάττονος·
οἶόν ἐστιν ὁ ιη, ὁ ς, καὶ ὁ β· ὁ τοίνυν ιη ὑπερέχει τοῦ ς
δὶς, ἰβ γὰρ ὑπερέχει, ὁ δὲ ἰβ γίνεται διπλασιασθέντος
10 τοῦ ς· καὶ πάλιν ὁ ς τοῦ β ὑπερέχει δ, ὁ δὲ δ γίνεται
διπλασιασθέντος τοῦ β. ἐπὶ δὲ τῶν τετραπλασίων
τρίς, καὶ ἐπὶ τῶν πενταπλασίων τετράκις, καὶ τοῦτο
ἐφεξῆς. οὐ μόνον δὲ ἐπὶ τῶν πολλαπλασίων φυλάττε-
ται ἡ ἀναλογία, ἀλλὰ καὶ ἐπὶ τῶν ἐπιμορίων καὶ τῶν 15

λ = Philop. πε, πζ λα = Philop. πη, πθ

λ, I = Nicom. XXIV, 1. 9-10 = Nicom. XXIV, 2.

17 cf. Nicom. XXIV, 3. λα, I = Nicom. XXIV, 3.

λ. 14 εὐρήσεις καὶ A: εὐρήσεις ἀπὸ τοῦ καὶ M

λα. 1 καὶ τὸ ἀνάπαλιν δέ AM: καὶ τὰς ἀνάπαλιν Nicom.

7 μόνων M: μόνον A

12 τετραπλασίων M: τριπλασίων A

13 πενταπλασίων M: τετραπλασίων A

ἐπιμερῶν καὶ τῶν μικτῶν ἀντὶ τοῦ τῶν τε πολλαπλασιαστικῶν καὶ τῶν πολλαπλασιαστικῶν. | ἔστι δὲ καὶ ἄλλο ἰδίωμα ἐπὶ τῆς γεωμετρικῆς μεσότητος, τὸ ὑπὸ τῶν ἄκρων ἴσον εἶναι τῷ ἀπὸ τοῦ μέσου, ἐὰν 20 συνεχῆς ᾖ ἡ ἀναλογία. οἶον θ, ς, δ· ἔστι γὰρ ἐννάκις δ λς, ἀλλὰ καὶ ἐξάκις ς λς. Ἰ δὲ διελευγμένη ὑπάρχει, ἀρτιοταγεῖς δὲ ὦσιν οἱ ἀριθμοί, ἀντὶ τοῦ ἐν διπλασίονι λόγῳ, τὸ ὑπὸ τῶν ἄκρων ἴσον ἔστι τῷ ἀπὸ τῶν μέσων. οἶον ἔστω α, β, δ, η, ις, λβ, ξδ· τὸ ὑπὸ 25 τῶν ἄκρων, ὃ ἔστι τῆς τε μονάδος καὶ τῶν ξδ, ἴσον ἔστι τῷ ὑπὸ τῶν πλησιαζόντων μέσων, οἶον τῶν τε β καὶ τῶν λβ· ἅπαξ γὰρ ξδ γίνεται ξδ, ἀλλὰ καὶ δις λβ γίνεται ξδ. καὶ πάλιν τὸ ὑπὸ τῶν β καὶ τῶν ξδ ἴσον ἔστι τῷ ὑπὸ τῶν δ καὶ λβ· δις γὰρ ξδ ρκη, ἀλλὰ 30 καὶ τετράκις λβ ρκη. καὶ τοῦτο αἰεὶ εὐρήσεις οὐ μόνον ἐπὶ τούτων, ἀλλὰ καὶ ἐπὶ τῶν ἄλλων, ὃ ἔστι καὶ ἐπὶ τριπλασίων καὶ τετραπλασίων καὶ ἐπιμορίων καὶ ἐπιμερῶν καὶ πολλαπλασιαστικῶν καὶ πολλαπλασιαστικῶν. καὶ ὅτι ἐν πάσαις ταύταις ταῖς σχέσεσιν 35 ἡ ἀναλογία σώζεται, παράδειγμα ἐκεῖνο ἱκανὸν ἔστω τὸ διὰ τῶν τριῶν προσταγμάτων ἀποδεδειγμένον ἥδη. ἐδείξαμεν γὰρ ὅτι ἡ ἰσότης προϋπάρχει τῆς ἀνισότητος· ἔτι δέ, κἂν μεταξὺ μὲν τετραγώνων ἑτερομήκη ἐκθώμεθα, ἡ αὐτὴ ἀναλογία φυλάττεται, εἰ δὲ 40 μεταξὺ ἑτερομηκῶν τετραγώνων, οὐκέτι ἡ αὐτὴ ἀναλογία, ἀλλὰ ἡ αὐτὴ ὑπεροχή, τριῶν αἰεὶ ἀποτελεσμένων, ὃ ἔστι λαμβανόμενων, ἀριθμῶν. καὶ ἐὰν τὸν ὕστερον τετράγωνον πρῶτον ποιήσωμεν, εὐρήσωμεν τὰ εἶδη πάντα. οἶον ἔστω α, β, δ· ἰδοὺ τὸ διπλάσιον εἶδος, τελευταῖος δὲ ἔστιν ὁ δ· λάβωμεν αὐτὸν 45 πρῶτον καὶ ποιήσωμεν δ, ς, θ· ἰδοὺ πάλιν ὁ μὲν ς ἑτερομήκης ὢν μέσος ἔστιν, ὁ δὲ θ τετράγωνος τελευταῖος, καὶ ἔστι τὸ ἡμιόλιον εἶδος. πάλιν λάβωμεν τὸν θ πρῶτον καὶ ποιήσωμεν θ, ιβ, ις· ἰδοὺ τὸ ἐπίτρι- 50 τον· καὶ οὕτω κατὰ τάξιν προκόπτων πάντα ποιήσεις τὰ εἶδη. τούτων οὕτω τεθεωρημένων πᾶσα ἡ λέξις σαφὴς τυγχάνει, μηδεμιᾶς δεομένη ἐξηγήσεως.

λβ. **εὐκαιρότατον δ' ἂν εἴη ἐνταῦθα γενομένους.** παραδίδωσιν ἐνταῦθα θεώρημα τοιοῦτον· λέγει ὅτι μεταξὺ δύο συνεχῶν τετραγώνων πάντως ἀνάλογος εἰς μέσος μόνος εὐρίσκεται. οἷον ἔστιν ὁ δ καὶ ὁ θ τετράγωνοι· μεταξὺ τούτων ὁ ς μόνος ἔστι μέσος ἀνάλογος,

λβ = Philop. ρ, φα, ρβ, ργ

17 cf. Nicom. XXIV, 4.

λβ, ι = Nicom. XXIV, 6.

16–17 πολλαπλασιαστικῶν (Philop.)] πολλαπλασίων ἐπιμερῶν AM

29 τῷ scripsi: τὸ AM

30 αἰ M: ἂν A

46 pr. ς (Philop.)] καὶ AM

49 ποιήσωμεν M: ποιήσω A

καὶ οὗτος ὁ μέσος πάντως ἑτερομήκης ἐστί, καὶ ἐκ τῶν πλευρῶν τῶν τετραγώνων γινόμενος· ἰδοὺ γὰρ ὁ ς μεταξὺ ὧν τοῦ τε δ καὶ τοῦ θ, ἐκ τῶν αὐτῶν πλευρῶν ἔστι· τοῦ μὲν γὰρ θ πλευρὰ ὁ γ, τοῦ δὲ δ ὁ β, τρεῖς οὖν β γίνεται ς. καὶ πάλιν μεταξὺ τοῦ θ καὶ τοῦ ις ἔστιν 10 ὁ ιβ· ἀλλὰ τοῦ μὲν ις πλευρὰ ὁ δ, τοῦ δὲ θ ὁ γ, ποιήσον οὖν τετράκις γ, γίνονται ιβ. οὕτω μὲν οὖν, εἰ ὦσι συνεχεῖς οἱ τετράγωνοι, εἰ δὲ πόρρω ἀλλήλων εἰκὸς ὁ μεταξὺ καὶ τετράγωνός ἐστι καὶ ἑτερομήκης κατ' ἄλλο καὶ ἄλλο. οἶον λαβὲ τὸν δ καὶ τὸν ξδ τε- 15 τραγώνους, πλευραὶ τοῦ μὲν δ ὁ β, τοῦ δὲ ξδ ὁ η, <δὲ η> γίνονται ις· ὁ ις οὗτος μέσος ἀνάλογός ἐστιν· οὗτος δὲ ἐστι τετράγωνος, ἀλλὰ καὶ ἑτερομήκης λέγεται, ὥς ἂν ἐξ ἀνίσων πλευρῶν συντεθεῖς ἐκ τε τοῦ η καὶ τοῦ β. τοσαῦτα μὲν περὶ τῶν τετραγώνων. | ἐπὶ 20 δὲ τῶν κύβων ἰστέον ὅτι μεταξὺ τῶν β κύβων τῶν συνεχῶν πάντως δύο μέσοι ἀνάλογοι εὐρεθήσονται· ἀλλ' ἐνταῦθα δεῖ τὸν μὲν ἕνα τετράγωνον τὸν ποιοῦντα τὸν κύβον τὸν ἕνα πολλαπλασιάσθαι ἐπὶ β πλευρὰς τοῦ ἐνὸς κύβου, καὶ ἐπὶ μίαν τοῦ ἄλλου κύ- 25 βου· τὸν δὲ ἕτερον πάλιν ὡσαύτως. οἶον τί λέγω; ἐκ τοῦ δ γίνεται κύβος ὁ η, ἐκ τοῦ θ ὁ κζ. οὐκοῦν ἐκ μὲν τοῦ η γίνεται μέσος ὁ ιβ· ποιῶ γὰρ δις β· ἰδοὺ δύο πλευρὰς ἔλαβον τοῦ κύβου γίνεται δ· λαμβάνω μίαν πλευρὰν τοῦ κζ τὴν τριάδα καὶ ποιῶ τρεῖς δ, 30 γίνονται ιβ· ἰδοὺ ὁ ιβ μέσος ἀνάλογος. πάλιν ἔρχομαι ἐπὶ τὸν κζ. λαμβάνω αὐτοῦ δύο πλευρὰς καὶ ποιῶ τρεῖς γ, γίνονται θ· λαμβάνω μίαν τοῦ η κύβου πλευρὰν τὴν δυάδα καὶ ποιῶ δις θ, γίνονται ιη· ἔστιν ἄρα καὶ ὁ ιη μέσος· ὥστε εὐρέθησαν μέσοι ἀνάλογοι ὁ ιβ 35 καὶ ὁ ιη καὶ ἔχουσι τὸν αὐτὸν λόγον. ἐκθοῦ κζ, ιη, ιβ, η· καὶ βλέπε ὅτι ὁ ἡμιόλιος ἐπὶ πάντων φυλάττεται λόγος· καὶ οἱ μὲν μέσοι διαστήματα δύο ἔχουσιν· ἐν γὰρ διάστημα ἀπὸ τοῦ ιη ἐπὶ τὸν ιβ καὶ ἄλλο ἐν ἀπὸ τούτου ἐπὶ τὸν η· πάντες δὲ ἅμα τρία διαστή- 40 ματα, ἐν μὲν τὸ ἀπὸ τοῦ κζ ἐπὶ τὸν ιη καὶ ἄλλο τὸ ἀπὸ τοῦ ιη ἐπὶ τὸν ιβ <καὶ ἄλλο τὸ ἀπὸ τοῦ ιβ ἐπὶ τὸν η>· καὶ διὰ τοῦτο τὰ στερεὰ τριχῇ διαστατά φασιν εἶναι. ἰστέον δὲ καὶ ὅτι αἱ ὑπεροχαὶ τὸν αὐτὸν λόγον φυλάττουσιν· οἷον ἔστιν κζ, ιη, ιβ, η· ἰδοὺ ὁ 45 ἡμιόλιος λόγος, ἀλλὰ τοῦ μὲν ιη ὁ κζ ὑπερέχει τῷ θ, τοῦ ιβ δὲ ὁ ιη ὑπερέχει τῷ ς, τοῦ δὲ η ὁ ιβ τῷ δ· εἰσὶν οὖν θ, ς, δ· καὶ οὗτοι τοῖνυν τὸν ἡμιόλιον ἔχουσι λόγον. | καὶ ἀπλῶς ἰστέον καθόλου ὅτι ἐὰν τετράγωνος ἢ ἑαυτὸν πολλαπλασιάσῃ ἢ ἄλλον τετράγωνον, 50 πάντως τετράγωνον ἀριθμὸν ποιεῖ· ἐὰν δὲ τετράγω-

20 cf. Nicom. XXIV, 9.

49 cf. Nicom. XXIV, 10.

λβ. 17 δις η (Philop.)] om. AM

21 β scripsi: ς AM

23–24 τὸν ποιοῦντα M: om. A

24 β scripsi: δευτέρας AM

42 ιη M: ιβ A

42–43 καὶ . . . τὸν η (Philop.)] om. AM

νος ἑτερομήκη ἢ ἑτερομήκης τετράγωνον, οὐδέποτε τετράγωνος γίνεται. ὡσαύτως κἄν κύβος κύβον πολλαπλασιάσῃ, κύβον ποιεῖ· ἐὰν δὲ κύβος ἑτερομήκη 55 πολλαπλασιάσῃ, πάντως ἄρτιον ποιεῖ, κἄν ἄρτιος περιττὸν ἢ περιττὸς ἄρτιον, καὶ τότε ἄρτιος γίνεται. | ἰστέον τοίνυν ὅτι ταῦτα συμβάλλεται πρῶτον μὲν εἰς τὸν Τίμαιον· λέγει γὰρ ἐκεῖ ὅτι μεταξύ τῶν δύο στοιχείων πυρὸς καὶ γῆς ἔστι δύο μέσα ὃ τε ἄῃρ καὶ 60 τὸ ὕδωρ· καὶ ζητεῖ διὰ τί δύο μέσα καὶ μὴ ἓν· καὶ λέγει ὅτι ἐπειδὴ στερεὰ εἰσι ταῦτα τὰ στοιχεῖα, μεταξύ δὲ δύο στερεῶν δύο μέσοι ἀνάλογοι γίνονται. ἐν δὲ ταῖς Πολιτείαις ζητεῖ εἰ δύναται διαλυθῆναι ποτε εὐνομουμένη πόλις· καὶ αὐτὸς μὲν οὐκ ἀποκρίνεται, 65 ποιεῖ δὲ τὰς Μούσας ἀποκρινομένης καὶ λεγούσας ὅτι ὡς μὲν εὐνομουμένη οὐδὲν χαλεπὸν ὑπομένει, ἐπειδὴ δὲ γέγονεν οὕτω δεῖ πάντως καὶ ἀπογενέσθαι· ἀπογίνεται δὲ τοῦ γάμου καὶ τῆς παιδοποιίας οὐ κατὰ καιρὸν ἀπολαμβανομένης, ἀλλ' ἐπιλειπούσης. συμ- 70 βολικῶς οὖν λέγει διὰ πόσων περιόδων καὶ φορῶν δεῖ τὰς παιδοποιίας παραλαμβάνειν, καὶ πόσους καιροὺς ἐν τῷ μέσῳ δεῖ παραλαμβάνειν· συμβάλλονται οὖν κάκεισε τὰ τοιαῦτα πάννυ. | πληρώσας τοίνυν τὸν λόγον τὸν περὶ τῆς γεωμετρικῆς μεσότητος καὶ τὸν 75 περὶ τῆς ἀριθμητικῆς, μεταβαίνει ἐπὶ τὸν τῆς ἁρμονικῆς καὶ λέγει ὅτι ἁρμονικὴ μεσότης ἐστὶ καθ' ἣν μήτε ἀναλογία ἢ αὐτὴ φυλάττεται ὥσπερ ἐπὶ τῆς γεωμετρικῆς, μήτε ἢ αὐτὴ ὑπεροχὴ ὡς ἐπὶ τῆς ἀριθμητικῆς, ἀλλ' ὅταν ὡς ὁ μέγιστος πρὸς τὸν ἐλάχιστον ἔχη, 80 οὕτω καὶ ἡ τοῦ μεγίστου πρὸς τὸν μέσον διαφορὰ πρὸς τὴν διαφορὰν τοῦ μέσου πρὸς τὸν ἐλάττωνα· οἷον ἔστω ἁρμονικὴ μεσότης αὕτη· ς , δ , γ · ἰδοὺ γὰρ οὐδὲ ὑπεροχὴ ἢ αὐτὴ ἐστὶν οὐδὲ ὁ λόγος, ἀλλ' ὡς ἔχει ὁ μείζων πρὸς τὸν ἐλάττωνα (πῶς δὲ ἔχει; διπλα- 85 σία) οὕτως ἢ διαφορὰ τοῦ μείζονος πρὸς τὸν μέσον πρὸς τὴν διαφορὰν τοῦ μέσου πρὸς τὸν ἐλάττωνα· τίνι δὲ διαφέρει ὁ μείζων τοῦ μέσου; δ · τίνι δὲ ὁ μέσος τοῦ ἐλάττωτος; μονάδι· καὶ ἡ δ αὐτῆς ἄρα τῆς μονάδος διπλασία. πάλιν ἔστω ἁρμονικὴ μεσότης ς , 90 γ , β , κατὰ τὸν τριπλάσιον τῶν ἄκρων λόγον· ὁ γὰρ ς τοῦ β τριπλάσιος· ὑπερέχει δὲ ὁ μὲν ς τοῦ γ τριάδι, ὁ δὲ γ τοῦ β μονάδι· καὶ ὁ γ ἄρα τῆς μονάδος τριπλάσιος· πάλιν ὁ μὲν ς τοῦ δ τῷ αὐτοῦ τρίτῳ ὑπερέχει· δ αὐτῆς γὰρ ὑπερέχει, τρίτον δὲ τῶν ς β · ὁ τε γ πάλιν 95 τοῦ δ λείπεται τῷ ἑαυτοῦ τρίτῳ, μονάδι γὰρ λείπεται, τρίτον δὲ τῶν γ μονάς. | ἐπὶ μὲν γὰρ τοῦ προτέρου ὑποδείγματος. τοῦ ἁρμονικοῦ τοῦ κατὰ τὸν διπλάσιον

λόγον ἐν τοῖς ἄκροις λαμβανομένου, ἐν γὰρ τούτῳ αἱ διαφοραὶ καὶ αὐταὶ διπλάσιαι· ἐν δὲ τῷ β τῷ κατὰ τὸ τριπλάσιον τῶν ἄκρων καὶ αἱ διαφοραὶ τριπλάσιαι. 100

λγ. **ιδίωμα δὲ ἔχει.** ἐπὶ μὲν τῆς ἀριθμητικῆς οἱ ἐλάττω-
νες λόγοι ἐν τοῖς μείζουσιν ὅροις ἦσαν, οἱ δὲ μείζους
ἐν τοῖς ἐλάττωσιν. οἷον τί λέγω; ἀριθμητικὴ μεσότης
ἐστὶν ὁ η , ς , δ · μείζων τοίνυν ἐστὶν ὁ η · οὗτος
τοίνυν τὸν ἐπίτρίτον λόγον ἔχει· τὸν γὰρ ς ἔχει καὶ 5
τρίτον αὐτοῦ· ἐλάττων δὲ ἐστὶν ὁ ς · οὗτος τὸν ἡμιό-
λιον ἔχει· τὸν γὰρ δ ἔχει καὶ τὸ ὕμισυ αὐτοῦ· ὁ δὲ
ἡμιόλιος τοῦ ἐπιτρίτου μείζων. ἐνταῦθα μέντοι ἐν τοῖς
μείζουσιν ἐστὶν ὁ μείζων, καὶ ἐν τοῖς ἐλάττωσιν ὁ
ἐλάττων. τοῦτο δὲ γέγονεν, ἵνα ὡς ἐν μεταίχμιῳ 10
φθάσῃ ἢ ἁρμονικὴ τῆς τε ἀριθμητικῆς καὶ τῆς γεω-
μετρικῆς, τῇ μὲν κατὰ τὴν ὑπεροχὴν κοινωνοῦσα, τῇ
δὲ κατὰ τὸν λόγον.

