SAMPLE FROM A 1703 EDITION OF

EUCLID
"THE ELEMENTS"

Euclid was a Greek mathematician, considered the "Father of Geometry". He lived in Alexandria around 300 BC, 2,300 years ago. He is mostly famous for writing this book "THE ELEMENTS" one of the most important books in the history of mathematics. Up to today it is the basis for all geometry school text books.

In the Elements, Euclid deduced the principles of what is now called Euclidean geometry from a small set of axioms. Euclid also wrote works on perspective, conic sections, spherical geometry, number theory and logic.

This edition of the elements in Latin and Greek was printed in Oxford England in the year 1703 under the supervision of David Gregory. David Gregory was an astronomer and university professor. He was a close friend and collaborator of Isaac Newton and helped Newton to publish his famous book the "Principia".

Here I translated the first page which begins with the most basic definition in Geometry, what is a point? "It is something that has no parts". Then I translated proposition 47 which is Euclid's proof of Pythagoras theorem, "the square of the hypotenuse is equal to the sum of the squares of the sides".

The book is leather bound with 700 pages containing all the 13 books of the Elements in two columns, Greek and Latin. The lower picture shows the introduction by Newton's friend David Gregory.

ΕΥΚΛΕΙΔΟΥ
ΤΑ ΣΩΖΟΜΕΝΑ.

EUCLIDIS
QUÆ SUPERSUNT
OMNIA.

Ex Recenſione DAVIDIS GREGORII M. D.
Aſtronomiæ Profeſſoris Saviliani, & R. S. S.

OXONIÆ,
E THEATRO SHELDONIANO, An. Dom. MDCCIII.

ΕΥΚΛΕΙΔΟΥ ΣΤΟΙΧΕΙΩΝ ΒΙΒΛΙΟΝ ΠΡΩΤΟΝ*.

EUCLIDIS ELEMENTORUM LIBER PRIMUS.

ΟΡΟΙ.

α΄. ΣΗΜΕΙΟΝ ἐστιν, οὗ μέρος οὐθέν.

β΄. Γραμμὴ δὲ, μῆκος ἀπλατές.

γ΄. Γραμμῆς δὲ πέρατα, σημεῖα.

δ΄. Εὐθεῖα γραμμή ἐστιν, ἥτις ἐξ ἴσου τοῖς ἐφ᾽ ἑαυτῆς σημείοις κεῖται.

ε΄. Ἐπιφάνεια δέ ἐστιν, ὃ μῆκος καὶ πλάτος μόνον ἔχει.

ς΄. Ἐπιφανείας δὲ πέρατα, γραμμαί.

ζ΄. Ἐπίπεδος ἐπιφάνειά ἐστιν, ἥτις ἐξ ἴσου ταῖς ἐφ᾽ ἑαυτῆς εὐθείαις κεῖται.

η΄. Ἐπίπεδος δὲ γωνία ἐστὶν ἡ ἐν ἐπιπέδῳ δύο γραμμῶν ἁπτομένων ἀλλήλων, καὶ μὴ ἐπ᾽ εὐθείας κειμένων, πρὸς ἀλλήλας τῶν γραμμῶν κλίσις.

θ΄. Ὅταν δὲ αἱ περιέχουσαι τὴν γωνίαν γραμμαὶ εὐθεῖαι ὦσιν, εὐθύγραμμος καλεῖται ἡ γωνία.

ι΄. Ὅταν δὲ εὐθεῖα ἐπ᾽ εὐθεῖαν σταθεῖσα τὰς ἐφεξῆς γωνίας ἴσας ἀλλήλαις ποιῇ, ὀρθὴ ἐστιν ἑκατέρα τῶν ἴσων γωνιῶν· καὶ ἡ ἐφεστηκυῖα εὐθεῖα κάθετος καλεῖται ἐφ᾽ ἣν ἐφέστηκεν.

ια΄. Ἀμβλεῖα γωνία ἐστὶν, ἡ μείζων ὀρθῆς.

ιβ΄. Ὀξεῖα δὲ, ἡ ἐλάσσων ὀρθῆς.

ιγ΄. Ὅρος ἐστὶν, ὅ τινός ἐστι πέρας.

DEFINITIONES.

