Chapter 1 : Translation of Euclid in English

Includes editions and translations of Euclid's Elements, Data, and Optica, Proclus's Commentary on Euclid, and other historical sources. The Elements of Geometrie of the Most Auncient Philosopher Euclide of Megara () from the English Printing Collection in the Rare Book and Special Collection Division at the Library of Congress.

According to him, Euclid taught at Alexandria in the time of Ptolemy I Soter , who reigned over Egypt from to bce. Medieval translators and editors often confused him with the philosopher Eukleides of Megara , a contemporary of Plato about a century before, and therefore called him Megarensis. Sources and contents of the Elements Euclid compiled his Elements from a number of works of earlier men. Among these are Hippocrates of Chios flourished c. The latest compiler before Euclid was Theudius, whose textbook was used in the Academy and was probably the one used by Aristotle â€" bce. For his subject matter Euclid doubtless drew upon all his predecessors, but it is clear that the whole design of his work was his own, culminating in the construction of the five regular solids, now known as the Platonic solids. A brief survey of the Elements belies a common belief that it concerns only geometry. This misconception may be caused by reading no further than Books I through IV, which cover elementary plane geometry. Book I then proves elementary theorems about triangles and parallelograms and ends with the Pythagorean theorem. The subject of Book II has been called geometric algebra because it states algebraic identities as theorems about equivalent geometric figures. This division was renamed the golden section in the Renaissance after artists and architects rediscovered its pleasing proportions. Book II also generalizes the Pythagorean theorem to arbitrary triangles, a result that is equivalent to the law of cosines see plane trigonometry. Book III deals with properties of circles and Book IV with the construction of regular polygons, in particular the pentagon. Book V shifts from plane geometry to expound a general theory of ratios and proportions that is attributed by Proclus along with Book XII to Eudoxus of Cnidus c. While Book V can be read independently of the rest of the Elements, its solution to the problem of incommensurables irrational numbers is essential to later books. In addition, it formed the foundation for a geometric theory of numbers until an analytic theory developed in the late 19th century. Books VIIâ€"IX contain elements of number theory , where number arithmos means positive integers greater than 1. Beginning with 22 new definitionsâ€"such as unity, even, odd, and prime â€"these books develop various properties of the positive integers. For instance, Book VII describes a method, antanaresis now known as the Euclidean algorithm , for finding the greatest common divisor of two or more numbers; Book VIII examines numbers in continued proportions, now known as geometric sequences such as ax, ax2, ax3, ax4â€¦ ; and Book IX proves that there are an infinite number of primes. Book X, which comprises roughly one-fourth of the Elements, seems disproportionate to the importance of its classification of incommensurable lines and areas although study of this book would inspire Johannes Kepler [â€"] in his search for a cosmological model. Book XI concerns the intersections of planes, lines, and parallelepipeds solids with parallel parallelograms as opposite faces. Book XIII culminates with the construction of the five regular Platonic solids pyramid, cube, octahedron, dodecahedron, icosahedron in a given sphere, as displayed in the animation. The five Platonic solidsThese are the only geometric solids whose faces are composed of regular, identical polygons. Placing the cursor on each figure will show it in animation. The unevenness of the several books and the varied mathematical levels may give the impression that Euclid was but an editor of treatises written by other mathematicians. To some extent this is certainly true, although it is probably impossible to figure out which parts are his own and which were adaptations from his predecessors. Renditions of the Elements In ancient times, commentaries were written by Heron of Alexandria flourished 62 ce , Pappus of Alexandria flourished c. The father of Hypatia , Theon of Alexandria c. The immense impact of the Elements on Islamic mathematics is visible through the many translations into Arabic from the 9th century forward, three of which must be mentioned: Euclid first became known in Europe through Latin translations of these versions. The first extant Latin translation of the Elements was made about by Adelard of Bath , who obtained a copy of an Arabic version in Spain, where he traveled while disguised as a Muslim student. Adelard also composed an abridged version and an edition with commentary, thus starting a Euclidean tradition of the greatest