λδ. **ἔτι ἐν μὲν τῇ ἀριθμητικῇ.** ἄλλο **ιδίωμα** ὅτι ἐν μὲν
τῇ ἀριθμητικῇ ὁ μέσος ὁρος ἑαυτοῦ μὲν μέρει τῷ αὐτῷ
μείζων τε καὶ ἐλάττων ἐστὶ τῶν ἐκατέρωθεν ἄκρων, αὐ-
τῶν δὲ ἐκείνων ἄλλῳ καὶ ἄλλῳ· οἷον τί λέγω; ἔστιν η ,
 ς , δ · ὁ ς τῷ αὐτῷ μείζων ἐστὶ καὶ ἐλάττων. τῇ γὰρ 5
αὐτῇ δ αὐτῇ καὶ ἐλάττων ἐστὶ τοῦ η καὶ μείζων τοῦ δ ·
ἀλλ' εἰ καὶ δ αὐτῇ καὶ μείζων ἐστὶ καὶ ἐλάττων, ἀλλὰ
ἄλλῳ καὶ ἄλλῳ ἐκείνων τῶν ἄκρων μέρει· ἢ γὰρ δ αὐτῇ
τοῦ μὲν η τέταρτον γίνεται, τοῦ δὲ δ ἡμισυ· ὥστε τοῦ
μὲν η ἐλάττων ἐστὶν ὁ ς τετάρτῳ μέρει, τοῦ δὲ δ μεί- 10
ζων ἡμίσει. ἐπὶ δὲ τῆς ἁρμονικῆς ὑπεναντίως ἔχει·
ἐνταῦθα γὰρ τὸ ἀνάπαλιν ὁ μέσος ἑαυτοῦ μὲν μέρει
ἄλλῳ καὶ ἄλλῳ ἐστὶ μείζων καὶ ἐλάττων, αὐτῶν δὲ
ἐκείνων τῷ αὐτῷ· οἷον ἔστω ἁρμονικὴ μεσότης ς , δ ,
 γ · ὁ δ τοίνυν ἄλλῳ καὶ ἄλλῳ μέρει τοῦ μὲν ἐστὶν ἐλάτ- 15
των, τοῦ δὲ μείζων· τοῦ μὲν γὰρ ς ἐλάττων ἐστὶ δ αὐτῇ,
τοῦ δὲ γ οὐκέτι τῇ αὐτῇ δ αὐτῇ ἀλλὰ μονάδι· αὐτῶν
δὲ τῶν ἄκρων τῷ αὐτῷ μέρει, ὥσπερ γὰρ αἱ δύο
αἰστίσιν ὑπερέχει ὁ ς τοῦ δ , τρίτον ἐστὶ μέρος τοῦ ς ,
οὕτω καὶ ἡ μονάς ἡττινὴ ὑπερέχει ὁ δ τοῦ γ , τρίτον 20
μέρος ἐστὶ τῆς τριάδος.

λε. **ἔτι ἔχει ἴδιον συμβεβηκός.** ἄλλο παρακολούθημα
τῆς ἁρμονικῆς, τὸ τοὺς ἄκρους συνθεῖναι καὶ τὴν σύν-
θεσιν πολλαπλασιάσαι ἐπὶ τὸν μέσον καὶ αὐτοὺς

λγ = Philop. φδ λδ = Philop. φς

λε = Philop. φθ

λγ, ι = Nicom. XXV, 2. λδ, ι = Nicom. XXV, 3.

λε, ι = Nicom. XXV, 4.

57 cf. Nicom. XXIV, ιι 73 cf. Nicom. XXV, ι.

96–97 = Nicom. XXV, ι.

60 ζητεῖ A: ζητεῖ διὰ τί δύο μέσα ὃ τε ἄῃρ καὶ τὸ ὕδωρ· καὶ
ζητεῖ M

69 καιρὸν M: om. A

77–78 γεωμετρικῆς scripsi: γεωμετρίας AM

92–93 τριπλάσιος (Philop.) τριπλασίον AM

93 αὐτοῦ scripsi: αὐτῷ AM

95 ἑαυτοῦ M (ut vid.): ἑαυτῷ A

100 τριπλάσιαι scripsi: τριπλάσιοι AM

λγ. 8 ἐνταῦθα, cf. n. ad loc.

ιι ἁρμονικὴ M: ἁρμονία A

ιι–ι2 γεωμετρικῆς scripsi: γεωμετρίας AM

λδ. 6 αὐτῇ M: αὐτοῦ A

ι8 αἱ δύο M: ὁ β A

λε. ι inter ἐτι et ἔχει Nicom. hab. ἢ ἁρμονικὴ

τοὺς ἄκρους ἐφ' ἑαυτούς, καὶ τούτου γινομένου διπλά-
5 σιος γίνεται· οἷόν ἐστιν ς , δ , γ · σύνθεσ ς καὶ γ , γίνον-
ται θ · <...> πολλαπλασίασον τοὺς μέσους, ἐξάκεις γ ,
γίνονται $\iota\eta$ · ὁ $\lambda\varsigma$ ἄρα τοῦ $\iota\eta$ διπλάσιός ἐστιν.

$\lambda\varsigma$. ἐκλήθη δὲ ἁρμονική. εἰρήκαμεν τὴν ἁρμονικὴν τῶν
πρὸς τι εἶναι. λέγει τοίνυν διὰ τί ἁρμονικὴ κέκληται,
καὶ φησιν ὅτι ἡ μὲν ἀριθμητικὴ τὸ ποσόν, ὃ ἐστὶ τὴν
ὑπεροχὴν, εἶχε κατὰ ἀναλογίαν, ἡ δὲ γεωμετρικὴ τὸ
5 ποῖόν, ὃ ἐστὶ τοὺς ὅρους πρὸς ἀλλήλους, ἡ μὲντοι
ἁρμονικὴ ἀμφοτέρω· οὔτε γὰρ ἐν ὅροις μόνον οὔτε ἐν
διαφοραῖς, ἀλλ' ἐκ μέρους μὲν ὅροις τῶν ὡς ἔχειν τοὺς
ἄκρους οὕτως ἔχειν τὰς διαφοράς, ἐκ μέρους δὲ διαφο-
ραῖς τῶν τὰς ὑπεροχὰς τὸ αὐτὸ μέρος εἶναι τῶν ἄκρων.
10 διὰ τοῦτο τοίνυν ἁρμονικὴ κέκληται ὡς ἔχουσα σχέ-
σιν ἀμφοτέρων. | τὸ δὲ πρὸς τι ἐπέγνωμεν. εἴρηται ὅτι
ἡ μὲν ἀριθμητικὴ περὶ τὸ ποσόν, ὃ ἐστὶ τὴν διαφοράν,
ἔχει τὴν ἀναλογίαν, ἡ δὲ γεωμετρικὴ περὶ τὸ ποῖόν
ἀντὶ τοῦ περὶ τοὺς ὅρους. ἡ μὲντοι ἁρμονικὴ, ὡς περὶ
15 ἑκάτερον ἔχουσα, διὰ τοῦτο τῶν πρὸς τι ὀνομάζεται.
λέγει τοίνυν ὅτι τὸ πρὸς τι, ὃ τί ποτέ ἐστιν ἐδιδάξαμεν
ἀνωτέρω, τὰ πάντα διαιροῦντες· διὰ τοῦτο οὖν,
φησίν, ἁρμονικὴ καλεῖται. ἄλλως τε καὶ ὅτι μάλιστα
ταύτη οἱ μουσικοὶ τῇ μεσότητι κέχρηται. καὶ πρῶ-
20 τος μὲν ἐστὶ λόγος ὁ διὰ τεσσάρων ὁ ἐν ἐπιτρίτῳ
θεωρούμενος, εἴτα ὁ διὰ ϵ ὁ ἐν ἡμιολίῳ, εἴτα ὁ διὰ
πασῶν ὁ διὰ τοῦ διπλασίου, μεθ' ὃν ὁ διὰ πασῶν
καὶ διὰ ϵ ὁ διὰ τοῦ διπλασίου καὶ τοῦ ἡμιολίου, καὶ
λοιπὸν ὁ δις διὰ πασῶν ὁ ἐκ τοῦ τετραπλασίου. πᾶ-
25 σαι τοίνυν αὗται αἱ διαφοραὶ ἐν τοῖς ὑποδείγμασι
τοῖς β τῆς ἁρμονικῆς μεσότητος τῶν τε κατὰ τὸ διπλά-
σιον καὶ τῶν κατὰ τὸ τριπλάσιον θεωροῦνται. ἴδωμεν
οὖν τοῦτο, εἰ δοκεῖ, πρότερον ἐπὶ τοῦ διπλασίου·
ἔστω ς , δ , γ · ἰδοὺ τὸ μὲν ἐπίτριτον, ὃ ἐστὶ τὸ διὰ δ ,
30 ἐν τοῖς ἐλάττωσιν ὅροις· ὁ γὰρ δ τοῦ γ ἐπίτριτος· τὸ
δὲ ἡμιόλιον, ὃ ἐστὶ τὸ διὰ ϵ , ἐν τοῖς μέλλουσιν· ὁ γὰρ ς
τοῦ δ ἡμιόλιος· τὸ δὲ διπλάσιον, ὃ ἐστὶ τὸ διὰ πασῶν,
ἐν τοῖς ἄκροις· ὁ γὰρ ς τοῦ γ διπλάσιος· τὸ δὲ διπλά-
σιον ἅμα καὶ ἡμιόλιον, ὃ ἐστὶ τὸ διὰ πασῶν ἅμα καὶ
35 διὰ ϵ · ὁ μὲν γὰρ ς τοῦ γ διπλάσιος, ὁ δὲ ς τοῦ δ ἡμιό-
λιος. τὸ δὲ δις διὰ πασῶν τὸ τετραπλάσιον οὕτω·
λαβὲ αὐτὸν τὸν μέσον· ἐστὶν ὁ δ · καὶ λαβὲ τὴν ὑπερο-
χὴν τοῦ μέσου πρὸς τὸν ἐλάττονα, γίνεται μονάς· ὁ
δὲ ἄρα τῆς μονάδος τετραπλάσιός ἐστιν. ἐδείξαμεν
40 τοίνυν πᾶσας τὰς διαφοράς ἐπὶ τούτου τοῦ ὑποδεί-
γματος. ἔλθωμεν ἐπὶ τὸ τριπλάσιον· ς , γ , β · τὸ μὲν
ἐπίτριτον ἐστὶν οὕτω· λαβὲ τῶν ἄκρων τὴν ὑπερο-
χὴν, γίνεται δ · ὁ δ ἄρα τοῦ γ τοῦ μέσου ἐπίτριτός

$\lambda\varsigma$ = Philop. ρ, ρα, ρβ, ργ

$\lambda\varsigma, \iota$ = Nicom. XXV, 5. $\iota\iota$ = Nicom. XXVI, 1.

6 cf. n. ad loc.

$\lambda\varsigma$. 4 et 13 γεωμετρικὴ scripsi: γεωμετρία AM

14 et 18 ἁρμονικὴ scripsi: ἁρμονία AM

ἐστὶ, τὸ δὲ ἡμιόλιον ἐστὶν ἐν τοῖς ἐλάττωσιν· ὁ γὰρ
 γ τοῦ β ἡμιόλιος, τὸ δὲ διπλάσιον ἐστὶν ἐν τῶν μείζονι 45
καὶ τῶν μέσῳ. ὁ γὰρ ς τοῦ γ διπλάσιος· τὸ δὲ διπλά-
σιον ἅμα καὶ ἡμιόλιον ὅτι ὁ μὲν ς τοῦ γ διπλάσιος, ὁ
δὲ γ τοῦ β ἡμιόλιος· τὸ δὲ τετραπλάσιον κατὰ τὰς
διαφοράς· λαβὲ γὰρ τὴν διαφορὰν τῶν ς πρὸς τὰ β ,
γίνεται δ , καὶ πάλιν τῶν γ , ὃ ἐστὶ τοῦ μέσου, πρὸς 50
τὰ δύο, γίνεται μονάς· ὁ ἄρα δ τῆς μονάδος τετρα-
πλάσιός ἐστιν.

$\lambda\zeta$. ἐν δὲ τῶν κατὰ τὸν διπλάσιον. θέλει εἰπεῖν, πῶς ἐν
τῶν διπλασίων ὑποδείγματι ὁ διὰ πασῶν καὶ διὰ ϵ
εὐρίσκεται, ὃ ἐστὶ τριπλάσιος, ὁ γινόμενος ἐκ τοῦ
διπλασίου καὶ τοῦ ἡμιολίου, καὶ λέγει ὅτι γίνονται ἡ
ἐξ αὐτοῦ τοῦ μείζονος καὶ τῆς διαφορᾶς αὐτοῦ πρὸς 5
τὸν μέσον ἢ ἐκ τῆς διαφορᾶς τῶν τε ἄκρων καὶ τῶν
ἐλαττόνων. ἐκ μὲν αὐτοῦ τοῦ μείζονος καὶ τῆς διαφο-
ρᾶς τῆς πρὸς τὸν μέσον οὕτω· λαβὲ αὐτὸν τὸν μείζονα,
ὃ ἐστὶ τὸν ς , καὶ τὴν διαφορὰν αὐτοῦ τὴν πρὸς
τὸν μέσον, γίνεται ὁ β · ὁ ς ἄρα τοῦ β τριπλάσιος. ἐκ 10
δὲ τῆς διαφορᾶς τῶν ἄκρων καὶ τῶν ἐλαττόνων οὕ-
τως· ὁ ς τοῦ γ διαφέρει τριάδι, ὁ δ τοῦ γ μονάδι· ὁ γ
ἄρα τῆς μονάδος τριπλάσιος. τελευταῖον δὲ καὶ μέγι-
στόν ἐστὶ τὸ δις διὰ πασῶν· μετὰ γὰρ τοῦτο οὐκ
ἐστὶν ἄλλο, ἐπεὶ οὐδὲ ἡ φωνὴ αὐταρκεῖ πρὸς τὸ μέλος, 15
ἐπεὶ ῥήγνυνται τὰ φωνητικὰ ὄργανα, οὐδὲ αἱ χορδαί,
ἐπεὶ καὶ αὗται ῥήγνυνται. ἔφαμεν δὲ πῶς γίνεται ἐπὶ
τε τοῦ διπλασίου ὑποδείγματος καὶ τοῦ τριπλασίου.

$\lambda\eta$. τινὲς δὲ αὐτὴν ἁρμονικὴν καλεῖσθαι νομίζουσι. θέλει
εἰπεῖν ὅτι Φιλολάῳ ἀκολουθοῦντές τινες ὑπενόησαν
ἁρμονικὴν ταύτην τὴν μεσότητα καλεῖσθαι, ἐπειδὴ
παρέπεται πάσῃ γεωμετρικῇ ἁρμονίᾳ. γεωμετρικὴ
δὲ ἁρμονία ἐστίν, ὡς καὶ Ἀριστοτέλης λέγει ἐν τῇ 5
Περὶ Ψυχῆς πραγματείᾳ τοὺς κύβους· διὰ τί ὁ κύβος;
πλευράς μὲν ἔχει $\iota\beta$, γωνίας δὲ στερεάς η , ἐπίπεδα δὲ
 ς · ἐκθοῦ οὖν $\iota\beta$, η , ς , καὶ εὐρήσεις πάντα ἀρμόζοντα
ὅσα εἰρήκαμεν ἐπὶ τῆς ἁρμονικῆς· ἰδοὺ γὰρ ὁ μὲν $\iota\beta$
τοῦ η ἡμιόλιός ἐστιν, ὁ δὲ η τοῦ ς ἐπίτριτος, ὥσπερ 10
ἐπὶ τῆς ἁρμονικῆς $\eta\gamma$. καὶ πάλιν ὥσπερ ἐκεῖ ὡς οἱ
ἄκροι πρὸς ἀλλήλους ἦσαν, οὕτω καὶ ἡ διαφορὰ τοῦ
μεγίστου πρὸς τὸν μέσον πρὸς τὴν διαφορὰν τοῦ
μέσου πρὸς ἐλάττονα, οὕτω κἀνταῦθα· ὡς γὰρ ὁ $\iota\beta$

$\lambda\zeta$ = Philop. ρδ $\lambda\eta$ = Philop. ρε

$\lambda\zeta, \iota$ = Nicom. XXVI, 1. $\lambda\eta, \iota$ = Nicom. XXVI, 2.