1. PUNCTUM est, cujus pars nulla est.

2. Linea autem est longitudo non lata.

3. Lineæ vero extrema sunt puncta.

4. Recta quidem linea est, quæ ex æquo sua interjacet puncta.

5. Superficies autem est, quod longitudinem & latitudinem tantum habet.

6. Superficiei vero extrema sunt lineæ.

7. Plana quidem superficies est, quæ ex æquo suas lineas rectas interjacet.

8. Planus vero angulus est duarum linearum, in plano sese tangentium, & non in directum jacentium, mutua inclinatio.

9. Quando autem lineæ angulum comprehendentes rectæ fuerint, angulus ipse appellatur rectilineus.

10. Cum vero recta linea super rectam lineam insistens angulos deinceps inter se æquales fecerit, rectus est uterque æqualium angulorum: & quæ insistit recta linea, perpendicularis vocatur ad eam super quam insistit.

11. Obtusus angulus est, qui major est recto.

12. Acutus autem, qui est recto minor.

13. Terminus est, quod alicujus est extremum.

* Quidam Codices addunt: Ἐκ τῶν Θέωνος συνουσιῶν

Aristippus Philosophus Socraticus, naufragio cum ejectus ad Rhodiensium litus animadvertisset Geometrica schemata descripta, exclamavisse ad comites ita dicitur, "Bene speremus, Hominum enim vestigia video.

Vitruv. Architect. lib. 6. Praef.

PROP. XLVII. THEOR.

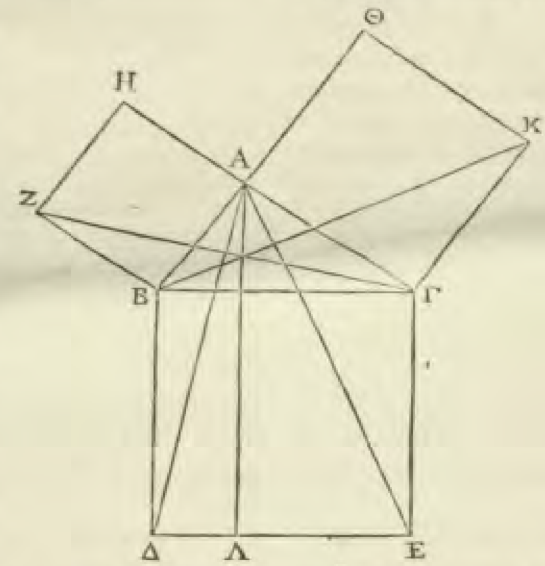
In rectangulis triangulis, quadratum, quod à latere rectum angulum subtendente describitur, æquale est quadratis, quæ à lateribus rectum angulum comprehendentibus describuntur.

SIT triangulum rectangulum ΑΒΓ, rectum habens ΒΑΓ angulum: dico quadratum, descriptum à recta ΒΓ, æquale esse quadratis, quæ ab ipsis ΒΑ, ΑΓ describuntur.

Describatur enim à ΒΓ quidem quadratum ΒΔΕΓ; ab ipsis vero ΒΑ, ΑΓ quadrata ΗΒ, ΘΓ; perque Α alterutri ipsarum ΒΔ, ΓΕ parallela ducatur ΑΛ; & ducantur ΑΔ, ΖΓ.

Quoniam igitur uterque angulorum ΒΑΓ, ΒΑΗ rectus est; & ad eandem rectam lineam ΒΑ, & ad punctum in ea Α, duæ rectæ lineæ ΑΓ, ΑΗ, non ad easdem partes positæ, faciunt angulos deinceps duobus rectis æquales: ΓΑ recta est in directum ipsi ΑΗ. eadem ratione, & ΑΒ est in directum ipsi ΑΘ. & quoniam angulus ΔΒΓ [per 10. ax.] est æqualis angulo ΖΒΑ, rectus enim est uterque, communis addatur ΑΒΓ: totus igitur ΔΒΑ angulus toti ΖΒΓ est æqualis. cum autem duæ ΔΒ, ΒΑ duabus ΓΒ, ΒΖ sint æquales, altera alteri, & angulus ΔΒΑ æqualis angulo ΖΒΓ: erit [per 4. prop.] & basis ΑΔ basi ΖΓ æqualis, & ΑΒΔ triangulum triangulo ΖΒΓ æquale. estque trianguli quidem ΑΒΔ [per 41. prop.] duplum ΒΛ parallelogrammum; basim enim eandem habent ΒΔ, & sunt in eisdem parallelis ΒΔ, ΑΛ: trianguli vero ΖΒΓ duplum est ΗΒ quadratum; rursus enim basim habent eandem ΖΒ, & sunt in eisdem parallelis ΖΒ, ΗΓ; æqualium autem dupla sunt inter se æqualia: æquale est igitur parallelogrammum ΒΛ ipsi ΗΒ quadrato. similiter, ductis ΑΕ, ΒΚ, ostendetur etiam ΓΛ parallelogrammum æquale quadrato ΘΓ: totum igitur ΒΔΕΓ quadratum duobus quadratis ΗΒ, ΘΓ est æquale. & est quidem ΒΔΕΓ quadratum à recta linea ΒΓ descriptum; quadrata vero ΗΒ, ΘΓ ab ipsis ΒΑ, ΑΓ: quadratum igitur ΒΕ, à latere ΒΓ descriptum, æquale est quadratis, quæ describuntur à lateribus ΒΑ, ΑΓ.

