Euclid was famous as the author of the Elements, a treatise that taught geometry through rigorous proofs of theorems. Euclid was from Alexandria, Egypt. In the time of Ptolemy I Soter who reigned over Euclid's Elements from to bce, Medieval translators and editors often confused him with the philosopher Eukleides of Megara contemporary of Plato about a century before, and therefore called him Megarensis.

Euclid compiled his Elements from a number of works of earlier men. Among these are Hippocrates of Chios.
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 Euclids Elements 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 Elementsits solution to the problem of Euclids Elements irrational numbers is essential to later books. In addition, Euclids Elements formed the foundation for a geometric theory of numbers until an analytic theory developed in the Euclids Elements 19th Euclids Elements.

Books VII—IX contain elements of number theorywhere number arithmos means positive integers greater than 1. Beginning with 22 new definitions—such as unity, even, odd, and prime—these books develop various properties of the positive integers. For instance, Book VII describes a method, antanaresis now known as Euclids Elements Euclidean algorithmfor finding the greatest common divisor of two or more numbers; Book VIII examines numbers in continued proportions, now known as Euclids Elements sequences such as a x 2a x 3a x 4 …; and Book IX Euclids Elements that there are an infinite number of primes.

Book X, which comprises roughly one-fourth of the Elementsseems disproportionate to the importance of its classification of incommensurable lines and areas although study of this book would inspire Johannes Kepler [—] in his search for a cosmological model.

Book XI concerns the intersections of planes, lines, and parallelepipseds solids with parallel parallelograms as opposite faces. Book XII 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 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 Euclids Elements is probably impossible to figure out which parts are his own and which were adaptations from his predecessors.


Euclids common notions 6 Things equal to the same thing are equal. These are the only geometric solids whose faces are composed of regular, identical polygons.

Placing the cursor on each figure will show it in animation. Load Next Page. A circle can be constructed when a point for its centre and a distance with the construction of the five regular Platonic solids pyramid, cube, octahedron, dodecahedron, icosahedron in a given sphere, as displayed in the 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 Euclids Elements is probably impossible to figure out which parts are his own and which were adaptations from his predecessors.


Plato, Euclid, and even American heroes like Thomas Jefferson and Abraham Lincoln, saw mathematics as much more than a set of tools for solving practical problems. Euclid's Elements men believed that the elegance and simplicity of mathematics underscored its primacy and power. For Plato and Euclid, this meant that the study of mathematics moved one beyond the realm of Euclid's Elements material world and into the more pure realm of the Forms.

To the aforementioned men, the truths of mathematics are unchanging, eternal, ordered, Euclid's Elements aesthetically beautiful to the eye of the mind. The study of mathematics prepares one to engage in the disciplines of philosophy and theology; which in turn, Euclid's Elements one to gaze upon and contemplate God with the clear eyes of a soul that has been enlightened by a sublime mind.

It was understood that the study of the trivium grammar, logic, and rhetoric followed by the quadrivium arithmetic, music, astronomy, and geometry would prepare one for the study of liberal arts par excellence philosophy and theology.

While the exact boundaries that confine these fields today differ from those that would have confined them 2, years ago, the general idea was that people must be well-versed Euclid's Elements the seven fields Euclid's Elements the liberal arts found in the trivium and quadrivium before they would be ready to study the more comprehensive and meta-level fields of philosophy and theology.

Only the best prepared and most motivated minds were allowed to study these disciplines. They constituted the highest form of human thought, matching that of the divine mind. Yet, these disciplines could be most heinously perverted and used for ill. Throughout history, many atrocities have been perpetrated by the erudite in philosophy and theology. Philosophy and theology had a more comprehensive definition in the ancient and into the early modern period; it was the philosophers and theologians who were to instruct the people about what it means to be human and progress towards flourishing.

Geometry is a Euclid's Elements discipline that takes intense study, mental sharpness, and clarity of thought and expression. There is little that can sharpen the mind more than constructing geometric proofs. Euclid's Elements reasoning must account for any and all gaps, and in order for a proof to be considered true, each claim must logically follow from those already definitively demonstrated.

Errors are Euclid's Elements quickly in geometry they cannot be veiled as they can in other disciplines. Geometry directs the mind to think on truths that do not pass away with the whims of human opinion. These truths are eternal. These truths are sure. These truths are foundational in the very fabric of Euclid's Elements world we inhabit and to the order we find throughout it. Euclid's Elements a failed politician and doubting lawyer, Lincoln sought refuge in the precision and Euclid's Elements Euclid exuded.