importance until the Renaissance unearthed Greek manuscripts. Incontestably the best Latin translation from Arabic was made by Gerard of Cremona c. The first direct translation from the Greek without an Arabic intermediary was made by Bartolomeo Zamberti and published in Vienna in Latin in , and the editio princeps of the Greek text was published in Basel in by Simon Grynaeus. Other writings The Euclidean corpus falls into two groups: Some of the propositions can be viewed as geometry exercises to determine if a figure is constructible by Euclidean means. On Divisions of figures â€"restored and edited in from extant Arabic and Latin versionsâ€"deals with problems of dividing a given figure by one or more straight lines into various ratios to one another or to other given areas. Four lost works in geometry are described in Greek sources and attributed to Euclid. Michel Chasles â€" conjectured that the work contained propositions belonging to the modern theory of transversals and to projective geometry. Pappus also mentioned the Surface-loci in two books , whose subject can only be inferred from the title. Legacy Almost from the time of its writing, the Elements exerted a continuous and major influence on human affairs. It was the primary source of geometric reasoning, theorems, and methods at least until the advent of non-Euclidean geometry in the 19th century. It is sometimes said that, other than the Bible , the Elements is the most translated, published, and studied of all the books produced in the Western world. Euclid may not have been a first-class mathematician, but he set a standard for deductive reasoning and geometric instruction that persisted, practically unchanged, for more than 2, years.

Chapter 2 : tikz pgf - english documentation of tkz-euclid - TeX - LaTeX Stack Exchange

Euclid (;, Eukleides; fl. BCE), sometimes called Euclid of Alexandria to distinguish him from Euclid of Megara, was a Greek mathematician, often referred to as the "father of geometry". He was active in Alexandria during the reign of Ptolemy I (BCE).

He was likely born c. He is rarely mentioned by name by other Greek mathematicians from Archimedes c. This biography is generally believed to be fictitious. Although the apparent citation of Euclid by Archimedes has been judged to be an interpolation by later editors of his works, it is still believed that Euclid wrote his works before those of Archimedes. However, this hypothesis is not well accepted by scholars and there is little evidence in its favor. The diagram accompanies Book II, Proposition 5. The only reference that historians rely on of Euclid having written the Elements was from Proclus, who briefly in his Commentary on the Elements ascribes Euclid as its author. Although best known for its geometric results, the Elements also includes number theory. The geometrical system described in the Elements was long known simply as geometry , and was considered to be the only geometry possible. Today, however, that system is often referred to as Euclidean geometry to distinguish it from other so-called non-Euclidean geometries that mathematicians discovered in the 19th century. More recent scholarship suggests a date of 75â€” AD. Construction of a dodecahedron by placing faces on the edges of a cube. In addition to the Elements, at least five works of Euclid have survived to the present day. They follow the same logical structure as Elements, with definitions and proved propositions. Data deals with the nature and implications of "given" information in geometrical problems; the subject matter is closely related to the first four books of the Elements. On Divisions of Figures, which survives only partially in Arabic translation, concerns the division of geometrical figures into two or more equal parts or into parts in given ratios. It is similar to a first-century AD work by Heron of Alexandria. Catoptrics , which concerns the mathematical theory of mirrors, particularly the images formed in plane and spherical concave mirrors. In its definitions Euclid follows the Platonic tradition that vision is caused by discrete rays which emanate from the eye. One important definition is the fourth: Proposition 45 is interesting, proving that for any two unequal magnitudes, there is a point from which the two appear equal. Lost works Other works are credibly attributed to Euclid, but have been lost. Conics was a work on conic sections that was later extended by Apollonius of Perga into his famous work on the subject. Pseudaria, or Book of Fallacies, was an elementary text about errors in reasoning. Surface Loci concerned either loci sets of points on surfaces or loci which were themselves surfaces; under the latter interpretation, it has been hypothesized that the work might have dealt with quadric surfaces. Several works on mechanics are attributed to Euclid by Arabic sources. On the Heavy and the Light contains, in nine definitions and five propositions, Aristotelian notions of moving bodies and the concept of specific gravity. On the Balance treats the theory of the lever in a similarly Euclidean manner, containing one definition, two axioms, and four propositions. A third fragment, on the circles described by the ends of a moving lever, contains four propositions. These three works complement each other in such a way that it has been suggested that they are remnants of a single treatise on mechanics written by Euclid.