$\lambda\zeta$. 1 τὸν Nicom.: τὸ AM

2 alt. διὰ A: δι M

8 τῆς M: τῶν A

10 τὸν scripsi: τὸ AM

13 τριπλάσιος scripsi: τριπλασίων AM

$\lambda\eta$. 4 παρέπεται M: παρέπετε A

6 πραγματείᾳ M: πράγματος A || τοὺς κύβους AM: (<...>
τοὺς κύβους[?])

9 τῆς ἁρμονικῆς M: τῇ ἁρμονικῇ A

15 πρὸς τὸν ζ, οὕτως ἡ διαφορὰ τοῦ ιβ πρὸς τὸν η, ἀντὶ τοῦ ὡς ὁ δ, πρὸς τὴν διαφορὰν τοῦ μέσου πρὸς τὸν ἐλάττωνα, ἀντὶ τοῦ πρὸς τὸν β. καὶ πάντα ἀπλῶς τὰ αὐτὰ σχήσει· καὶ τὸν ἐπίτριστον λόγον, ὃ ἐστὶ τὴν διὰ δ ἁρμονίαν, καὶ τὴν διὰ ε, ὃ ἐστὶ τὴν ἡμιόλιον, 20 καὶ τὴν διὰ πασῶν ἅμα καὶ ἐπίτριστον, καὶ τὴν δις διὰ πασῶν, αὐτὸς δὲ καὶ ταῦτα σαφῶς ἀπαριθμεῖται.

λθ. ὥσπερ δὲ ἐν τῇ τοῦ μουσικοῦ κανόνος. ἐπειδὴ εἶπε περὶ ἀριθμητικῆς μεσότητος καὶ γεωμετρικῆς καὶ ἀρμονικῆς, νῦν θέλει εἰπεῖν ὅτι δυνατόν δύο ἄκρων ὄρων εἶτε ἀρτίων εἶτε περιττῶν λαμβανομένων μέσον ἀπο- 5 θέσθαι καὶ ποιῆσαι ἄλλοτε ἄλλως τὰς γ μεσότητας. ὥσπερ οὖν, φησὶν, ἐπὶ τῆς χορδῆς ἐὰν λάβωμεν τὸν κόλλοπα καὶ τὸ βατράχιον, ὃ ἐστὶ ξυλάριον, καὶ ἀπο- λάβωμεν τὴν χορδὴν, οὐ πᾶσα ἡχεῖ· ἀλλ' εἰ μὲν τὸ τρίτον ἀπολάβωμεν, γίνεται τὸ ἡμιόλιον, εἰ δὲ τὸ 10 τέταρτον ἐπίτριστον, εἰ δὲ τὸ ἡμισυ διπλάσιον, καὶ ἐπὶ τοῦ αὐλοῦ ὁμοίως τοῦ διαστήματος τῶν ὁπῶν λαμβανομένων· ὥσπερ οὖν ἐπὶ τούτων τῶν ὀργάνων ἐν τοῖς μέσοις διαστήμασιν ἀπήχησιν τις γίνεται, οὕτω καὶ ἐπὶ τῶν ἄκρων τούτων λαμβανομένων 15 μέσων γίνονται αἱ τρεῖς μεσότητες· οἷον ἔστωσαν ἄκροι ὁ τε μ καὶ ὁ ι. ἐὰν μὲν μέσον λάβῃς τὸν κε, γίνεται ἡ ἀριθμητικὴ μεσότης· αἱ ὑπεροχαὶ γὰρ αἱ αὐταί. εἰ δὲ τὸν κ ἢ γεωμετρικὴ· ἡ αὐτὴ γὰρ ἀναλογία, δι- 20 πλάσια γάρ. εἰ δὲ τὸν ις, γίνεται ἡ ἀρμονικὴ· ὡς γὰρ ἔχει ὁ μ πρὸς τὸν ι, οὕτως ἡ ὑπεροχὴ τοῦ μείζονος πρὸς τὸν μέσον πρὸς τὴν ὑπεροχὴν τοῦ μέσου πρὸς τὸν ἐλάττωνα. καὶ ἀπλῶς τὰ εἰρημένα πάντα ιδιώ- 25 ματα μῖς ἐκάστης τῶν γ μεσοτήτων πάντως εὐρή- σεις. καὶ πλείονος ἔνεκεν σαφηνείας πάλιν ἐκτίθεται τὰ ιδιώματα ἃ περιττὸν ἐξηγεῖσθαι σαφῇ γε τυγχά- νοντα.

μ. ἐφοδος δέ, ὡς ἂν ἐντέχνως. τὸ προκείμενόν ἐστὶν εἰπεῖν αὐτῷ μέθοδον πῶς οἷόν τέ ἐστὶ δύο ὄρων λαμ- βανομένων τὰς γ ταύτας μεσότητας εὐρεῖν, ἵνα εἰδείη- 5 μεν εἰ δυνατόν γενέσθαι ἢ μή. ἐπὶ μὲν οὖν ἀριθμητι- κῆς ποιεῖ οὕτω· συνθεῖς τὰ ἄκρα, τὸ ἡμισυ ὅρον μέσον τάξον, καὶ ἔξεις τὴν ἀριθμητικὴν μεσότητα· οἷον λαβέ μ καὶ ι, σύνθεσ τούτους, γίνονται ν· τὸ ἡμισυ τούτων τί ἐστίν; κε. ἐκθοῦ οὖν μ, κε, ι, καὶ ἐστὶν αὕτη ἀριθμη-

τική μεσότης. ἐὰν τοίνυν οἱ ἄκροι συντεθέντες δυνη- θῶσι δίχα τμηθῆναι, οἶσθα ὅτι ἐστὶ μεσότης· οἷον εἰ 10 λάβῃς μ καὶ ια (οὐ γὰρ δύναται ὁ ἐξ αὐτῶν συντεθεῖς διαιρεθῆναι). ἡ οὖν οὕτω ποιεῖ ἢ τὴν τοῦ μείζονος ὑπεροχὴν πρὸς τὸν ἐλάττωνα δίχα τέμνων καὶ προσ- θεῖς αὐτῷ τῷ ἐλάττω, μέσον τάξεις. οἷον τί λέγω; ἐστὶν ὁ μ καὶ ὁ ι· ὁ μ τοῦ ι, ὃ ἐστὶν ὁ μείζων τοῦ ἐλάτ- 15 τω, τίνι ὑπερέχει; τῷ λ. τέμε τοίνυν τοῦτο δίχα, γίνονται ιε· πρόσθεσ αὐτῷ τὸν ἐλάττω, ὃ ἐστὶ τὸν ι, γίνεται κε· γίνεται ἄρα μ, κε, ι, καὶ ἐστὶν ἀριθμητικὴ μεσότης. | γεωμετρικὴ δὲ γίνεται οὕτω· τοῦ ὑπὸ τῶν ἄκρων προμήκους τὴν τετραγωνικὴν πλευρὰν εὐρών, 20 μέσον ποιήσον ὅρον· οἷον ἐστὶν μ, ι· ποιήσον τὸ ὑπὸ τῶν ἄκρων, ἀντὶ τοῦ τεσσαρακοντάκις ι, γίνεται υ· οὗτος ὁ τετρακόσια προμήκης ἐστίν, ἐπειδὴ ἐξ ἀνί- σων πλευρῶν γέγονε τοῦ τε μ καὶ τοῦ ι. ζήτησον εἰ ἔχει τετραγωνικὴν πλευρὰν κάκεινη ἐστὶ μέση· ἔχει 25 τοίνυν ὁ υ πλευρὰν τὴν κ· εἰκοσάκι γὰρ κ, υ· ἐκθοῦ τοίνυν μ, κ, ι, καὶ ἐστὶ γεωμετρικὴ μεσότης. ὥστε, εἰ ὁ ὑπὸ τῶν ἄκρων μὴ ἔχοι τετραγωνικὴν πλευρὰν, γίνωσκε ὅτι οὐ γίνεται γεωμετρικὴ μεσότης· οἷον εἰ λάβῃς λ καὶ ι, οὐκ ἐστὶ γεωμετρικὴ μεσότης· ποιεῖς 30 γὰρ τριακοντάκις ι, γίνεται τ· οὗτος δὲ οὐ τετραγώ- νος ἐστίν. ἡ οὖν οὕτως ἢ ὃν ἔχουσι λόγον οἱ ὅροι πρὸς ἀλλήλους· ιδῶν τὸν δίχα τούτου τμητικὸν λό- γον, μέσον ποιήσον· οἷον ἔστω μ καὶ ι· ποῖον ἔχουσι 35 πρὸς ἀλλήλους λόγον; τὸν τετραπλάσιον, ὃν δίχα 35 τέμε, τὸν δ, γίνονται β· διπλάσιος ἄρα ἐν τετραπλα- σίοις ὁ μέσος ἐστὶ· ζητεῖς γὰρ τὸν διπλάσιον, μ γὰρ καὶ ι ὄντων, μέσος εὐρίσκηται ὁ κ. | ἀρμονικὴν δὲ μεσότητα ποιεῖς οὕτω· τῶν ἄκρων τὴν διαφορὰν ποιήσον ἐπὶ τὸν ἐλάττω, καὶ τὸν γενόμενον παρά- 40 βαλε πρὸς τὸν σύνθετον τὸν ἐκ τῶν ἄκρων, εἶτα τὸ πλάτος τῆς παραβολῆς πρόσθεσ τῷ ἐλάττω, καὶ ἔσται ὁ γενόμενος ἀρμονικὴ μεσότης· οἷον τί λέγω; ἔστω μ καὶ ι· διαφέρουσι τοίνυν τῷ λ· τοῦτον τοίνυν 45 πολλαπλασίασον ἐπὶ τὸν ἐλάττω, γίνεται τ. σύν- 45 θεσ τοὺς ἄκρους, γίνονται ν· παράβαλε τὸν τ πρὸς τὸν συντεθέντα, γίνεται ζ (πεντηκοντάκις γὰρ ζ, τ)· πρόσθεσ τὰς ζ τῷ ἐλάττω, γίνονται ις· ἐκθοῦ οὖν μ, ις, ι, καὶ ἐστὶν ἀρμονικὴ μεσότης. | τοσαῦτα μὲν περὶ τούτων τῶν μεσοτήτων εἰρήσθω, ἃς ἐπλατύνσαμεν διὰ 50 τὸ πολυθρullyήτους αὐτὰς εἶναι· ταύταις γὰρ κέ- χρηται οἱ ἀπὸ Πυθαγόρου, καὶ γὰρ Πλάτων καὶ Ἀρι- στοτέλης ταύταις κέχρηται. ἄλλαι δὲ εἰσιν ἑπτὰ ἀνα-

λθ = Philop. ρι

μ = Philop. ριζ, ριη, ριθ, ρκ, ρκβ, ρκγ, ρκδ, ρκε

λθ, ι = Nicom. XXVII, ι.

μ, ι = Nicom. XXVII, 7.

20 pr. τὴν M: τῶν A

λθ. 3 δυνατόν M: om. A

μ. 5 ποιεῖ A: ποιεῖ M || τὸ scripsi: τὸν AM

6 ἔξεις A: ἔξης M

7 τὸ M: καὶ τὸ A

19 cf. Nicom. XXVII, 7. 38 cf. Nicom. XXVII, 7.

49 cf. Nicom. XXVIII, ι.

11 λάβῃς M: λάβεις A || ια scripsi: ιδ AM

19 τοῦ M: τὸν A (ut vid.)

24 alt. τοῦ M: om. A

30 λάβῃς M: λάβεις A

31 οὐ scripsi: ὁ τ AM

36 β M: ὁ β A

50 cf. n. ad loc.

53 εἰσιν scripsi: ἐστὶν M

λογίαι περί ὧν μέλλει λέγειν. δέκα γάρ τὰς πάσας
 55 μεσότητος ἀπαριθμεῖται, θέλων κἀν τούτῳ τὸν ἰ
 ἀριθμὸν τέλειον ὡς πρὸς τὴν συμπλήρωσιν τῶν μο-
 νάδων ἀποδείξαι. λέγει τοίνυν τὴν πρώτην μὲν καὶ
 τετάρτην, πρώτην μὲν ἔξωθεν τῶν τριῶν τούτων
 60 τῶν εἰρημένων λαμβανομένων, τετάρτην δὲ κατὰ τὸ
 συνεχὲς ἡμῶν λαμβανόντων τοιαύτην τινὰ οὔσαν.
 ἰστέον δὲ ὅτι καθ' ὑπεναντίωσιν εἰσιν αἱ λεγόμεναι
 τῶν προφρασθεῖσων εἴ γε καὶ ἐξ αὐτῶν ἐκείνων ἀνα-
 πλάττονται. ἡ μὲν οὖν τετάρτη μετὰ τὰς ἡδὴ εἰρη-
 65 μένας ἀντιπέπουνθε τῇ ἀρμονικῇ· ἐπὶ γὰρ τῆς ἀρμονι-
 κῆς ὡς ὁ μέγιστος πρὸς τὸν ἐλάττονα, οὕτως ἡ δια-
 φορὰ τῶν μεζόνων πρὸς τὴν διαφορὰν τῶν ἐλαττό-
 νων ὑπῆρχεν. ἐκθώμεθα τοίνυν καὶ ἴδωμεν, οἶον ς , ϵ ,
 γ· ὁ τοίνυν μεζὼν πρὸς τὸν ἐλάττονα τὸν διπλάσιον
 70 λόγον ἔχει, διαφέρει δὲ ὁ μὲν γ τοῦ ϵ δυάδι, ὁ δὲ ϵ τοῦ
 ς μονάδι, ὁ β' ἄρα τῆς μονάδος διπλάσιος. ἰδοὺ ἀπὸ
 τῶν ἐλαττόνων τῆς διαφορᾶς ἡρξάμεθα ἐπὶ δὲ τῆς
 ἀρμονικῆς ἀπὸ τῶν μεζόνων, διὰ τοῦτο οὖν ἀντιπέ-
 75 πονθεν αὐτῇ. ἴδιον δὲ ἐπὶ ταύτης τῆς μεσότητος τὸ
 διπλάσιον ἀποτελεῖσθαι τὸ ὑπὸ τοῦ ἄκρου καὶ μέσου,
 τοῦ ὑπὸ τοῦ μέσου καὶ τοῦ ἐλάττονος· ἐξάκις γὰρ ϵ ,
 λ, πεντάκις δὲ τρεῖς, δεκαπέντε· τὰ δὲ λ τῶν ιε διπλά-
 80 σια. | αἱ δὲ λοιπαὶ δύο μεσότητες ἡ τε ϵ καὶ ς πρὸς τὴν
 γεωμετρικὴν μεσότητα ἀντιπεπονητότως ἔχουσι, δια-
 φέρουσι δὲ ἀλλήλων οὕτως· ἡ μὲν ϵ ἐστὶν ὅταν ἐν τρι-
 85 σὶν ὁροις ὡς ὁ μέσος πρὸς τὸν ἐλάχιστον, οὕτω καὶ ἡ
 αὐτῶν τούτων διαφορὰ πρὸς τὴν τοῦ μεγίστου πρὸς
 τὸν μέσον, οἶον ϵ , δ , β'· ἐστὶ γὰρ ὡς ὁ μέσος, ὁ ἐστὶν
 ὁ δ , πρὸς τὸν ἐλάχιστον τὸν δύο, οὕτως ἡ τούτων
 διαφορὰ, ὁ ἐστὶν <ὁ β>, πρὸς τὴν τοῦ μεγίστου πρὸς
 85 τὸν μέσον, ὁ ἐστὶν τὴν μονάδα· ὡς γὰρ ὁ δ τοῦ β δι-
 πλάσιος, οὕτω καὶ τὰ δύο τῆς μονάδος. ὑπεναντία
 δὲ ἐστὶν αὕτη τῇ γεωμετρικῇ, ὅτι ἐπὶ μὲν τῆς γεω-
 μετρικῆς ὡς ὁ μεζὼν πρὸς τὸν ἐλάττονα, οὕτω καὶ ἡ
 τοῦ μεζόνος ὑπεροχὴ πρὸς τὴν τοῦ ἐλάττονος, ἐπὶ
 90 δὲ ταύτης ἀνάπαλιν ἡ τοῦ ἐλάττονος πρὸς τὴν τοῦ
 μεζόνος. ἴδιον δὲ καὶ ταύτης τὸ ὑπὸ τοῦ μεγίστου
 καὶ τοῦ μέσου διπλάσιον εἶναι τοῦ ὑπὸ μεγίστου καὶ
 ἐλαχίστου· ἐστὶ γὰρ ϵ , δ , β'· τὸ οὖν ὑπὸ τῶν ϵ καὶ δ ,
 ὁ ἐστὶ τὰ εἴκοσι, διπλάσιόν ἐστὶ τοῦ ὑπὸ τοῦ ϵ καὶ
 95 τοῦ β, ὁ ἐστὶ τοῦ ι. | ἡ δὲ ἕκτη γίνεται ὅταν ἐν τρισὶν
 ὁροις ἦ, ὡς ὁ μέγιστος πρὸς τὸν μέσον, οὕτως ἡ τοῦ
 μέσου παρὰ τὸν ἐλάχιστον ὑπεροχὴ πρὸς τὴν τοῦ
 μεγίστου παρὰ τὸν μέσον. ὡς γὰρ ὁ ς τοῦ δ ἡμιόλιος,
 οὕτω καὶ ὁ γ τοῦ δύο ἡμιόλιος. ἔοικε δὲ καὶ αὕτη τῇ
 100 γεωμετρικῇ ἐναντιότητι· ἐπιστρέφει γὰρ ἡ τῶν λό-
 γων μεσότης ὡς ἐπὶ τῆς πέμπτης. | αὗται τοίνυν

εἰσὶν ἐξ ἀναλογίαι. αἱ μὲν πρῶται τρεῖς τοῖς ἀπὸ
 Πυθαγόρου, Πλάτωνι καὶ Ἀριστοτέλει ἐγνωσμέναι,
 αἱ δὲ λοιπαὶ τρεῖς, τοῖς ὑπομνηματογράφοις καὶ αἰ-
 ρεσιάρχαις γνώριμοί εἰσι.