Ergo in rectangulis triangulis, quadratum, quod à latere rectum angulum subtendente describitur, æquale est quadratis, quæ à lateribus rectum angulum comprehendentibus describuntur. quod erat demonstrandum.



ΠΡΟΤΑΣΙΣ μζ΄.

Ἐν τοῖς ὀρθογωνίοις τριγώνοις, τὸ ἀπὸ τῆς τὴν ὀρθὴν γωνίαν ὑποτεινούσης πλευρᾶς τετράγωνον ἴσον ἐστὶ τοῖς ἀπὸ τῶν τὴν ὀρθὴν γωνίαν περιεχουσῶν πλευρῶν, τετραγώνοις.

Ἔστω τρίγωνον ὀρθογώνιον τὸ ΑΒΓ, ὀρθὴν ἔχον τὴν ὑπὸ ΒΑΓ· λέγω ὅτι τὸ ἀπὸ τῆς ΒΓ τετράγωνον ἴσον ἐστὶ τοῖς ἀπὸ τῶν ΒΑ, ΑΓ τετραγώνοις.

Ἀναγεγράφθω γὰρ ἀπὸ μὲν τῆς ΒΓ τετράγωνον τὸ ΒΔΕΓ· ἀπὸ δὲ τῶν ΒΑ, ΑΓ τὰ ΗΒ, ΘΓ· καὶ διὰ τοῦ Α ὁποτέρᾳ τῶν ΒΔ, ΓΕ παράλληλος ἤχθω ἡ ΑΛ· καὶ ἐπεζεύχθωσαν αἱ ΑΔ, ΖΓ.

Καὶ ἐπεὶ ὀρθή ἐστιν ἑκατέρα τῶν ὑπὸ ΒΑΓ, ΒΑΗ γωνιῶν· πρὸς δή τινι τῇ ΒΑ, καὶ τῷ πρὸς αὐτῇ σημείῳ τῷ Α, δύο εὐθεῖαι αἱ ΑΓ, ΑΗ, μὴ ἐπὶ τὰ αὐτὰ μέρη κείμεναι, τὰς ἐφεξῆς γωνίας δυσὶν ὀρθαῖς ἴσας ποιοῦσιν· ἐπ' εὐθείας ἄρα ἐστὶν ἡ ΓΑ τῇ ΑΗ. διὰ τὰ αὐτὰ δὴ καὶ ἡ ΑΒ τῇ ΑΘ ἐστὶν ἐπ' εὐθείας. καὶ ἐπεὶ ἴση ἐστὶν ἡ ὑπὸ ΔΒΓ γωνία τῇ ὑπὸ ΖΒΑ, ὀρθὴ γὰρ ἑκατέρα, κοινὴ προσκείσθω ἡ ὑπὸ ΑΒΓ· ὅλη ἄρα ἡ ὑπὸ ΔΒΑ ὅλῃ τῇ ὑπὸ ΖΒΓ ἐστὶν ἴση. καὶ ἐπεὶ δύο αἱ ΔΒ, ΒΑ δυσὶ ταῖς ΓΒ, ΒΖ ἴσαι εἰσὶν, ἑκατέρα ἑκατέρᾳ, καὶ γωνία ἡ ὑπὸ ΔΒΑ γωνίᾳ τῇ ὑπὸ ΖΒΓ ἴση ἐστίν· βάσις ἄρα ἡ ΑΔ βάσει τῇ ΖΓ ἐστὶν ἴση, καὶ τὸ ΑΒΔ τρίγωνον τῷ ΖΒΓ τριγώνῳ ἐστὶν ἴσον. καὶ ἐστι τοῦ μὲν ΑΒΔ τριγώνου διπλάσιον τὸ ΒΛ παραλληλόγραμμον, βάσιν τε γὰρ τὴν αὐτὴν ἔχουσι τὴν ΒΔ καὶ ἐν ταῖς αὐταῖς εἰσι παραλλήλοις ταῖς ΒΔ, ΑΛ· τοῦ δὲ ΖΒΓ τριγώνου διπλάσιον τὸ ΗΒ τετράγωνον, βάσιν τε γὰρ πάλιν τὴν αὐτὴν ἔχουσι τὴν ΖΒ καὶ ἐν ταῖς αὐταῖς παραλλήλοις εἰσὶ ταῖς ΖΒ, ΗΓ· τὰ δὲ τῶν ἴσων διπλάσια ἴσα ἀλλήλοις ἐστίν· ἴσον ἄρα ἐστὶ καὶ τὸ ΒΛ παραλληλόγραμμον τῷ ΗΒ τετραγώνῳ. ὁμοίως δὴ, ἐπιζευγνυμένων τῶν ΑΕ, ΒΚ, δειχθήσεται καὶ τὸ ΓΛ παραλληλόγραμμον ἴσον τῷ ΘΓ τετραγώνῳ· ὅλον ἄρα τὸ ΔΒΓΕ τετράγωνον δυσὶ τοῖς ΗΒ, ΘΓ τετραγώνοις ἴσον ἐστί. καὶ ἐστι τὸ μὲν ΒΔΕΓ τετράγωνον ἀπὸ τῆς ΒΓ ἀναγραφὲν, τὰ δὲ ΗΒ, ΘΓ ἀπὸ τῶν ΒΑ, ΑΓ· τὸ ἄρα ἀπὸ τῆς ΒΓ πλευρᾶς τετράγωνον ΒΕ ἴσον ἐστὶ τοῖς ἀπὸ τῶν ΒΑ, ΑΓ πλευρῶν τετραγώνοις.