Chapter 3 : Euclid's Elements, Introduction

Translation of Euclide from the Collins Italian to English Dictionary The to infinitive The to infinitive is used as follows: after an adjective of quality such as small, tall, agreeable, pleasant, funny that is used in combination with too.

This manuscript, the Heiberg manuscript, is from a Byzantine workshop around and is the basis of modern editions. Although known to, for instance, Cicero , no record exists of the text having been translated into Latin prior to Boethius in the fifth or sixth century. Private collection Hector Zenil. In , John Dee provided a widely respected "Mathematical Preface", along with copious notes and supplementary material, to the first English edition by Henry Billingsley. Copies of the Greek text still exist, some of which can be found in the Vatican Library and the Bodleian Library in Oxford. The manuscripts available are of variable quality, and invariably incomplete. By careful analysis of the translations and originals, hypotheses have been made about the contents of the original text copies of which are no longer available. Ancient texts which refer to the Elements itself, and to other mathematical theories that were current at the time it was written, are also important in this process. Such analyses are conducted by J. Heiberg and Sir Thomas Little Heath in their editions of the text. Also of importance are the scholia , or annotations to the text. These additions, which often distinguished themselves from the main text depending on the manuscript , gradually accumulated over time as opinions varied upon what was worthy of explanation or further study. Influence[edit] A page with marginalia from the first printed edition of Elements, printed by Erhard Ratdolt in The Elements is still considered a masterpiece in the application of logic to mathematics. In historical context, it has proven enormously influential in many areas of science. The austere beauty of Euclidean geometry has been seen by many in western culture as a glimpse of an otherworldly system of perfection and certainty. Vincent Millay wrote in her sonnet " Euclid alone has looked on Beauty bare ", "O blinding hour, O holy, terrible day, When first the shaft into his vision shone Of light anatomized! Einstein recalled a copy of the Elements and a magnetic compass as two gifts that had a great influence on him as a boy, referring to the Euclid as the "holy little geometry book". Much of the material is not original to him, although many of the proofs are his. The Elements still influences modern geometry books. Further, its logical axiomatic approach and rigorous proofs remain the cornerstone of mathematics. Contents[edit] Book 1 contains 5 postulates including the famous parallel postulate and 5 common notions, and covers important topics of plane geometry such as the Pythagorean theorem , equality of angles and areas , parallelism, the sum of the angles in a triangle, and the construction of various geometric figures. Book 2 contains a number of lemmas concerning the equality of rectangles and squares, sometimes referred to as " geometric algebra ", and concludes with a construction of the golden ratio and a way of constructing a square equal in area to any rectilineal plane figure. Book 3 deals with circles and their properties: Book 4 constructs the incircle and circumcircle of a triangle, as well as regular polygons with 4, 5, 6, and 15 sides. Book 5, on proportions of magnitudes , gives the highly sophisticated theory of proportion probably developed by Eudoxus , and proves properties such as "alternation" if a: Book 6 applies proportions to plane geometry, especially the construction and recognition of similar figures. Book 7 deals with elementary number theory: Book 8 deals with the construction and existence of geometric sequences of integers. Book 9 applies the results of the preceding two books and gives the infinitude of prime numbers and the construction of all even perfect numbers. Book 10 proves the irrationality of the square roots of non-square integers e. Euclid here introduces the term " irrational ", which has a different meaning than the modern concept of irrational numbers. He also gives a formula to produce Pythagorean triples. Book 12 studies the volumes of cones , pyramids , and cylinders in detail by using the method of exhaustion , a precursor to integration , and shows, for example, that the volume of a cone is a third of the volume of the corresponding cylinder. It concludes by showing that the volume of a sphere is proportional to the cube of its radius in modern language by approximating its volume by a union of many pyramids. Book 13 constructs the five regular Platonic solids inscribed in a sphere and compares the ratios of their edges to the radius of the sphere.