105

μα. τέσσαρας δὲ τινὰς ἐτέρας μετακινούντες. περὶ τῶν
 λοιπῶν δὲ λέγει μεσότητων ἐφ' ὧν μετατίθενται οἱ
 ὅροι καὶ οὐκέτι ἡ αὐτὴ τάξις φυλάττεται. αὗται τοί-
 νυν αἱ μεσότητες οὐ πάνυ ἐμφανίζονται ἐν τοῖς τῶν
 παλαιότερων συγγράμμασι. | πρώτη τοίνυν ἐστὶ 5
 μεσότης ὅταν ἦ ὡς ὁ μέγιστος πρὸς τὸν ἐλάχιστον,
 οὕτως ἡ αὐτῶν τούτων τῶν ἄκρων διαφορὰ πρὸς
 τὴν τῶν ἐλαττόνων διαφορὰν, οἶον θ , μ , ς · ἐστὶν ὡς
 ὁ θ πρὸς τὸν ς , οὕτως ἡ διαφορὰ τοῦ θ πρὸς τὸν ς ,
 ὁ ἐστὶν ὁ γ , πρὸς τὴν διαφορὰν τοῦ η πρὸς τὸν ς , ὁ 10
 ἐστὶ πρὸς τὸν β· ὡς γὰρ ὁ θ τοῦ ς ἡμιόλιος, οὕτως ὁ
 γ τοῦ β. | δευτέρα δὲ μεσότης ὅταν ἦ ὡς ὁ μέγιστος
 πρὸς τὸν ἐλάχιστον, οὕτως ἡ τούτων διαφορὰ πρὸς
 τὴν τῶν μεζόνων διαφορὰν, οἶον θ , ζ , ς · ὡς γὰρ ὁ θ
 πρὸς τὸν ς , οὕτως ἡ διαφορὰ τούτων, ὁ ἐστὶν ὁ γ , 15
 πρὸς τὴν διαφορὰν τοῦ θ πρὸς τὸν ζ , ὁ ἐστὶ πρὸς
 τὸν β. | τρίτη δὲ μεσότης ὅταν ὦν ἔχη λόγον ὁ μέσος
 πρὸς τὸν ἐλάχιστον τοῦτον καὶ ἡ τῶν ἄκρων ὑπεροχὴ
 πρὸς τὴν τῶν ἐλαττόνων, οἶον ζ , ς , δ · ὡς γὰρ ὁ ς
 πρὸς τὸν δ , οὕτως ἡ ὑπεροχὴ τῶν ζ δ , ὁ ἐστὶν ὁ γ , 20
 πρὸς τὴν ὑπεροχὴν τῶν ς δ , ὁ ἐστὶ τῶν β. | τετάρτη
 δὲ ἐστὶ μεσότης ὅταν ἦ ὡς ὁ μέσος πρὸς τὸν ἐλάττονα,
 οὕτω καὶ ἡ διαφορὰ τῶν ἄκρων πρὸς τὴν διαφορὰν
 τῶν μεζόνων, οἶον η , ϵ , γ · ὦν γὰρ λόγον ἔχει ὁ ϵ πρὸς
 τὸν γ , ὁ ἐστὶ τὸν ἐπιδιμερῆ, τοῦτον τὸν λόγον ἔχει 25
 ἡ διαφορὰ τῶν ἄκρων, ὁ ἐστὶ ὁ ϵ , πρὸς τὴν διαφορὰν
 τῶν μεζόνων, ὁ ἐστὶ πρὸς τὸν γ . | ἰστέον τοίνυν ὅτι
 μετὰ τὸ πληρῶσαι καὶ ταύτας τὰς μεσότητας ὡς ἐν
 κεφαλαίῳ πασῶν τὰ ὑποδείγματα ἐκτίθενται, καὶ
 μετὰ τοῦτο διδάσκει περὶ ἐτέρας τινὸς μεσότητος 30
 ἀρμονικῆς τελειότητος.

μβ. <τελειότητος>. ἀρμονικὴν δὲ αὐτὴν καλεῖ, ἐπειδὴ
 ἐκ τριῶν διαστάσεων γίνεται, τεσσάρων ὁρων γι-
 νομένων ὥσπερ ἐν τετραχορδίᾳ καὶ οὐκέτι ἐπὶ τριῶν
 ὁρων. | θέλουσι δὲ οἱ ἄκροι πάντως στερεοὶ εἶναι,

μα = Philop. ρκς-ρλα

μβ = Philop. ρλγ-ρλε

μα, I = Nicom. XXVIII, 6.

5 cf. Nicom. XXVIII, 7. 12 cf. Nicom. XXVIII, 8.

17 cf. Nicom. XXVIII, 9. 21 cf. Nicom. XXVIII, 10

27 cf. Nicom. XXVIII, 11.

μβ, I = Nicom. XXIX, 1 4 cf. Nicom. XXIX, 2.

μα. 7 διαφορὰ scripsi: διὰ τὸν ὅρον M
 μβ. 1 τελειότητος Nicom.: om. M (cf. n. ad loc.)

77 cf. Nicom. XXVIII, 4. 95 cf. Nicom. XXVIII, 5.

101 cf. Nicom. XXVIII, 6.

60 λαμβανόντων scripsi: λαμβανομένων M

76 τρεῖς P: τρις M

81 μεγίστου scripsi: μέσου M

84 ὁ β scripsi: om. M

5 οἶον ἢ ἰσάκεις ἴσοι ἰσάκεις (ἀντὶ τοῦ ἢ κύβοι), ἢ δοκίδες
 ἢ σφηνίσκοι ἢ σκαληνοί. καὶ τοῦτο λέγω ὅτι πάντες
 οἱ αὐτοὶ εἰσιν. ἐνδέχεται γὰρ τὸν μὲν μείζονα κύβον
 εἶναι, τὸν δὲ ἐλάττονα σφηνίσκον ἢ τὸ ἀνάπαλιν,
 καὶ ἐπὶ τῶν ἄλλων ὁμοίως· στερεοὶ δὲ πάντες ὁφεί-
 10 λουσιν εἶναι. καὶ λοιπὸν εὐρίσκεται ἡ γεωμετρικὴ
 ἀναλογία οὐ κατὰ τάξιν τῶν ὄρων λαμβανομένων,
 ὡς δεῖξομεν, ἀλλ' ὡς ὁ μέγιστος πρὸς τὸν γ ἀπ'
 αὐτοῦ, οὕτως ὁ β μετὰ τὸν μέγιστον πρὸς τὸν δ· τὸ
 γὰρ τοιοῦτον τὸ ὑπὸ τῶν ἄκρων ἴσον ποιεῖ τῷ ὑπὸ
 15 τῶν μέσων· οἶον ἔστωσαν ἄκροι ὁ ιβ καὶ ὁ ζ, μέσοι δὲ
 ὁ τε θ καὶ ὁ η· οὐκοῦν τὸ ὑπὸ τῶν ἄκρων ἴσον ἐστὶ
 τῷ ὑπὸ τῶν μέσων, ὡς γὰρ δωδεκάκις ζ οβ, οὕτω
 καὶ ἐννάκις η οβ· καὶ πάλιν ἔαν ὁ μέγιστος πρὸς τὸν
 ὑπ' αὐτὸν ἐν τοσαύτῃ δειχθῇ διαφορᾷ ἐν ὅσῃ καὶ
 20 αὐτὸς οὗτος ὁ ὑπ' αὐτὸν πρὸς τὸν ἐλάχιστον, ἀρι-
 θμητικὴ ἢ τοιαύτη μεσότης γίνεται, καὶ ἡ τῶν ἄκρων
 σύνθεσις διπλάσια τοῦ μέσου· ιβ γὰρ καὶ ζ καὶ θ καὶ
 ιη· ὁ δὲ ιη διπλάσιος τοῦ θ τοῦ μέσου. ἔαν δὲ ὁ γ ἀπὸ
 τοῦ μεγίστου τῷ αὐτῷ μέρει τῶν ἄκρων αὐτῶν
 25 ὑπερέχηται, ἀρμονικὴ γίνεται, καὶ τὸ ὑπὸ τοῦ μέσου
 τε καὶ τῆς τῶν ἄκρων συνθέσεως, διπλάσιον τοῦ ὑπὸ
 τῶν ἄκρων· σύνθεσις γὰρ τοὺς ἄκρους, γίνονται ιη.
 ποίησον τὸν μέσον, ὃ ἐστὶ τὸν η, ἐπὶ τὸν ιη, γίνονται
 ρμδ· ποίησον τὸ ὑπὸ τῶν ἄκρων, γίνονται οβ. ἰστέον
 30 τοίνυν ὅτι ὁ μὲν ζ σκαληνός ἐστιν· ἄνισοι γὰρ αὐτοῦ
 αἱ πλευραί· ἀπὸ γὰρ τοῦ ἅπαξ β καὶ τρεῖς γέγονεν·
 ἅπαξ γὰρ δύο γίνονται δύο, τρεῖς δύο γίνονται ζ. ὁ
 δὲ ιβ ἀπὸ τοῦ δις δύο γέγονε τρεῖς· δις γὰρ δύο γίνον-
 ται δ, τρεῖς δ γίνονται ιβ. τῶν δὲ μέσων ὁ μὲν ἐλάττων,
 35 ὃ ἐστὶν ὁ η, ἀπὸ [γὰρ] τοῦ ἅπαξ β, τετράκις γέγονεν·
 ἅπαξ γὰρ β γίνονται β, τετράκις β γίνονται η· ὁ δὲ
 μείζων, ὃ ἐστὶν ὁ θ, ἀπὸ τοῦ ἅπαξ τρεῖς, τρεῖς γέγονεν·
 ἅπαξ γὰρ τρεῖς γίνονται τρεῖς, τρεῖς τρεῖς γίνονται θ.

38 τρεῖς τρεῖς scripsi: τρεῖς τρεῖς M

στερεοὶ τε οὖν εἰσιν οἱ ἄκροι καὶ τρία ἔχουσι διαστή-
 ματα, καὶ ὁμογενεῖς εἰσιν αὐτοῖς αἱ μεσότητες, ἀντὶ 40
 τοῦ καὶ αὐταὶ στερεαί. | ἔστιν οὖν γεωμετρικὴ μὲν
 ἐμπλέγδην, ἀντὶ τοῦ ἀναπεπλεγμένη καὶ οὐ κατὰ
 τάξιν αὕτη· ὡς ὁ ιβ πρὸς τὸν η, οὕτως ὁ θ πρὸς τὸν
 ζ· διεzeugμένη γὰρ ἐνταῦθα λαμβάνεται. ἔστι δὲ καὶ
 ἐναλλάξ ὡς ὁ ιβ πρὸς τὸν θ, οὕτως ὁ η πρὸς τὸν ζ, 45
 ἀριθμητικὴ δὲ γίνεται, ἐπειδὴ ὅσω ὁ ιβ τοῦ θ ὑπερέ-
 χει, τοσούτῳ ὁ θ τοῦ ζ. ἀρμονικὴ δὲ οὕτως· ᾧ μέρει
 ὁ η τοῦ ζ ὑπερέχει τούτῳ ὑπὸ τοῦ ιβ ὑπερέχεται, ἐν
 αὐτῷ τῷ ιβ θεωρουμένῳ, ὥσπερ γὰρ ὁ η τοῦ ζ ὑπερ-
 ἔχει δυάδι, ἡ δὲ δυὰς τέταρτον μέρος ἐστὶ τοῦ η, 50
 οὕτως ὁ ιβ τοῦ η τετράδι ὑπερέχει. ἀλλὰ μὴν ἔστιν
 εὐρεῖν καὶ τῆς ἀρμονικῆς ἐν αὐτοῖς τὰ ὀνόματα· ὁ μὲν
 γὰρ η πρὸς τὸν ζ ἢ ὁ ιβ πρὸς τὸν θ τὸν διὰ τεσσάρων
 λόγον ποιεῖ, ἐν ἐπιτρίτῳ γὰρ εἰσιν, ὁ δὲ θ πρὸς τὸν
 ζ ἢ ὁ ιβ πρὸς τὸν η τὸν διὰ πέντε, ἐν ἡμιολίῳ γὰρ 55
 εἰσιν, ὁ δὲ ιβ πρὸς τὸν ζ τὸν διὰ πασῶν, ἐν διπλάσιῳ
 γὰρ· ἡ δὲ ὑπεροχὴ τοῦ ιβ πρὸς τὸν η, ὃ ἐστὶν ὁ δ,
 καὶ ἡ ὑπεροχὴ τοῦ θ πρὸς τὸν η, ὃ ἐστὶν ἡ μονάς,
 τὸν δις διὰ πασῶν ποιοῦσιν, ἐν τετραπλάσιῳ γάρ.
 ὁ δὲ θ πρὸς τὸν η τὸν τονιαῖον ποιεῖ, ἐν ἐπογδῳ 60
 γὰρ λόγῳ, ὁ δὲ ἐπόγδοος προστιθέμενος ταῖς χορ-
 δαῖς, τόνος τις καὶ ἀπῆχησις γίνεται· οὗτος γὰρ ὁ
 λόγος κοινὸν μέτρον γίνεται πάντων τῶν ἐν τῇ μου-
 σικῇ λόγων, ὡς γνωριμώτερον ὄν. δέδεικται τοίνυν
 ὅτι διαφορὰ τις τῶν στοιχειωδεστάτων καὶ πρώτων 65
 συμφωνιῶν ὑπάρχει. τοσαῦτα τοίνυν ἀρκείτω πρὸς
 εἰσαγωγικὴν διδασκαλίαν.

42 = Nicom. XXIX, 2.

50 τέταρτον. . . η M: (τρίτον μέρος ἐστὶ τοῦ ζ [?])
 64–66 cf. n. ad loc.

NOTES TO THE TEXT

Asclepius I. α

In line 5, the manuscripts of Asclepius are confused (see the critical apparatus *ad loc.*); the correct reading is not only guaranteed by the sense, but also by those manuscripts which, like the *Cod. Scor.* Y-I-12, contain recension IV preceded by I. α of the commentary of Asclepius (see Introduction, pp. 18–21). On the definition of φιλοσοφία as φιλία σοφίας see below this same note.

In lines 6ff. Asclepius explains the name σοφία as coming from σοφία and quotes Aristotle in support of this etymology. Many critics, following Bywater, have taken Philoponus I. α, which is parallel to Asclepius I. α and in which the same interpretation of the name σοφία is given, as a fragment of Aristotle's *De Philosophia*. But actually both Philoponus and Asclepius when they later paraphrase again this passage of Aristotle's identify it as coming from *Metaphysics* α minor, i.e. *Metaphysics* 993 B 7–11. See below note to I, γ and especially Introduction, p. 14 and n. 70 with the references there given.

In line 21 πάντων δὲ οὐ κατεκράτησε, ἀλλ'οἱ μὲν is the reading of *Cod. Scor.* Y-I-12. Notice the reading of the manuscripts of Asclepius: πάντων δὲ καὶ τὰ κρανία. This is but another proof that our three manuscripts go back ultimately to the same archetype. See Introduction, p. 21.

In line 22, Asclepius wrote τὰ δὲ πεδία κατακλύζονται. Notice Philoponus, I. α 20 τὰ δὲ πεδία καὶ οἱ ἐν τούτοις οἰκοῦντες κατακλύζονται.

In lines 15–17 it is said that there are five different meanings of σοφόν according to Aristocles in his work in ten books *Περὶ Φιλοσοφίας*. This Aristocles is Aristocles of Messene, the teacher of Alexander of Aphrodisias. (But cf. *contra* P. Moraux, "Aristoteles, der Lehrer Alexanders von Aphrodisias," *Archiv für Geschichte der Philosophie* 49 (1967): pp. 169–182.) Asclepius and Philoponus proceed to give these five meanings and attribute each meaning to a different period of the evolution of human civilization. Most critics attribute to Aristocles not only the five different meanings of the word σοφόν, but also the connection of each meaning with a different period of the history of civilization. Some of the notions mentioned in Asclepius I. α 15–49 and also the quotation of passages of ancient authors occur in other works of Ammonius or in works which ultimately go back to Ammonius, and they do occur in passages in which there is no mention of Aristocles at all. Thus for example, the cataclysm of the time of Deucalion (connected with humanity's loss of wisdom) and even the quotation of Homer, *Iliad* XX. 216–217 occur in Asclepius' commentary to the *Metaphysics*. Cf. Asclepius, *In Metaph.*, p. 10, 28–p. 11, 6 (Hayduck): πρόκειται αὐτῷ ἐντεῦθεν εἰπεῖν τὸν χρόνον, καθ' ὃν ἐφοίτησεν εἰς ἡμᾶς ἡ σοφία· οὐχ ὅτι φησὶν ἐν χρόνῳ ἐφοίτησεν, ἀλλ' ὡς πρὸς τὴν ἡμετέραν περίοδον· ἦν γὰρ καὶ πρῶτον· γίνονται γὰρ κατακλυσμοὶ καὶ σεισμοὶ καὶ ἀφανίζονται τὰ πράγματα καὶ πάλιν εὐρίσκονται, ὡς φησὶ καὶ αὐτὸς Ἀριστοτέλης ἐν τοῖς Μετεώροις περὶ τοῦ μεγάλου σεισμοῦ τοῦ γενομένου ἐν τῇ Ἀχαΐᾳ, καὶ ὅτι ἐπὶ τοῦ Δευκαλίωνος, φησί, ἐγένετο μέγας κατακλυσμὸς καὶ πολλοὶ ἠφανίσθησαν τόποι, καὶ πᾶσαι αἱ πεδιάδες ἀπώλοντο, καὶ μόνοι ἠδυνήθησαν περισωθῆναι οἱ ἐν ταῖς ἀκρωρείαις τῶν ὀρέων ὄντες, ὡς δηλοῖ καὶ ὁ ποιητὴς εἰρηκῶς "κτίσσε δὲ Δαρδανί-

ην, ἐπεὶ οὕτω Ἰλῖος ἱρὴ ἐν πεδίῳ πεπόλιστο, πόλις μερόπων ἀνθρώπων ἀλλ' ἔθ' ὑπάρχειας ἔναιον πολυπίδακος Ἰδης."