Ἐν ἄρα τοῖς ὀρθογωνίοις τριγώνοις, τὸ ἀπὸ τῆς τὴν ὀρθὴν γωνίαν ὑποτεινούσης πλευρᾶς τετράγωνον ἴσον ἐστὶ τοῖς ἀπὸ τῶν τὴν ὀρθὴν γωνίαν περιεχουσῶν πλευρῶν τετραγώνοις. ὅπερ ἔδει δεῖξαι.

ΠΡΟ-

TRANSLATIONS

Shipwreck caption

When Aristippus the Socratic philosopher, casted by a shipwreck at the coast of Rhodesia, noticed a geometry drawing on the sand, he said: “Now we have good hope because I see traces of men”.

First Book

Definitions

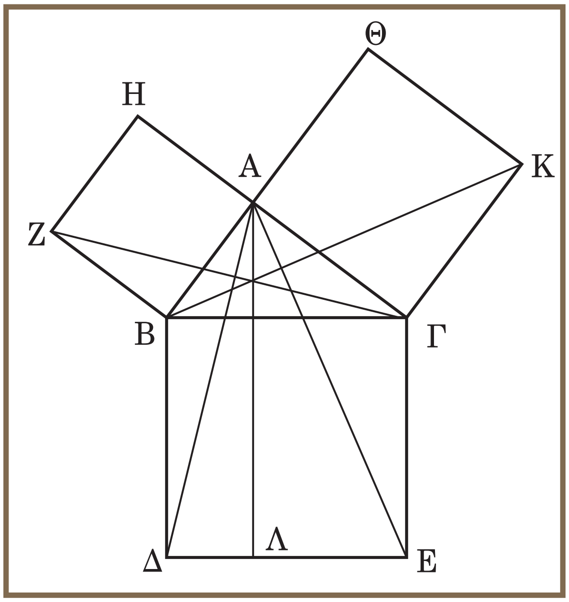
1. A point is something without parts.
2. A line is length but not width.
3. The ends of a line are points.
4. A straight line is made of evenly laid points.
5. A surface is something that has length and width.
6. The ends of a surface are lines.
7. A flat surface is made of evenly laid straight lines.
8. A plane angle is made of two lines that touch, are inclined to each other and are not in a straight line.
9. When the lines that make the angle are straight the angle is called rectilinear.
10. When a straight line on another straight line makes adjacent angles equal to one another, each of the equal angles is right and the straight line is called perpendicular to the one on which lays.
11. An obtuse angle is greater than a right angle.
12. An acute angle is smaller than a right angle.
13. A boundary is the extreme of anything.

Proposition 47 (Pythagorean theorem)

In right angled triangles the square on the side described as subtending the right angle is equal to the squares of the sides making the right angle.