Chapter 4 : The English Euclide, being the first six elements of geometry, (Book,) [blog.quintoapp.com]

*The English Euclide, being the first six elements of geometry, translated out of the Greek, with annotations and useful supplements, by Edmund Scarburgh [Euclid] on blog.quintoapp.com *FREE* shipping on qualifying offers.*

The Elements[change change source] Euclid collected together all that was known of geometry , which is part of mathematics. His Elements is the main source of ancient geometry. Textbooks based on Euclid have been used up to the present day. In the book, he starts out from a small set of axioms that is, a group of things that everyone thinks are true. Euclid then shows the properties of geometric objects and of whole numbers , based on those axioms. The Elements also includes works on perspective , conic sections, spherical geometry, and possibly quadric surfaces. Apart from geometry, the work also includes number theory. Euclid came up with the idea of greatest common divisors. They were in his Elements. The greatest common divisor of two numbers is the greatest number that can fit evenly in both of the two numbers. The geometrical system described in the Elements was long known simply as geometry, and was considered to be the only geometry possible. Today that system is referred to as Euclidean geometry to distinguish it from other so-called non-Euclidean geometries which mathematicians developed in the 19th century. Other works[change change source] In addition to the Elements, at least five works of Euclid have survived to the present day. They follow the same logical structure as Elements, with definitions and proved propositions. Data deals with the nature and implications of "given" information in geometrical problems; the subject matter is closely related to the first four books of the Elements. On Divisions of Figures, which survives only partially in Arabic translation, concerns the division of geometrical figures into two or more equal parts or into parts in given ratios. It is similar to a third century AD work by Heron of Alexandria. Catoptrics , which concerns the mathematical theory of mirrors, particularly the images formed in plane and spherical concave mirrors. The attribution to Euclid is doubtful. Its author may have been Theon of Alexandria. Phaenomena, a treatise on spherical astronomy , survives in Greek; it is quite similar to On the Moving Sphere by Autolycus of Pitane , who flourished around BC. Tributes to Euclid[change change source] An asteroid , is named after Euclid. A crater on the moon is named after Euclid. The diagram accompanies Book II, Proposition 5.

Chapter 5 : Euclid | Define Euclid at blog.quintoapp.com

Euclid's Elements (Stoicheia) is a mathematical and geometric treatise consisting of 13 books written by the ancient Greek mathematician Euclid in Alexandria, Ptolemaic Egypt c. BC. It is a collection of definitions, postulates (axioms), propositions (theorems and constructions), and mathematical proofs of the propositions.

Chapter 6 : Euclid - Simple English Wikipedia, the free encyclopedia

Reading Euclid - a course in how to read Euclid in the original Greek, with English translations and commentaries (HTML with figures) Sir Thomas More 's manuscript Latin translation by Aethelhard of Bath.

Chapter 7 : Euclid - Wikipedia

Euclid was a great Greek mathematician. Although little is known about his early and personal life, he went on to contribute greatly in the field of mathematics and came to known as the 'Father of Geometry', Euclid is known to have taught mathematics in Ancient Egypt during the reign of Ptolemy I.

Chapter 8 : Euclid's Elements - Wikipedia

Euclid of Alexandria (Greek: Î•á½•Î°Î»Î¼Î¯Î´Î·Ï‚) (about BC BC) was a Greek mathematician who lived in Alexandria, Egypt and worked at the Library of Alexandria. Little is known about this person, but people think he lived there when Ptolemy I

was Pharaoh.

Chapter 9 : Euclid translation German | English-German dictionary | Reverso

The English Euclide: being the first six elements of geometry, translated out of the Greek, with annotations and useful supplements, by Edmund Scarburgh.