In the lines that follow Asclepius sets forth humanity's subsequent evolution in knowledge; the passage is more elaborate than the one in the commentary to Nicomachus, to be sure, but it is essentially the same. And the fact that in his commentary to the *Metaphysics* Asclepius refers to Aristotle's *Meteorologics* (although not all that he attributes to Aristotle is to be found there) casts doubt over the attribution to Aristocles of all that is contained in lines 15–49 of Asclepius I. α. Moreover, there are other passages in works which ultimately go back to Ammonius (some of which are quoted below) which are parallel to Asclepius I. α 17ff. Since also before and after the passage under consideration there are doctrines and quotations that are typical of the school of Ammonius, it seems to me that possibly only the five different meanings of σοφόν belong to Aristocles in lines 15–49 (cf. also Asclepius I. α 3–5 and note *ad loc.*), and that the connection of the five meanings of σοφόν with the different periods of the history of human civilization belongs to Ammonius, although he might have found the basis for his more elaborate developments in certain passages of Plato and Aristotle. At any rate one cannot be certain that Aristocles really connected so elaborately the five different meanings of σοφία with the evolution of humanity. But even if lines 15–49 were ultimately based on Aristocles this certainly is not a verbatim quotation (see below).

In lines 44–49, for the connection of Pythagoras with the fifth meaning of σοφία, that is, to designate the wisdom of eternal things, τὰ αἰὶ καὶ ὡσαύτως ἔχοντα, and with the definition φιλοσοφία ἐστὶ φιλία σοφίας, and the connection of the different meanings of σοφία with the quotations of Homer, *Iliad* XV. 412 and XXIII. 712, compare Ammonius, *In Porphyrii Isagogen*, p. 9, 7–23 (Busse): ὁ μὲντοι Πυθαγόρας φησὶ "φιλοσοφία ἐστὶ φιλία σοφίας" πρῶτος τῷ παρὰ τοῖς παλαιότεροις ἐπιστάς ἀμαρτήματι. ἐπειδὴ γὰρ ἐκείνοι σοφὸν ὠνόμαζον τὸν ἡντιναοῦν μετιόντα τέχνην, ὧν εἰς ἦν καὶ Ἀρχίλοχος λέγων "τρίαιναν ἐσθλὴν καὶ κυβερνήτην σοφός," καὶ ὁ ποιητὴς "ἐπεὶ σοφὸς ἦραρε τέκτων" καὶ "εὖ εἰδὼς σοφίης ὑποθημοσύνησιν Ἀθήνης," μεθίστησι τὴν προσηγορίαν ταύτην ἐπὶ τὸν θεὸν ὡς μόνον ἐκείνον καλεῖσθαι σοφόν, τὸν θεὸν φημι, σοφίαν τε καὶ τὴν τῶν ὄντων αἰδίων ἔχοντα γνῶσιν. ὁρῶν δὲ τοὺς μὲν ἐπὶ ῥητορικὴν τοὺς δὲ ἐπὶ γραμματικὴν τοὺς δὲ ἐπὶ τὴν τῶν φυσικῶν λήττησιν τρέχοντας, ἄλλους δ' αὖ πάλιν ἐφ' ἑτερα, προσαγορεύει τοὺς τὴν τῶν φυσικῶν θεωρίαν ἀσκοῦντας φιλοσόφους οἰοεὶ φιλοῦντας τὸν σοφόν, ὅπερ ἡξίου καλεῖν τὸν θεόν, τὴν δὲ τούτων γνῶσιν φιλοσοφίαν ἀναλόγως τὴν φιλίαν τῆς σοφίας· σοφίαν γάρ, ὡς ἤδη εἴρηται, τὴν τοῦ θεοῦ γνῶσιν ὠνόμαζε. ταῦτα Πυθαγόρας. And see especially the variant given after p. 9, 17–18 (... σοφίαν τε καὶ τὴν τῶν ὄντων αἰδίων ἔχοντα γνῶσιν) in *cod. Parisinus* 1973, f. 14 v. (cf. Supplementum Praefationis III in Ammonius, *In Porphyrii Isagogen*, ed. Busse, p. XLV): καὶ οὐ ταύτην ἀπλῶς ἀλλὰ σοφίαν λέγομεν τὸ σαφές, σαφές δὲ λέγομεν τὸ φανερόν, φανερά δὲ λέγομεν τὰ ἄνυλα· περὶ γὰρ ταῦτα ἡ φιλοσοφία καταγίνεται. εἰ δὲ μὴ ὑποπίπτει ταῦτα ἡμῖν, οὐχὶ διὰ τὴν οἰκείαν σμικρότητα ἀλλὰ διὰ τὴν οἰκείαν ἀσθένειαν, ὥσπερ καὶ ταῖς νυκτερίσιν ὁ ἥλιος σκοτεῖν δοκεῖ διὰ

τὴν ἀσθένειαν τῆς αἰσθήσεως. On Pythagoras and the use of the word *philosophia*, cf. Diogenes Laertius I. 12 and Aetius, *Plac.*, I 3.8 (= Diels, *Doxographi Graeci*, pp. 281–282). It is interesting to notice in the passage of Ammonius' commentary to Porphyry the particular quotation of Homer, *Iliad* XXIII. 712 as ἐπεὶ σοφὸς ἦραρε τέκτων. In the first place we must observe the occurrence of the word σοφός instead of κλυτός. Eustathius does not quote this variant (which, to judge from Allen's *editio maior*, does not occur in any manuscript of Homer) in his note to XXIII. 712, but in his note to XV. 412 εὐ εἶδ' ἡ σοφίης ὑποθημοσύνησιν Ἀθῆνης (this is the only occurrence of the word σοφίη in Homer; N.B. this passage is also quoted by Ammonius, Asclepius, and Philoponus) he has a note on the meaning of σοφία where he quotes σοφὸς ἦραρε τέκτων; cf. Eustathius, *Ad Il.*, 1023, 12–15: σοφίαν δὲ οὐ τὴν λογικὴν φησιν ἀλλ' ἀπλῶς τὴν τέχνην ἔθει ἀρχαίῳ, καὶ μάλιστα τὴν χειρωνακτικὴν, ἣν οἶδε τις ὑποθημοσύναις Ἀθῆνης κατὰ τὸν ποιητὴν, τῆς, ὡς πολλοῦ δηλοῦται, τοιαύτης τέχνης ἐπιστατούσης. οἱ γὰρ παλαιοὶ σοφοὺς ἐκάλουν ἅπαντας τοὺς τεχνίτας, ὡς τὸ, σοφὸς ἦραρε τέκτων. This variant of *Iliad* XXIII. 712 was also known to Clement of Alexandria; cf. *Strom.*, I. 4.1: "Ὁμηρος δὲ καὶ τέκτονα σοφὸν καλεῖ. It is also interesting to notice in this quotation the word ἐπεὶ which occurs both in Ammonius and in Asclepius (cf. also Elias, *Proleg.*, p. 24, 3 and David, *Proleg.*, p. 46, 8), whereas Philoponus starts his quotation with σοφός.

Lines 50–51: The reference to Plotinus is *Enn.* I. 3.3. The passage is quoted by Philoponus I. κλ. Cf. also Asclepius, *In Metaph.*, p. 151, 4–6 (Hayduck): διὸ φησιν ὁ Πλωτίνος "δοτέον τοῖς νέοις τὰ μαθήματα πρὸς συνεθισμὸν τῆς ἀσωμάτου φύσεως." Philoponus' quotation of the passage is close to Asclepius' (cf. Philop. I. κλ 2–3): παραδοτέον γὰρ τοῖς νέοις τὰ μαθήματα, Πλωτίνος φησι, πρὸς συνεθισμὸν τῆς ἀσωμάτου φύσεως. Plotinus, *Enn.* I.3.3 has: τὰ μὲν δὴ μαθήματα δοτέον πρὸς συνεθισμὸν κατανοήσεως καὶ πίστεως ἀσωμάτου. The reference to Plato is probably to the *Republic*; see also below Asclepius' comments on *Epinomis* 991 E 1–992 B 3 quoted by Nicomachus in I.3.5.

Lines 51–53: Here the reference to Plato is *Timaeus* 52 B 2, λογισμῷ τινι νόθῳ. Cf. also Asclepius, *In Metaph.*, p. 131, 18–19 (Hayduck): διὸ καὶ ὁ Πλάτων νόθῳ λογισμῷ ληπτὴν αὐτὴν εἶναι ἔλεγεν and *ibid.*, p. 133, 3: καὶ ὡς ὁ Πλάτων φησί, νόθῳ λογισμῷ ληπτὴ.

Asclepius I. α and Philoponus I. α are parallel. Philoponus most probably did not have anything but the text of the notes from Ammonius' lectures for the quotation or paraphrase from Aristocles. This did not prevent him from expanding, as may be seen from a comparison of Philoponus' text with that of Asclepius. Notice his expansion of the quotation of *Iliad* XX. 216–217 to 215–218. As I have said above, it is possible that only the five different meanings of σοφία belong to Aristocles and not the connection of each of them with a different period of the evolution of humanity. But even if this connection also Ammonius got from Aristocles, in all likelihood lines 15–49 do not constitute a verbatim quotation and consequently no arguments based on the occurrence of a definite word should be used. And, if this text is to be included in a collection of the fragments of Aristocles, the version given by Asclepius is the one that should be accepted and not that of Philoponus. Heiland in his edition of Aristocles (*Aristocles Messenii reliquiae*, Diss. Giessen, 1925) prints the whole text of Philoponus I. α and considers that this, although in part contaminated by some more recent material, contains the essence of a passage of Aristocles' *De Philosophia*. But after what we said above, it should be

obvious that, at best, only lines 15–49 contain material coming from Aristocles.

Asclepius I. β

The lemma given by Asclepius (ἡ δημιουργίας) is more appropriate than the one given by Philoponus (ἀλλ' ὁ γε Πυθαγόρας). In line 2, A and M read τὰ instead of γὰρ; for a similar mistake, cf. I. α 51.

The line quoted from Homer is *Iliad* XXIII. 318, which is also quoted by Philoponus in a passage which reproduces almost verbatim what Asclepius has stated. The verse was probably quoted from memory; the correct quotation is μῆτι δ' ἡνίοχος περιγίγνεται ἡνιόχοιο.

Asclepius I. γ

Here again the lemmata given by Asclepius and Philoponus are different. The passage starts with the demonstration of the Neoplatonic notion that the "forms" which are in this world are derivative from the true forms which are in the intelligible world; the heavenly bodies are intermediate between the two.

Lines 4–5: ἐπειδὴ τοῖς μὴ οὐσι παράκεινται. Both A and M omit μὴ; but it seems to me that the negative is needed. Asclepius is giving the reason why the things in our world are not κυρίως ὄντα, and since παράκεινται means "being closely connected with" (cf. Iamblichus, *De Communi Math. Scientia*, p. 88, 17–19 [Festa] καθόλου μὲν οὖν δεῖ προεἰδέναι ὡς παράκεινται τῇ μαθηματικῇ θεωρίᾳ ἢ τε θεολογικῇ ἐπιστήμῃ καὶ ἡ φυσικῇ κτλ.), it seems that we need μὴ, which I have supplied from Philoponus (I. γ, 3). Cf. also below, lines 12–13: οὐκ εἰσὶ τὰ ἐνταῦθα κυρίως ὄντα ἀλλὰ πῃ ὄντα, ἐπειδὴ τῷ μὴ ὄντι πλησιάζουσι.

In lines 35ff., the passage where Aristotle calls the objects of knowledge καθαρά and φωτιστικά is identified as *Metaphysics* α minor; Philoponus does the same thing (I. γ, 33–34). This is the same passage paraphrased by Asclepius and Philoponus in I. α and which many critics take as a fragment of Aristotle's *De Philosophia*. Against this see also Introduction, p. 14 and n. 70, and the note to Asclepius I. α.

In lines 45–53 Asclepius paraphrases *Phaedo* 65 A 9ff. The same paraphrase occurs in Philoponus I. γ, 40–45. The text of A, M, and P is confused here and I have corrected it according to the text of Philoponus; see the critical apparatus *ad loc.* This is but another proof that ultimately A and M go back to the same archetype (see Introduction, p. 21).

In lines 68–71 Asclepius quotes *Timaeus* 27 D 6–28 A 1. In explaining this passage Asclepius argues against those who interpret the *Timaeus* as asserting that the universe had a beginning in time because Plato calls the cosmos γενητός. Asclepius argues that Plato calls the cosmos γενητός because it always is in process. Philoponus, as we saw (cf. Introduction, pp. 10–12), has substituted this explanation with a more non-committal διὰ τὸ συνεχὲς τῆς μεταβολῆς and has suppressed the polemic against those who interpret the *Timaeus* as asserting a beginning in time for the universe. The defense reported by Asclepius was a favorite one since the time of Middle Platonism. Cf. Alcinoüs, *Epitomé* XIV. 3 (Louis): ὅταν δὲ εἴπῃ (sc. Πλάτων) γενητὸν εἶναι τὸν κόσμον, οὐχ οὕτως ἀκουστέον αὐτοῦ, ὡς ὄντος ποτὲ χρόνον ἐν ᾧ οὐκ ἦν κόσμος: ἀλλὰ διότι αἰεὶ ἐν γενέσει ἐστὶ καὶ ἐμφαίνει τῆς αὐτοῦ ὑποστάσεως ἀρχικώτερόν τι αἴτιον. Cf. also Taurus, *apud* Philoponus, *De Aeternitate Mundi*, pp. 145, 8–147, 13 (Rabe) and Proclus, *In Timaeum*, vol. I, pp. 290, 13–291, 12 (Diehl).

In line 75 I have emended αὐτῷ to αὐτόν. The dative cannot be right because both (a) "it (*sc.* the quotation) does not mean for him...", and (b) "he does not mean γενητόν by it..." are impossible. τό cannot be the subject of βούλεται and, moreover, in (b) the article is in the predicate, and in that case it can only be understood as introducing a quotation and not as part of the quotation itself. This is precisely why I have emended the text: "there (*sc.* in the *Timaeus*) he does not mean (this) "it is generated," that is, that the cosmos came into being; for he says that it is always becoming, etc." The conjecture of P² (αὐτός) does not solve the problem.

In lines 78–79, ὅθεν καὶ ὃν (ἀντὶ τοῦ κυρίως ὄντος) οὐδέποτε ἔστι refers to the cosmos. What Asclepius means is that, despite the fact that the universe has no beginning or end, it still is not true being; *cf.* Asclepius I. 1 7–11, where *à propos* of the same passage of the *Timaeus* he says: διὰ παντός γὰρ βεῖ καὶ τρέπεται, ὥς καὶ Πλάτων φησὶν ἐν Τιμαίῳ, ὅτι ἐκεῖνα μὲν γένεσιν οὐκ ἔχει, ἀλλ' αἰεὶ ὄντα εἰσὶ, τὰ δὲ τῇδε γίνονται, ὃ ἔστιν ἀλλοιοῦνται, καὶ οὐκ εἰσὶν οὐδέποτε κυρίως ὄντα. See also Asclepius I. 1 13–14.

Asclepius I. 8

Here again the lemmata of Philoponus and Asclepius are different. The reference to Aristotle is to the *Posterior Analytics* 71 B 15–16, 88 B 30ff., etc.

Lines 3–4, αἰεὶ διατελοῦντα ἐν τῷ κόσμῳ are a quotation of Nicomachus I. 2 (lines 11–12 [Hoche]) which Asclepius proceeds to explain. This corresponds to a different paragraph in Philoponus (= Philoponus I. ε).

Asclepius I. ε

Again, here, the lemmata of Asclepius and Philoponus are different.

Line 2: *cf.* Aristotle, *Categ.* I A 1–3: ὁμῶνυμα λέγεται ὃν ὄνομα μόνον κοινόν, ὃ δὲ κατὰ τοῦνομα λόγος τῆς οὐσίας ἕτερος, ὅσον ζῶον ὃ τε ἄνθρωπος καὶ τὸ γεγραμμένον.

Asclepius I. 5 and ζ 1–10

For a comparison of these passages with the corresponding ones in the commentary of Philoponus, see Introduction, pp. 9–10. In both passages Philoponus gives the same lemmata as Asclepius, but those of Asclepius are fuller.

Asclepius I. ζ 10ff.

Here it is necessary to suppose that ταῦτα δὲ κτλ. are meant to be a commentary on ἀσώματα in Nicomachus (= θ–1 in Philoponus).

Asclepius I. ι

In line 7 Asclepius starts to comment on the words ἀλλ' αἰεὶ μεταρρεῖ (*cf.* crit. app. *ad loc.*); this is indicated by a different paragraph in the commentary of Philoponus.

In lines 8–13 Asclepius paraphrases *Timaeus* 27 D 6–28 A 4: τί τὸ ὃν αἰεὶ, γένεσιν δὲ οὐκ ἔχον, καὶ τί τὸ γιγνόμενον μὲν αἰεὶ, ὃν δὲ οὐδέποτε; τὸ μὲν δὴ νοήσῃ μετὰ λόγου περιληπτόν, αἰεὶ κατὰ ταῦτα ὃν, τὸ δ' αὖ δόξῃ μετ' αἰσθήσεως ἀλόγου δοξαστόν, γιγνόμενον καὶ ἀπολλύμενον, ὄντως δὲ οὐδέποτε ὃν. This passage of the *Timaeus* is quoted verbatim by Nicomachus in I.2.2.