Let $AB\Gamma$ be a right angled triangle having the right angle $BA\Gamma$. I say that the square on $B\Gamma$ is equal to the squares on BA and $A\Gamma$.

Let there be the square $B\Delta E\Gamma$ described on $B\Gamma$ the square $B\Delta E\Gamma$, and on BA,$A\Gamma$ the squares HB, $\Theta\Gamma$; through A let $A\Lambda$ be drawn parallel to either $B\Delta$ or ΓE, and let $A\Delta$, $Z\Gamma$ be joined.



Because each of the angles $BA\Gamma$, BAH is right, it follows that with a straight line BA and a point A on it, the two straight lines $A\Gamma$, AH not laying on the same side make the adjacent angles to two right angles; therefore ΓA is in a straight line with AH.

For the same reason BA is also in straight line with $A\Theta$. And, since the angle $\Delta B\Gamma$ is equal to the angle ZBA, because each is right, let the angle $AB\Gamma$ be added to each; therefore the whole angle ΔBA is equal to the whole angle $ZB\Gamma$.

And, since ΔB is equal to $B\Gamma$, and ZB to BA, the two sides AB, $B\Delta$ are equal to the two sides ZB, $B\Gamma$ respectively, and the angle $AB\Delta$ is equal to the angle $ZB\Gamma$; therefore the base $A\Delta$ is equal to the base $Z\Gamma$, and the triangle $AB\Delta$ is equal to the triangle $ZB\Gamma$.

Now the parallelogram $B\Lambda$ is double of the triangle $AB\Delta$, for they have the same base $B\Delta$ and are in the same parallels $B\Delta$, $A\Lambda$. And the square HB is double of the triangle $ZB\Gamma$, because they have again the same base ZB, and are the same parallels ZB, $H\Gamma$. But the doubles of equals are equal to one another.

Therefore the parallelogram $B\Lambda$ is also equal to the square HB; Similarly. If AE is joined to BK, the parallelogram $\Gamma\Lambda$ can also be proved equal to the square $\Theta\Gamma$; therefore the whole square $B\Delta E\Gamma$ is equal to the two squares HB, $\Theta\Gamma$. And the square $B\Delta E\Gamma$ is described on $B\Gamma$, and the squares HB, $\Theta\Gamma$ on BA, $A\Gamma$.

Therefore the square on the side $B\Gamma$ is equal to the squares on the sides BA, $A\Gamma$.

Therefore in a right triangle the square on the side described as subtending the right angle is equal to the squares of the sides making the right angle. Which is what was to be demonstrated.

The Greek Language

The Greek language holds an important place in the histories of Europe, the more loosely defined "Western" world, and Christianity; the canon of ancient Greek literature includes works of monumental importance and influence for the future Western canon, such as the epic poems Iliad and Odyssey.

Greek was also the language in which many of the foundational texts of Western philosophy, such as the Platonic dialogues and the works of Aristotle, were composed; The New Testament of the Christian Bible was written in Koiné Greek and the liturgy continues to be celebrated in the language in various Christian denominations (particularly the Eastern Orthodox and the Greek Rite of the Catholic Church).

Together with the Latin texts and traditions of the Roman world (which was profoundly influenced by ancient Greek society), the study of the Greek texts and society of antiquity constitutes the discipline of Classics.

Greek was a widely spoken lingua franca in the Mediterranean world and beyond during Classical Antiquity, and would eventually become the official parlance of the Byzantine Empire. In its modern form, it is the official language of Greece and Cyprus and one of the 23 official languages of the European Union. The language is spoken by approximately 13 million people today in Greece, Cyprus, and diaspora communities in numerous parts of the world.

The Greek Alphabet

Αα	Alpha	**Νν**	Nu
Ββ	Beta	**Ξξ**	Xi
Γγ	Gamma	**Οο**	Omicron
Δδ	Delta	**Ππ**	Pi
Εε	Epsilon	**Ρρ**	Rho
Ζζ	Zeta	**Σσς**	Sigma
Ηη	Eta	**Ττ**	Tau
Θθ	Theta	**Υυ**	Upsilon
Ιι	Iota	**Φφ**	Phi
Κκ	Kappa	**Χχ**	Chi
Λλ	Lambda	**Ψψ**	Psi
Μμ	Mu	**Ωω**	Omega

I encourage you to learn and master another language. It will expand your understanding of other cultures and ways of thinking. Greek roots are often used to coin new words for other languages, especially in the sciences and medicine; Greek and Latin are the predominant sources of the international scientific vocabulary. Over fifty thousand English words are derived from the Greek language.