Asclepius I. ια

In lines 1–7 Asclepius refers back to I. α where he pointed out what is the purpose of Nicomachus' *Introduction to Arithmetic*. The three things stated here, namely, (a) that philosophy is love of wisdom, (b) that there are five dif-

ferent meanings of σοφός, and (c) that true philosophy has as its object eternal being, were stated in I. α. The same reference backward we find in Philoponus.

In line 4 the manuscripts of Asclepius have Ἀριστοτέλης instead of Ἀριστοκλῆς but the emendation is obvious if we compare this passage with I. α. According to Hoche's edition of Philoponus the latter here has Ἀριστοκλῆς. That the two names were easily confused by scribes is shown by the fact that in I. α some manuscripts of Philoponus have Ἀριστοτέλης for Ἀριστοκλῆς.

For lines 17 and 26–27, εὐζωία, *cf.* Aristotle, *Nicom. Ethics* 1098 B 21. Notice also the example of the builder of the house and the connection with the Aristotelian final cause, etc. All this Asclepius gets from Nicomachus.

Lines 33 ff.: There is a scholion in M (f. 98v.): πλήθος μὲν ἐπὶ τὸ πλεόν, μέγεθος δὲ ἐπὶ τὸ ἕλαττον· τὸ γὰρ πλήθος ἀπὸ μονάδος ἀρχόμενον καὶ ἐπὶ τὸ πλεόν προχωρεῖν καὶ πέρασ οὐκ ἐπιδέχεται· τὸ δὲ μέγεθος ἀπὸ ὄγκου ἀρχόμενον, εἴτα εἰς λεπτότερα κατατεμνόμενον τὴν ἀπειρίαν ἔχει καὶ τὸ ἀόριστον μέχρι σημείου, οὗ μέρος οὐδὲν τηρηθῆναι μὴ δυνάμενον.

In line 49 ταῦτα refers to τὸ συνεχές καὶ τὸ διωρισμένον.

Lines 66 ff.: The reference is to the *Republic*, Book VII, especially 519 C 8ff. *Cf.* Asclepius, *In Metaph.*, p. 20, 6–16 (Hayduck): ὥστε ἡ σοφία οὐ τῆς πράξεώς ἐστιν, ἀλλὰ τῆς θεωρίας. ὁμῶς μέντοι γε ὁ Πλάτων παρακαλεῖται τοὺς φύλακας ἀνάγειν μέχρι τῆς πρώτης θεωρίας· εἰτά φησιν ὅτι καὶ πάλιν μετὰ τὸ ἀναγαγεῖν αὐτοὺς καταγάγωμεν ἐπὶ τὴν ὕλην καὶ τὴν φροντίδα τῶν ὑλικῶν πραγμάτων. καὶ φησιν "ἐποφείλουσι γὰρ τῇ θρεψαμένη τε καὶ παιδευσάσῃ αὐτοὺς καὶ τοιούτους ἀποτελεσάσῃ." ὥστε οὐ δεῖ λέγειν "διὰ τί γεωμετροῦμεν ἢ ἀστρονομοῦμεν; οὔτε γὰρ ἐστὶ κέρδος ἐντεῦθεν." αὐταὶ γὰρ αἱ ἐπιστήμαι ζητοῦνται οὐ διὰ κέρδος, ἀλλὰ διὰ τὸ ἀγαθὸν τῆς ψυχῆς· κλίμαξ γὰρ ἐστὶν καὶ δι' αὐτῶν, φησὶν, ἀνερχόμεθα ἐπὶ τὴν πρωτίστην πασῶν ἐπιστημῶν, τὴν ὄντως σοφίαν, ἣτις οὐ δι' ἄλλο ἀλλὰ δι' αὐτὴν ἐστὶν αἰρετή.

In line 69, in favor of ἀνάγεσθαι are Philoponus, Asclepius, lines 64 and 67, and Asclepius, *In Metaph.* quoted above. Plato (*Republic* 519 C 9) has ἀφικέσθαι.

Lines 76–80: The quotation from Proclus does not occur in the commentary of Philoponus. I am unable to identify this quotation in the extant writings of Proclus. See Iamblichus, *Protrepticus*, p. 47, 12 ff. (Pistelli).

In line 76 we should probably keep ὃ = "that which" = "as"; to read the article would be perhaps too harsh. At first it may appear that ὃ is the relative of ταῦτα in line 80; but in lines 80–81, ταῦτα ἐστὶν ἃ βούλεται διὰ τούτων διδάσκει, does not refer to Proclus but to Nicomachus or to Ammonius (*cf.* Introduction, p. 17).

Asclepius I. ιγ–18

Here the lemmata of Asclepius and Philoponus are different. The corresponding paragraphs in the commentary of Philoponus are in the reverse order; *cf.* Introduction, p. 13.

Asclepius I. ιγ

Line 2: οὐ γὰρ τῶν ὄντως νοητῶν. *Cf.* Philoponus I. ιη 1–2: οὐδὲ γὰρ περὶ τῶν κυρίως νοητῶν ὑπερκοσμίων ὁ λόγος νῦν, ἀλλὰ περὶ τῶν μαθημάτων.

In lines 2 ff. Asclepius refers to the famous passage of the divided line, that is, *Republic* 509 D ff. *Cf.* Asclepius, *In Metaph.*, p. 142, 7–11 (Hayduck): καὶ ὁ Πλάτων πάλιν ἐν τῇ Πολιτείᾳ λαμβάνει μίαν εὐθείαν καὶ τέμνει αὐτὴν δίχα εἰς νοητὴν οὐσίαν καὶ αἰσθητὴν, καὶ τὴν νοητὴν διαιρεῖ εἰς τε νοητὴν καὶ διανοητὴν καὶ πάλιν τὴν ἄλλην εἰς αἰσθητὴν καὶ εἰκαστήν.

In line 6 there is a reference to the λόγοι δημιουργικοὶ which is not reproduced by Philoponus.

Asclepius I. ιθ

What Asclepius says about Androcydes is based on Nicomachus I.3.3. Androcydes is mentioned by [Iamblichus], *Theologumena Arithmeticae*, p. 52, 9–10 (de Falco) as Ἀνδροκύδης τε ὁ Πυθαγορικός ὁ περὶ τῶν συμβόλων γράψας. Philoponus I. κα 18–24 who expands what Nicomachus reports about Androcydes probably did not have before him anything but the text of Nicomachus.

Asclepius I. κ-κγ

Here again what Asclepius and Philoponus report about Archytas is based on the quotation that Nicomachus has (Nicomachus, p. 6, 17–p. 7.4 [Hochel]) = Archytas B 1 (vol. I, p. 431, 36–p. 432, 9 [Diels-Kranz]).

Asclepius I. κα

In lines 2–3 the manuscripts of Asclepius read εἰ μὲν ἀδελά. The correction to εἰμεν ἀδελφεά is necessary and is guaranteed by the text of Nicomachus. This is one more example that A and M go back ultimately to the same archetype (cf. Introduction, p. 21).

Asclepius I. κβ-κγ

These paragraphs are in the reverse order. For an example of this in the commentary of Philoponus, cf. Introduction, p. 13 and above note to I. ιγ-ιδ. But, whereas in the case of Philoponus the same paragraphs in the correct order are given by Asclepius, in the present case Philoponus has no corresponding passage to Asclepius I. κγ.

Asclepius I. κδ-λ

Here Asclepius and Philoponus comment on *Epinomis* 991 E 1–992 B 3 which is quoted by Nicomachus probably from memory. That Asclepius and Philoponus based their comments on the quotation given by Nicomachus is shown by the fact that they both read εἰ τις εἰς ἐν βλέπων as does the text of Nicomachus according to Hoche. Apparently not all the manuscripts of Nicomachus have εἰ (cf. D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 185, n. 3), but even so it is clear that the text of Nicomachus which Asclepius and Philoponus had in front of them was the same, in this respect, as the one adopted by Hoche. In Philoponus I. κζ Plotinus is quoted; this quotation does not occur in the commentary of Asclepius; but the same passage of Plotinus was referred to by Asclepius and Philoponus in I. α (cf. above n. to I. α).

κδ. 1: εἴρηται. Cf. Asclepius I. α, 49ff.

Asclepius I. κη

In lines 1–3 Asclepius refers back to I. ια 29–30. Same reference backward in Philoponus, I. κη.

Asclepius I. κθ

In line 2 after οὐ δυνάμεθα either one must indicate a lacuna, for there is something like πρὸς φιλοσοφίαν ἰέναι (cf. Philoponus I. κθ, 2) missing, or one must suppose that ἐπὶ τὰ νοητὰ δεῦσαι goes also with οὐ δυνάμεθα.

This paragraph of Asclepius is very close in language to Philoponus I. κθ and yet we can discern here signs of Philoponus' re-elaboration. This re-elaboration is not limited to his expansions of the text which contained the notes from Ammonius' course; in the quotation of Hesiod, *Opera et Dies* 291–292 (cf. Rzsch's *editio maior ad loc.*), Philoponus has suppressed ἦν δ' ἐς ἄκρον ἵκηται.

In lines 11–15 Asclepius quotes an anecdote narrated by Ammonius. This anecdote is also present in the Philoponus

text, but Philoponus has changed it in order to underline his special relationship to Ammonius; cf. Philoponus I. κθ 8–11: ποτὲ γοῦν τις ἐμοὶ συνήθης ἀπόδειξιν γεωμετρικοῦ τινὸς θεωρήματος ὑπὸ τοῦ διδασκάλου παραλαβὼν καὶ τῇ κατασκευῇ λίαν ἐφηδόμενος, ἐπειδὴ πρὸς τῷ συμπεράσματι γέγονεν, ἀνίστασθαι ἔφη τοῦ λόγου πέρας εἰληφότος, ὥσπερ εἰ τις ὄψω λίαν ἡδοντὶ ἢ ποτῶ τι, ἐπειδὴν δαπανηθεὶς λυπούμενος. See Introduction, p. 13 and Westerink, *R.E.G.* 77 (1964): pp. 534–535.

Asclepius I. λα

In line 6, after βαδίσαι, with which Philoponus finishes his commentary on κλιμαξί τισι, Asclepius continues with αὐτὰ καθ' αὐτὰ εἰσι θεῖα τὰ μαθήματα καὶ οὐ μετὰ τῶν ἐνύλων. In the manuscripts of Asclepius these words are indicated as a new lemma, but in the text of Nicomachus we find nothing like it. It is possible that we have here another instance of the fact that the commentary of Asclepius was left in large measure unrevised (cf. Introduction, pp. 12 ff.), but it is more likely that in the present case there has been a shift in order to comment on another part of Nicomachus' text and that a scribe mistook these words for a new quotation. At any rate with αὐτὰ καθ' αὐτὰ κτλ. Asclepius comments on Nicomachus I. 3.6 τῇ δὲ αὐλῇ κτλ.

In line 9 there is an obvious shift to Nicomachus I. 3.7 ὁμῶς γὰρ τῆς ψυχῆς κτλ. Philoponus I. λα 5 quotes *Odyssey* IX. 36; this is not included in the commentary of Asclepius.

In lines 17–18 Asclepius quotes Homer, *Iliad* V. 127–128. The same lines are quoted by Philoponus (I. λβ 16–17) with some variations. The text given by Asclepius is on the whole better.

Philoponus I. λα paraphrases a passage of Plato's *Republic* which is also paraphrased by Nicomachus; there is nothing like this in Asclepius.

Asclepius I. λγ

Asclepius starts by referring back to the passages where it was pointed out that it is impossible to arrive at the goal of true philosophy unless one has acquired enough knowledge of the four mathematical sciences, i.e. arithmetic, geometry, music, and astronomy (cf. Asclepius I. α, ια, ιθ, κδ, κη, κθ). Same reference backward in Philoponus I. λγ.

In lines 5–8 Asclepius paraphrases Nicomachus' statement that the ideas are the thoughts in the mind of God (Nicomachus I. 4.2) and his special reference to arithmetic with the words ἡ ἀριθμητικὴ πολιτεύεται παρὰ τῷ δημιουργῷ, εἰ γε ἐκεῖ εἰσιν οἱ λόγοι τῶν εἰδῶν πάντων. Same description in Philoponus I. λδ, 1–2. Asclepius continues his explanation insisting, as he has done before, that what is in the mind of God is really the *LOGOI* of things or forms, not the things or forms themselves (cf. above Asclepius I. ιγ and n. *ad loc.*). In the reference to Homer Asclepius only mentions Athena and Hephaestus, whereas Philoponus adds a reference to Apollo.

In line 9 the manuscripts read μετρικός, whereas the correct reading must be μετρητικός (cf. Introduction, p. 21).

In line 42 ὁ γεωμέτρης is of course Euclid and the reference itself says that it is to Book V of the *Elements*. Same reference in Philoponus I. λδ, 25. After showing that arithmetic is the first of the four sciences to be studied because it is arithmetical number that the λόγοι τῶν εἰδῶν imitate in the mind of God, Asclepius goes on to show that also by its very nature arithmetic is to be studied before geometry, music, and astronomy. Philoponus I. λδ has the same content and the two texts are very close

here; yet Philoponus has modified one thing here, another there, and the reader should compare carefully the two passages to become aware of the way in which Philoponus edited the notes from Ammonius' lectures on Nicomachus.

Asclepius I. λη

Here the manuscripts of Asclepius read καθάπερ οὐ τὸ μέγα in the lemma. In cases such as this I have emended, because the text of Nicomachus and the sense guarantee the true reading. The mistake might have been prompted by the fact that Asclepius had in mind οὐ μόνον... καθάπερ τὸ μέγα τοῦ μείζονος; he might have written οὐ... καθάπερ κτλ. and this was changed by a scribe to καθάπερ οὐ.

Asclepius I. μ

In the corresponding passage of Philoponus there is a reference to the Pythagoreans *à propos* of the "music of the spheres." There is no such reference in Asclepius.

Asclepius I. μα

In lines 1-5 Asclepius recalls that it has been said that only through the four mathematical sciences can we reach philosophy (*cf.* Asclepius I. α, ια, ιθ, κδ, κη, κθ, λγ, etc.) and also that it was shown that arithmetic is by nature prior to geometry, music, and astronomy (*cf.* Asclepius I. λγ and ff.). Now he says that we must study the model that is in the mind of God, that is number (*cf.* lines 5-8). This has also been said in the commentary to Nicomachus I. 4.2. The same references backward are to be found in Philoponus I. μβ 1-5. The rest is based on Nicomachus I. 6 which, in its turn, develops the cosmological ideas of the *Timaeus* in Neopythagorean fashion.

In lines 12ff. Asclepius, following Nicomachus, says that the "dianoetic" number is a composite, σύγκειται ἄρα ἐξ ὄντων καὶ ὁμογενῶν καὶ ἐναντίων. This definition and the one in lines 23-26 ἡ ἁρμονία ἐξ ἐναντίων σύγκειται, οἱ Πυθαγόρειοι δηλοῦσι· φασὶ γὰρ ὅτι ἁρμονία ἐστὶ πολυμυγιῶν καὶ δίχρα φρονεόντων ἔνωσις (this latter definition is taken verbatim from Nicomachus II. 19.1) probably go back to the fragments attributed to Philolaus; *cf.* especially fragments 2, 4, and 10 (the last is precisely Nicomachus II. 19.1) = vol. I, pp. 407, 408-411 (Diels-Kranz).

Asclepius I. μδ

In lines 3-5 Asclepius reports the opinion of Amelius, the student of Plotinus, according to whom even the λόγοι τῶν κακῶν are in the mind of God; this text is also reported by Philoponus I. με 2-3, but there is a misprint in Hoche's edition which has ἀμέλει in line 2 instead of Ἀμέλιος (the misprint is noticed by Hoche himself at the bottom of p. 52 of the first book). This misprint is probably the reason why the commentary of Philoponus on Nicomachus was not quoted by Zoumpos as the source of fr. XXXVIII of Amelius. *Cf. Amelii Neoplatonici Fragmenta*. Collegit A. N. Zoumpos, Pars Prior. (Athenis, 1956). Zoumpos gives as his source for this fragment A. Mai's *Spicil. Rom.* II, 20, which contains a selection of texts taken from Philoponus' commentary.

Asclepius I. με

The manuscripts of Asclepius give as lemma καὶ αὐτὸν ἐπιστημονικόν. I have added τόν, which is also the reading of some manuscripts of Nicomachus (Cμ). I have corrected the text according to the text of Nicomachus, because there appears to be a mistake by a scribe.

Asclepius I. μθ

Asclepius here paraphrases the definitions of number given by Nicomachus. The definition of number as a collection of units most probably originated with the early Pythagoreans in the fifth century B.C. (*cf.* Cherniss, *Aristotle's Criticism of Presocratic Philosophy* [Baltimore, 1935], pp. 387-389). The second definition or "fluxion" theory is later. On the definitions of number see Heath, *The Thirteen Books of Euclid's Elements* 2: p. 280; see also Iamblichus, *In Nicomachi Arith. Introd.*, pp. 10, 8- 11, 26 (Pistelli), who expands the number of definitions given by Nicomachus. *Cf.* Heath, *A History of Greek Mathematics* 1: pp. 69-70.

Asclepius I. νδ

1-3: Both Asclepius and Philoponus misunderstand Nicomachus (pp. 13, 20-14, 4 [Hoche]) by relating παρεμφάνων to δυνάδος instead of to ἄριστος, since any even number can be divided into two even or two odd numbers.

Asclepius I. νς

We can see that in this paragraph Asclepius is more explicit than Philoponus in his explanation, but this does not make his text clearer; Philoponus in the corresponding paragraph has suppressed Asclepius' unnecessary repetitions of examples.

Asclepius I. νζ

For Nicomachus' definition of number in I. 8.1 and the special rôle that he assigns to the monad or unit because of this definition, *cf.* D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 48 and note 1.

Asclepius I. νη

In line 1, εἰρήκαμεν refers to μα, especially lines 35-37.

Asclepius here merely paraphrases Nicomachus' tripartite division of even numbers. He also follows Nicomachus in the tripartite division of odd numbers (which Nicomachus develops in I. 11 ff.). Euclid in Book VII of the *Elements* has a quadripartite classification (even-times even, even-times odd, odd-times even, and odd-times odd) which applies to all numbers, whereas Nicomachus' classification of the even and of the odd (which he divides into three parts to balance the tripartite classification of the even) is not very significant. *Cf.* Heath, *A History of Greek Mathematics* 1: pp. 70ff. See also Heath's notes on Euclid Book VII, Definitions 11-14 and D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 192, n. 2 and p. 201, n. 1. It is to be noticed that in the corresponding passage Philoponus gives only the classification of the even number, not that of the odd number; see below note to I. πγ.

Asclepius I. νθ

In line 3 there is a shift to comment on παρακολουθεῖ δὲ αὐτῷ (= Nicomachus I.8.6) and this corresponds to Philoponus I. ξς.

This passage of Asclepius has a somewhat confused way of stating what Philoponus develops with much more clarity in I. ξς. The interpretation of δύναις as the quotient of a number when the latter is divided, which both Asclepius and Philoponus give as the meaning of the word in Nicomachus, is probably mistaken. δύναις here should be translated as "value"; *cf.* D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 193, n. 3 and the references there given.

Asclepius I. ξα

In this passage, and in the corresponding passage in the commentary of Philoponus (= Philoponus I. ξη), Euclid is criticized for his definition of the "even-times even." This refers to Euclid, *Elements* Book VII, Definition 8: ἀρτιάκις ἄρτιος ἀριθμός ἐστιν ὁ ὑπὸ ἄρτιου ἀριθμοῦ μετρούμενος κατὰ ἄρτιον ἀριθμόν. Of course this criticism does not have any validity, for it depends on the acceptance of the tripartite division of the even number that Nicomachus has given. Euclid's classification is different and is better than the classification given by Nicomachus; cf. above note to I. νη and the references there given. Criticism of Euclid and the corresponding praise of Nicomachus is not an exclusive feature of the commentaries of Asclepius and Philoponus, for it is also a characteristic of the commentary of Iamblichus. Iamblichus himself criticizes the same definition of Euclid in similar terms; cf. Iamblichus, *In Nicom. Arith. Introd.*, pp. 20, 7–21, 4 (Pistelli). This is one more proof that the Neoplatonists (perhaps with the exception of Proclus) preferred Nicomachus' speculations on number to the more scientific treatment given by Euclid.

Asclepius I. ξβ

Asclepius here insists in his notion that δύναμις means quotient. Cf. above note to I. υθ.

Asclepius I. ξς

This passage of Asclepius really fails to explain fully what Nicomachus states in I. 8.10ff. The corresponding passage in the commentary of Philoponus is more precise. See also D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 194, note 2 and p. 195, notes 1 and 2. Asclepius I. ξς–οα and the corresponding passages of Philoponus are quite different from one another. The Philoponus text is a better commentary on Nicomachus.

Asclepius I. ξη

In line 4, καὶ μίαν κτλ. is a commentary on the series that has an even number of terms.

Asclepius I. οα

In line 1, ἐλέγομεν, refers to ξς, 2ff.

Asclepius I. οβ

Here the parallelism between the text of Asclepius and that of Philoponus starts again.

Asclepius I. ος

Asclepius' note to γινώσκοντες is not as full as that of Philoponus. Cf. also D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 197, n. 3.

In line 3 Asclepius starts to comment on Nicomachus I. 9.6 = Philoponus I. πζ.

Asclepius I. πα

In this instance Asclepius gives fewer examples than Philoponus. Both texts are merely a paraphrase of what Nicomachus says in I. 10.

In line 17, εἰρήκαμεν refers to οη, 8ff.

In line 53, after ποιεῖ there is a marginal note by M^a that I cannot decipher. It seems to be an addition to the text.

Asclepius I. πβ

This seems to have as parallel in the commentary of Philoponus, 9ε, 62ff.

Asclepius I. πγ

Asclepius here comments on Nicomachus' tripartite division of the odd number. One must notice, however, that Asclepius already gave the tripartite division of the odd number in I. νη, when he commented on Nicomachus' classification of the even number. In the corresponding passage of Philoponus the latter refers forward to his comments on Nicomachus I. 11.1 (see above note to I. νη). On Nicomachus' classification of odd and even number, see above note to I. νη with the references there given.

Neither Asclepius nor Philoponus notice that according to Nicomachus' definition of prime number also 2, which is even, would be prime. But for Nicomachus prime number is a subdivision of odd number, not of number in general. Cf. Heath, *The Thirteen Books of Euclid's Elements* 2: pp. 284–285 (on Euclid's definition of prime number [Euclid, Book VII, Definition 11]).

Asclepius I. πε

This does not have a parallel passage in the commentary of Philoponus.

Asclepius I. πς

For the method that Eratosthenes called the "sieve" and for its insufficiency, cf. Heath, *A History of Greek Mathematics*, 1: p. 100.

Asclepius I. ϑα

In line 5, οὗτος (sc. ὁ πέντε) γὰρ δεύτερος means that five is the second in the series of odd numbers.

Asclepius I. ϑγ–ϑδ

These two paragraphs have no equivalent in the commentary of Philoponus. The lemmata given by Asclepius differ from the text of Nicomachus.

Asclepius I. ρα

Lines 7–10 refer to πς.

Asclepius I. ρβ

In line 6 οἱ ἅπας refers to the fact that in the diagram of p. 41 the square numbers had only one number over them; cf. Philoponus (ρζ 4–5): οἱ ὑφ' ἐνὸς ἐφ' ἑαυτὸν πολλαπλασιασθέντος.

Asclepius I. ρε

This is a simple paraphrase of Nicomachus I. 13.10–13. For this method of determining common factors, see Euclid, *Elements* Book VII. 1 and Book X. 2.

Asclepius I. ρς

For the ethical distinctions made in lines 27ff., which are based on what Nicomachus says in I. 14.2, see Aristotle, *Eth. Nic.* 1106 B 24ff.

Line 36: For Bias, cf. *Frag. d. Vorsokr.* 1: p. 65 (Diels-Kranz).

In line 46, with ἐπεὶ τοίνυν κτλ., Asclepius starts a commentary on Nicomachus I. 16.4 (= Philoponus I. ριε).

Asclepius I. ρθ–ρι

Here the manuscripts of Asclepius are confused. The last sentence in ρθ, οἱ δὲ ἄλλοι πάντες τέλειοι κατ' ἐνέργειαν, is indicated in A, M, and P as a new lemma. But this obviously belongs to ρθ, whereas what follows is the commentary to Nicomachus I. 17.1 προτετεχνολογημένου κτλ., which the best manuscript of Asclepius gives as προτεχνολογησάμενου. So, having made the necessary emendation, I have taken this and the following words as the new lemma.

Asclepius I. ρι

In line 2, εἰρήκαμεν refers to ια, 53 ff.

Strictly the study of relative number should, according to Nicomachus' statement in I. 3.1, belong to music.

Asclepius I. ρια

This passage which paraphrases Nicomachus' classification of relative number is somewhat imprecise.

In line 31, οὐ γὰρ μέρος should be understood as οὐ γὰρ ἐν μέρος μόνον. Cf. Philoponus I, ργγ, 27.

In lines 45–48 the text of Asclepius is again confused and I have emended it in order to make it intelligible.

In lines 54–57 Asclepius mentions the (Pythagorean) notion that equality is the mother of inequality.

Asclepius I. ριδ

In line 3 the commentary shifts to comment on Nicomachus I. 18.1 (= Philoponus I. ρκθ).

Asclepius I. ρκ

In line 1, εἰρήκαμεν refers to ριη, 17–19.

Asclepius I. ρκδ

Asclepius and Philoponus paraphrase Nicomachus' definition of πυθμὴν and give examples of it. πυθμὴν is the lowest ratio in a series of equal ratios. πυθμένες is already used in this sense by Plato, *Republic* 546 B–C. See D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 216, note 1. For a different use of πυθμὴν cf. Heath, *A History of Greek Mathematics* 1: pp. 115–117.

Asclepius I. ρκε

In lines 1–2, εἰρήκαμεν refers to ρια, 9 ff.

In line 2, σχέσεις refers to the divisions of relative number; this is stated by Philoponus I. ρλθ 1–2.

In line 5, after ἡ ἐπιμερές I have completed the sentence with ἡ πολλαπλασιαστικὸς ἡ πολλαπλασιαστικῆς; this is probably an omission of a scribe, since in the previous line it was said that there are five divisions of the μείζων.

In line 8, οὐ θέσει καὶ νόμῳ, ἀλλὰ φύσει is taken from Nicomachus I. 19.14 οὕτω φύσει θεῖα καὶ οὐ νόμῳ ἡμετέρῳ. This distinction was common in the Sophistic of the fifth century B.C.

In line 56 Asclepius jumps from the ἐπιμέριος to the πολλαπλασιαστικὸς, omitting the ἐπιμερές.

After line 90 the manuscripts of Asclepius reproduce the diagram that Nicomachus has in p. 51.

Asclepius I. ρκθ

In line 22 notice the καὶ which is suppressed by Philoponus in a sentence that otherwise is a verbatim reproduction of that of Asclepius. Cf. Westerink, *R.E.G.* 77 (1964): p. 531.

Asclepius I. ρλδ

In line 2, εἰρήκαμεν refers to ρκδ, 1–3.

Asclepius I. ρλη

In lines 8–9 I have excised τὸ δὲ τρίτον τοῦ τετάρτου μείζων; this phrase makes no sense here and is, in all probability, a scribal mistake: a scribe misunderstood δ'οὐ for "second" as τετάρτου.

Asclepius I. ρμα

Here Asclepius fails to explain the lemma of Nicomachus; Philoponus I. ρεγ gives the correct explanation. It is possible that Asclepius meant to explain only αἱ εἰδικαί; but even in this case rather than πολλαπλασιαστικὸς and πολλαπλασιαστικῆς he should have written διπλασιαστικὸς and διπλασιαστικῆς.

Asclepius I. ρμδ

I have included the words τὸ διπλάσιον γὰρ μένει in ρμγ where they obviously belong. These words are given by the manuscripts of Asclepius as the lemma of a new paragraph. This paragraph of Asclepius corresponds to Philoponus I. ρεξ but Philoponus gives as the lemma δὲ αὐτὸς γὰρ (= Nicomachus p. 60, 16–17 [Hoche]). There are several possibilities: either the manuscripts, or Asclepius himself, are wrong when they indicate a new paragraph here and τὸ διπλάσιον γὰρ μένει κτλ. is simply part of the previous paragraph, or only the words indicated as a lemma are part of the previous paragraph and the lemma of the new paragraph is lacking, or the manuscripts of Asclepius are correct and τὸ διπλάσιον γὰρ μένει is lacking in the text of Nicomachus in p. 60 after lines 4–5. The most probable alternative seems to me to be that the mistake is due to a scribe and that the lemma is παρὰ τὴν προσότητα παρονομασθήσεται; the scribe simply committed a mistake when he punctuated to indicate the lemma.

Asclepius I. ρν

According to the manuscripts of Asclepius the lemma includes ἐπεὶ ὡς εἴρηται εὐρεθήσεται τὸ αὐτό (line 2). But this must be a scribal mistake.

In line 2, ὡς εἴρηται refers to ρλε–ρλς.

Asclepius I. ρνβ

This passage should be compared with Philoponus I. ροη–ροθ. The passage of Asclepius is really parallel to ροθ. In the other paragraph, ροη, Philoponus has intercalated a philosophical digression.

Asclepius here paraphrases the principle of the "three rules" as enunciated by Nicomachus I. 23.7. If we have three equal terms, another three in different ratios can be derived from them, and, conversely, any proportion of three terms may be reduced to the original equality. The purpose of Nicomachus is to show that equality is the mother of any form of inequality (cf. also Asclepius I. ρια 54–57 and I. ρκε 12 ff. and II. α; the latter is his comment to Nicomachus II. 1.1). This principle was certainly known to Adrastus in the second century A.D. (cf. Theon, *Expositio Rerum Mathematicarum Ad Legendum Platonem Utilium*, pp. 107, 24–108, 8 [Hiller]). It is very likely that already Eratosthenes in the third century B.C. knew this principle of the three rules; cf. D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 225, n. 1 and the references there given. In the present passage Nicomachus gives the process of deriving from three equal numbers three unequal ones in different ratios; in II. 1–2 he gives the reverse process.

Asclepius II. α

In line 1, εἴρηται refers to I. ια, 53 ff., I. ρια, 1 ff., I. ρκε, 1 ff.

Here Asclepius describes the process of reducing three numbers which are in a given ratio to their original equality. See above note to I. ρνβ.

Asclepius II. δ

In the lemma the MSS of Asclepius give εἰς and then τὴν ἰσότητα κτλ., omitting the rest but preserving the sense. The passage in Nicomachus reads (Nicomachus is speaking of the process of reducing three numbers with a given ratio to the basic equality) . . . μέχρις ἀνελὶς ἰσότητα ἀναχθῶσιν· ἐξ οὗ πᾶσα ἀνάγκη δηλονότι ἀποφαίνεσθαι, τὴν ἰσότητα τοῦ πρὸς τι ποσοῦ στοιχείον πάντως εἶναι (Nic. p. 75, 11–14 [Hoche]). Therefore I postulate a lacuna after εἰς.

Asclepius II. ε

In lines 4–5 ἐν τῇ ψυχογονίᾳ Πλάτωνος refers to *Timaeus* 35 A ff.

Lines 7–8 are corrupt and I cannot suggest an emendation.

In line 19 Asclepius starts his comment on Nicomachus II. 3.1 and after λέγει γοῦν there is a verbatim quotation of Nicomachus; cf. Asclepius, lines 20–22.

In line 20 ἡγήσεται means, with reference to the table in II. 3.4, “it will head a column.” Cf. D’Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 231, n. 4.

In line 48 Asclepius starts his comment on Nicomachus II. 3.2, but there is no lemma, though ἀπὸ δὲ τῶν τριπλασίων οἱ ἐπίτριτοι πάντες (Nicomachus, p. 76, 13–14 [Hoche]) is probably meant.

In line 64, ἐν τῇ ψυχογονίᾳ refers to *Timaeus* 35 A ff.

In line 70 the commentary shifts to comment on Nicomachus II. 4.3. Asclepius starts with a quotation from Nicomachus, p. 79, lines 14–16 (Hoche), from which he omits only of ἀνωτάτω.

Asclepius II. ζ

In line 21 the commentary shifts to Nicomachus, II. 5.5.

In line 32 Euclid is mentioned (same reference in Philoponus, II. κ 6). Cf. Euclid, *Elem.* VI, def. 5.

Asclepius, II. ι

The three alphas that the manuscripts have after ὑποτέτακται (lines 4–5) are meant to be an example of παράλληλος ἔκθεσις.

Asclepius, II. θ

For the role of the six categories of relative position and motion in Neopythagoreanism, see D’Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 238, n. 4 and the references there given.

Asclepius II. ια

In line 14, after εὐρίσκω ὅτι ὁ δ obviously a scribe has omitted συντίθημι τὸν δ καὶ τὸν ε, γίνονται ἰ ὁ ἰ ἄρα τρίγωνος. πάλιν ζητῶ τοῦ δ τίς ὑπερέχει μονάδι, εὐρίσκω ὅτι ὁ ε; (cf. critical apparatus for the reading of A in lines 13–14). The mistake was caused by homoioteleuton.

In lines 37–38, ἔστι δὲ καὶ ἄλλη μέθοδος τετραγώνων, ἣτις δορυμάζεται δίαυλος, εἰρηται δὲ καὶ ἐν ταῖς Φυσικαῖς, refer to a course on Aristotle’s *Physics* given by Ammonius; see Philoponus, *In Phys.*, p. 393, 15–27 (Vitelli) which is based on Ammonius’ lectures; cf. Introduction, p. 14 f.

Asclepius II. ιβ

In line 26, εἰρήκαμεν refers to II. ε, 72 ff.

After line 50 the manuscripts of Asclepius reproduce the diagram that Nicomachus has in p. 97, except that one more line with the ὀκτάγωνοι is added. The principle that Nicomachus enunciates in II. 11.4 and which Asclepius (lines 1–25) and Philoponus (II, ια) paraphrase was enunciated in the second century B.C. by Hypsicles; cf. *Diophanti Alexandrini Opera Omnia*, I: pp. 470, 27–472, 4 (Tannery): καὶ ἀπεδείχθη τὸ παρὰ Ὑψικλεῖ ἐν ὄρω λεγόμενον ὅτι ἐὰν ὦσιν ἀριθμοὶ ἀπὸ μονάδος ἐν ἰσῇ ὑπεροχῇ ὁποσοιοῦν, μονάδος μενούσης τῆς ὑπεροχῆς, ὁ σύμπαρ ἔστιν <τρίγωνος, δυάδος δέ>, τετράγωνος, τριάδος δέ, πεντάγωνος λέγεται δὲ τὸ πλῆθος τῶν γωνιῶν κατὰ τὸν δυάδι μείζονα τῆς ὑπεροχῆς, πλευραὶ δὲ αὐτῶν τὸ πλῆθος τῶν ἐκτεθέντων σὺν τῇ μονάδι. See also, *op. cit.*, p. 472, 20 ff.

Asclepius II. ιγ

After line 32 Asclepius is confused about the pyramidal numbers that follow 10; the next is 20, not 15, etc. Asclepius has confused the bases with the pyramidal numbers.

Asclepius II. ιδ

In line 3, ὡς εἰρηται refers to II. ιγ, 13 ff.

Nicomachus (p. 104, 2–4 [Hoche]) says that we may encounter the names of the truncated pyramidal numbers ἐν συγγράμμασι μάλιστα τοῖς θεωρηματικοῖς. Now both Asclepius (lines 8–12) and Philoponus (II, ν, 4) take this to be a reference to a sort of *Theologumena* such as the one that Nicomachus himself wrote. This interpretation of the reference is approved by Tannery, *Mémoires scientifiques* 2: pp. 188–189. But Nicomachus may simply be referring to theoretical writings on Arithmetics; at any rate there is no reason to think that in the *Theologumena* Nicomachus treated of the numbers that are truncated pyramids.

Asclepius II. ις–ιη

The anecdote about the duplication of the cube is not included in the commentary of Philoponus. For the anecdote cf. Theon Smyr. (from Eratosthenes’ *Platonicus*), p. 2, 3–12 (Hiller); Eratosthenes, *ap.* Eutocius, *In Archim.* (3: pp. 88, 23–90, 11 [Heiberg] cf. Hiller, *Eratosthenis Carminum Reliquiae*, pp. 122–137); Plutarch, *De E ap. Delph.* 386 E; *De genio Socr.* 579 A–D; Philoponus, *In Anal. Post.*, p. 102, 12–20 (Wallies), *Anonymous Prolegomena*, 5. 15–24 (p. 11 [Westerink]). See Heath, *A History of Greek Mathematics* 1: pp. 244–270. The manuscripts of Asclepius have a scholion which I have transcribed in the Introduction, note 30.

In ιη after λήγουσιν in line 52 A has omitted some words, but because the manuscript is damaged I cannot read the first two lines of the page (cf. Introduction, p. 21).

Asclepius II. ια

In lines 7–8 the reference is to *Timaeus* 35 A ff.

Lines 87–91: the text is corrupt in line 89, but the emendation (ἀποπάλλεται) is guaranteed by a parallel passage of Asclepius where the same experiment is described; Asclepius, *In Metaph.*, p. 92, 20–25: ὁμοίως καὶ ἐπὶ τῆς διὰ πασῶν ἀρμονίας, ἣτις ἐστὶ καὶ κατακορεστέρα· ἔστι δ’ ὁ τοιοῦτος λόγος διπλάσιος. διὸ ἐὰν τις πλαγίαν θείῃ τὴν κιθάραν, ἐμβάλοι δὲ κάρφος εἰς τὴν νευρὰν τὴν ἀποτελοῦσαν τὸν διπλάσιον λόγον, κρούσῃ δὲ πρὸς ἣν ἡ σχέσις, ἀποπάλλεται τὸ κάρφος· τοσαύτη ἐστὶν ἡ συμπτώθια, καίτοι ἄλλων καρφῶν, εἴπερ εἴεν, μὴ κινουμένων. Cf. also Aristides Quintilianus, *De Musica* II, xviii (p. 90, 2–6 [Winnington-Ingram]): εἰ γὰρ τις δύο χορδῶν ὁμοφώνων ἐς μὲν τὴν ἐτέραν σμικρὰν ἐνθείῃ καὶ κούφην καλὰ μὴν, θατέραν δὲ πόρρω τεταμένην πλῆξῃ, ὅπως τὴν καλαμηφόρον ἐναργέστατα συγκινουμένην· δεινὴ γὰρ ὡς ἔοικεν ἡ θεία τέχνη καὶ διὰ τῶν ἀψύχων δρᾶσαι τι καὶ ἐνεργῆσαι.

Asclepius II. ιβ

In line 2, εἰρήκαμεν refers to II. ια.

Asclepius II. λ

In line 3, εἰρηται refers to II. ια, 11 ff.

Asclepius II. λβ

In lines 58 ff. the reference is to *Timaeus* 31 B 4 ff.

In line 63 the reference is to Plato, *Republic* 545 D ff. Nicomachus himself refers to this passage of the *Republic* (cf. Nicomachus II, 24.11 [p. 131, 7 ff., Hoche]). Philoponus refers to the passage of the *Timaeus*, but not to that of the *Republic*; he adds, however, a reference to Homer’s Golden Chain and an allegorical interpretation of it.

Asclepius II. λγ

Since what is said in lines 8–10 is at variance with what was said about the arithmetical proportion at the beginning of the paragraph, we must assume that ἐνταῦθα in line 8 refers to the harmonic proportion; ἐνταῦθα, *sc.* ἐν τῇ ἀρμονικῇ ἀναλογίᾳ.

Asclepius II. λε

Here again in line 6 we have a lacuna, for the multiplication of 4 by 9 is lacking.

Asclepius II. λς

In line 1, εἰρήκαμεν refers to II. λβ, 73 ff.

In line 11, εἰρηται refers to II. κα, 11 ff., λβ, 78–79 and ff., etc.

In line 16, ἐδιδάξαμεν refers to I. ια, 53 ff., I. ρια, 4 ff., I. ρκε, 1 ff., II. α, 1 ff.

Asclepius II. λη

In lines 5–6 there is a mistaken reference to Aristotle's *On The Soul*. This reference, which is not to be found in the commentary of Philoponus, is another proof that the commentary of Asclepius was left unrevised (*cf.* Introduction, p. 12f.). It should be noticed that in Nicomachus, p. 135, line 12 (Hoche), the subject of φασί is those who agree with, or follow, Philolaus, and this same opinion held by Philolaus' followers is attributed by Asclepius to Aristotle. This mistaken reference can perhaps be explained. In the school of Ammonius a passage of Aristotle's *De Anima* (410 A 1–6) where Empedocles is quoted was taken to represent the Pythagorean notion that the cube, a harmonic proportion, was the structure of the earth, etc. *Cf.*, e.g., Philoponus, *In De Anima*, p. 176, 28 ff., a lengthy passage from which I quote only pp. 176, 32–177, 8: ἴσμεν ὅτι εἰς τὴν γένεσιν τῶν ὄντων τοὺς ἀρμονικοὺς οἱ Πυθαγόρειοι παρέλαμβανον ἀριθμούς. εἰς τὴν γένεσιν οὖν τῶν ὁσῶν παραλαμβάνει τὸν ὀκτώ, διότι πρῶτος κύβος ὁ η, τὸ δὲ κυβικὸν σχῆμα ἀπονέμουσι τῇ γῇ, ... ὁ δὲ κύβος σύγκειται ἐξ ἀρμονικῶν ἀριθμῶν· ἔχει γὰρ πλευρὰς μὲν δώδεκα, γωνίας δὲ ὀκτώ, ἐπίπεδα δὲ ἕξ· ἔχουσιν οὖν τὰ μὲν δώδεκα πρὸς τὸν ὀκτώ τὸν ἡμιόλιον λόγον, πρὸς δὲ τὰ ἕξ τὸν διπλάσιον, ὁ δὲ ὀκτώ πρὸς τὸν ἕξ τὸν ἐπίτριτον. οὗτοι δὲ οἱ ἀριθμοὶ ποιοῦσιν ἀρμονικοὺς λόγους· κτλ. See also Simplicius, *In De Anima*, p. 68, 5–8: 'ἐπίπερος' δέ, τουτέστιν ἐναρμόνιος, εἰρηται ἢ γῇ ὡς κύβος κατὰ

τὴν Πυθαγόρειον παράδοσιν· τὸν γὰρ κύβον διὰ τὸ δώδεκα μὲν ἔχειν πλευρὰς ὀκτώ δὲ γωνίας ἕξ δὲ ἐπίπεδα τὴν ἀρμονικὴν ποιοῦντα ἀναλογίαν ἀρμονίαν ἐκάλουν. Ammonius, then, while lecturing made this reference to Aristotle's *De Anima*, a text into which he read the notion that the cube was a harmonic proportion; Asclepius did not remove or change this mistaken reference probably because he did not revise this part of the commentary; Philoponus omitted the reference altogether.

In line 8, εἰρήκαμεν refers to II. κα, 67 ff.

Asclepius II. μ

In line 50 περὶ τούτων τῶν μεσο... A ends. *Cf.* p. 21 and n. 106.

In lines 73–77 Asclepius repeats Nicomachus' statement in II. 28.3 that it is a characteristic of the subcontrary proportion that the product of the greater and the mean terms is twice the product of the mean and the smaller. This is a false inference of Nicomachus', for it happens to be true only of the particular example of subcontrary that he gives, namely, 3, 5, 6. *Cf.* Heath, *A History of Greek Mathematics* 1: p. 98. For the correct enunciation of the characteristic of this proportion (i.e., the product of the greater by the middle equals the product of the middle by the less multiplied by the ratio), *cf.* D'Ooge, Robbins, and Karpinski, *Nicomachus of Gerasa. Introduction to Arithmetic*, p. 282, n. 2.

Asclepius II. μβ

1: In M, ἀρμονικῆς τελειότητος, the final words of the previous paragraph, are indicated as a new lemma; but, since they seem to belong to the previous sentence, I have supplied τελειοτάτης (Nicom., p. 144, 20 [Hoche]) as the lemma of the new paragraph. For ἀρμονικὴν *cf.* also Nicom. II 26, 2.

64–66: Both Asclepius and Philoponus misunderstood Nicom., p. 146, 22–23 (Hoche); for the correct explanation see the addition to, or the gloss on, πρῶτων in the margin of Nicom. C: ἤτοι τῶν διὰ δ ἢ διὰ ε. *Cf.* also Boethius, *De Institutione Arithmetica* II, 54 (Friedlein): *unde notum est, quod inter diatessaron et diapente consonantiarum tonus differentia est, sicut inter sesquiertiam et sesquialteram proportionem sola est epogdous differentia.*

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 ἐπιτριτέταρτος, I. ρλγ. 33.
 ἐπίτριτος, I. ια. 58.
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 ἐπόγδοος, II. ε. 13.
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 ἐπταπλάσιος, I. ριη. 20.
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 ἔσπερία, I. λγ. 80.
 ἑτερομήκης, I. πς. 111.
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 καθαρῶς, I. λα. 15.
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 κακός, I. μδ. 4.
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κολοβός, II. ιδ. 5.
κόλουρος, II. ιδ. 6.
κορυφή, II. ιγ. 16.
κόσκινον, I. πς. 4.
κοσμέω, I. δ. 5; I. λε. 5.
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μηχανική, I. α. 8.
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μουσικός (λόγος), I. λγ. 47.
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νοέω, I. γ. 36.
νοητός, I. γ. 21; I. ιγ. 9; I. μα. 11.
νόμος, I. α. 38; I. ρκε. 8.
νοῦς, I. γ. 49; I. ι. 11.
νυκτερίς, I. γ. 44.

ξυλάριον, II. λθ. 7.

ὁδός, I. α. 3; 62.
οἰκεία, I. γ. 40.
ὀκτάγωνος, II. ιβ. 24.
ὀκτάεδρος, I. λγ. 36.
ὀκταπλάσιος, II. ε. 66.
ὀλοκλήρως, I. ριε. 1–2.
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ὁμογενής, I. μα. 13–14; I. ση. 33.
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ὁμοιογενής, I. ση. 29–30.
ὁμολογία, I. κε. 4.
ὁμοταγής, II. ε. 74.

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ὁμωνύμως, I. ε. 2.
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ὄνομα, I. α. 46.
ὄντως, I. α. 3.
ὄργανον, II. λζ. 16.
ὀρθόγωνος, II. κα. 55.
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ὀρισμός, I. μα. 38.
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παρακολουθῶ, I. ση. 28.
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παρώνυμος, I. νθ. 8.
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πέραις, I. ι. 5.
περίοδος, I. μ. 6.
περιοριστικός, I. λγ. 10–11.
περιττός, I. ια. 56; (τὸ πρῶτον καὶ ἀσύνθετον, τὸ δεύτερον καὶ σύνθετον, τὸ ἐν μέσῳ τούτων [= τὸ πρὸς μὲν ἑαυτὸ σύνθετον καὶ δεύτερον πρὸς δὲ ἄλλο πρῶτον καὶ ἀσύνθετον, I. νη. 11–13], I. μα. 31–33.)
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πηλικότης, II. σ. 36.
πίπτω, I. ο. 7.
πλάτος, II. σ. 80.
Πλατωνικός, I. α. 2; I. κδ. 4; II. ιθ. 18.
πλεονεξία, I. ρς. 28.
πλευρά, I. πδ. 2.
πλήθος, I. ια. 51.
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ποιέω, I. ξε. 14.
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πολλαπλασιάζω, I. η. 6.
πολλαπλασιασμός, I. πα. 82.
πολλαπλασιεπίδιτριτος, I. ρμα. 1–2.
πολλαπλασιεπιμερής, I. ρια. 35.
πολλαπλασιεπιμόριος, I. ρια. 32.
πολλαπλασιεπιτέταρτος, I. ρμα. 2.
πολλαπλασιεπιτριτος, I. ρνς. 5.
πολλαπλασιεπιμόλιος, I. ρνς. 8–9.
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πρόβασις, II. ιγ. 27.
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πρόθεσις, I. ρκε. 7.
προκέντημα, I. λε. 1.
προκοπή, I. ρα. 8.
προκόπτω, II. ια. 46–47.
πρόλογος, I. ρκβ. 2.
προμήκης, I. πς. 112; II. η. 7.
προποδισμός, I. λγ. 78.
πρόσθεσις, I. να. 7.
προστίθημι, I. οβ. 54.
προϋπόκειμαι, I. λη. 3.
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Πυθαγορικῶς, I. ξα. 1.
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ρήγνυμι, II. λζ. 16.
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σαφία, I. α. 7; 8.
σαφῶς, I. οβ. 101.
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σημεῖω, II. ι. 33.
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στιγμή, II. σ. 106.
στοιχεῖον, I. μα. 18; II. α. 7.
συγγενής, I. κα. 3; I. κβ. 1; 2.
σύγκειμαι, I. μα. 12.
συμβολικῶς, II. η. 39.
σύμβολον, II. ε. 5.
συμμετρία, II. κα. 91.
συμφθέγγομαι, II. κα. 90.
συμφωνέω, II. ιβ. 27.
συμφωνία, I. κε. 8.
συναναιρέω (τὸ συναναιροῦν), I. λγ. 23.
συναριθμέω, II. ιζ. 4.
συναρμόζω, I. μα. 27.
συνεισφέρω, I. λγ. 24; 29; 30.
συνέχεια, I. ια. 35.
συνεχής, I. ια. 34; 36; 42; I. ιβ. 1.
σύνθεσις, I. πα. 81; II. λε. 2–3.
σύνθετος, I. μα. 12; I. πγ. 30.
συντίθημι, I. νζ. 4.
σύστασις, I. κε. 2–3.
σύστημα, I. κε. 2.
σφαῖρα, I. λγ. 69.
σφαιρικός, I. λγ. 58; II. η. 38.
σφηκός, II. ις. 4.
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τελείως, I. ριε. 4.
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τετραπλασιάζω, I. ρκγ. 2.
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τεχνίτης, I. λδ. 1.
τίκτω, II. ε. 6.
τμήμα, I. νδ. 3.
τομή, I. ν. 12.
τονιαῖος, II. μβ. 60.
τόνος, II. μβ. 62.
τόπος, I. ι. 2.
τρεπτική, I. ζ. 3.
τρεπτόν, I. γ. 55; 77.
τρέπω, I. ζ. 5.
τριάς, II. κα. 16.
τρίγωνος, I. λγ. 39.

τρικόλουρος, II. ιδ. 7.
τριπλασιάζω, I. ρκβ. 9.
τριπλασιεπίτριτος, I. ρμγ. 6.
τριπλάσιος, I. λγ. 37.
τριχές, I. λγ. 33.
τριωδουμένη, I. ρκθ. 12.
τροπή, I. ζ. 4.
τύχη, I. ια. 30.

ύλη, I. α. 52; I. γ. 18.
ύπεναντίος, II. μ. 86.
ύπεναντίως, II. λδ. 11.
ύπερασπίζω, I. ρλ. 4.
ύπερβαίνω, I. οβ. 32.
ύπερβολή, I. ρς. 26.
ύπερέχω, I. οβ. 58.
ύπεροχή, I. ρκη. 8.
ύπερτελής, I. ρς. 4.
ύπόδειγμα, I. οβ. 83.
ύποδιαίρεσις, I. πγ. 41.
ύποδιαίρνω, I. νη. 7.
ύποδιπλάσιος, I. πα. 8.
ύποεπιμερής, I. ρια. 50.
ύποεπιμόριος, I. ρια. 46.
ύποεπίτριτος, I. ρια. 48.
ύπόκειμαι, I. νθ. 14.
ύπόλογος, I. ρκβ. 1.
ύποπολλαπλασιεπιμερής, I. ρια. 53-54.
ύποπολλαπλασιεπιμόριος, I. ρια. 52.
ύποπολλαπλάσιος, I. ρια. 42-43.
ύπόστασις, I. ι. 4.
ύποτετραπλάσιος, I. ρις. 6.

ύποτίθημι, I. ξς. 3-4.
ύποτριπλάσιος, I. ρις. 4.
ύφημιόλιος, I. ρια. 47.

φαίνω (τὸ φαινόμενον, τὰ φαινόμενα), I.
ια. 33; II. κα. 10.
φαντασία, I. γ. 50.
φθόγγος, II. κα. 90-91.
φθορά, I. α. 52.
φιλία, I. α. 5.
φιλοσοφέω, I. ια. 6.
φιλοσοφία, I. α. 5.
φιλόσοφος, I. κδ. 6.
φορά, I. κε. 3.
φρέαρ, II. ς. 82.
φρόνησις, I. ρς. 31-32.
φροντίζω, I. ια. 70.
φυσικός, I. α. 42; II. κα. 6.
φύσις, I. α. 41; I. γ. 40.
φωνή, II. ις. 2.
φωνητικός, II. λζ. 16.
φῶς, I. α. 9.
φωτιστικός, I. γ. 38.

χορδή, II. κα. 88.
χρεία, I. α. 30.
χρόνος, I. γ. 9.
χύμα, I. μθ. 3.

ψυχή, I. γ. 66.
ψυχικός, I. λα. 10.
ψυχογονία, II. ε. 4.