Galvanized by such the rigor and assurance Euclid's Elements truth laid out in the propositions, Lincoln successfully navigated this troubled point in his life, to becoming a more effective lawyer and one of the greatest politicians America has ever seen. Lincoln biographer Michael Burlingame puts it this way: Lincoln in his early forties Euclid's Elements Euclid, whose works he carried with him on business trips. This suggests a desire to strip away all superfluous mental baggage and get at the heart of the matter, psychologically as well as logically… Euclid's Elements he emerged from his political semiretirement inhe had formulated a basic critique of the proslavery and popular sovereignty cases, arguing with Euclidean coherence.

To think these thoughts of pure geometry was, in Euclid's Elements very real sense, to think the very thoughts of God. Studying this rigorous discipline will train Euclid's Elements mind to think on higher thoughts and prepare it for the spiritual Euclid's Elements to participation in the divine nature. Taking into account this disconnect between an ancient and popular modern understanding of mathematics, the rest of this essay will briefly sketch how we got from the ancient and pre-modern viewpoint to the modern viewpoint, and evaluate some positives and negative implications for us today.

There are two factors that Euclid's Elements changed how mathematics is Euclid's Elements and understood in pedagogical circles. Namely, the industrial revolution and the democratization of education. Both of these changes reframe the aim of education and the expectation of the student.

Euclid's Elements, what we would know as secondary education was a privilege reserved for the wealthy. The wealthy had little need to learn practical skills such as medicine or engineering or vocational trades, Euclid's Elements they could study the liberal arts without care of economic return on investment. The poorer needed to use their education to make themselves more marketable and economically reliable, and so invested more time into practical disciplines.

Access to anything like the free compulsory Euclid's Elements that we enjoy today was only a pipe-dream before the industrial revolution and the democratization of education. However, by the Euclid's Elements of the 19th century, the place in society for the poor traditionally shifted, as did the needs of all in an industrial society.

Educational reformers persuaded lawmakers that the ways of the past were obsolete, and a new approach was necessary for Euclid's Elements in a modern society. I do not find all these Euclid's Elements unfortunate. The modern view of mathematics has certain strengths. One such strength lies in the accessibility of free, compulsory education and the practicality acknowledged in the schooling of all children.

Seeking a shortcut or an alternate road, he approached Euclid in person. Euclid's Elements schooling is offered indiscriminately, it must include a bit of practicality.

Due to constraints in Euclid's Elements and resources and other pressing educational matters, not everyone can graduate having mastered the Elements. Despite this constraint, that all children, regardless of socioeconomic status, have the opportunity to study mathematics should still be considered a victory for modernity. Additionally, the advancement of technology has allowed for the use of applied mathematics in realms thought to Euclid's Elements impossible mere decades ago, let alone millennia ago.
Euclid compiled his Elements from a number of works of earlier men. Euclid's Elements are Hippocrates of Chios flourished c. The latest compiler before Euclid was Theudius, whose textbook... Even serious objections to the lack of... Later, perhaps in the mids, he had gained enough sophistication to pursue independent research in optics, a subject he later claimed to.... Archytas was Euclid's an influential figure in public affairs, and he served for seven years as commander in chief of his city. Where previous proofs of proportion required separate treatments for lines, surfaces, and solids, Eudoxus provided general Euclid's Elements.

It is unknown, however, how much later mathematicians may have contributed to the form found in the Elements. He certainly formulated the bisection principle....

Much less is known about Euclid, however, than about Moses. In fact, the only thing known with a fair degree of confidence is.... The theory of proportions remained an Euclid's Elements component of mathematics well into the 17th century, by allowing the comparison of ratios of pairs of magnitudes of the same kind.

Greek proportions, however, were very different from modern equalities, and no concept.... Euclid's Elements, the Mesopotamians Euclid's Elements to have understood Euclid's Elements sets of such numbers aband c form the sides of right triangles, but the Greeks proved this result Euclid, in fact, proves it twice....

Beginning with Nicomachus of Gerasa flourished c. A favourite result Euclid's Elements the representation.... In his Elements Euclid gave the first Euclid's Elements proof that there are infinitely many primes. Various formulas have Euclid's Elements suggested for discovering primes see number games: Perfect numbers and Mersenne numbers and Fermat prime... but all have been flawed.

Two other Euclid's Elements results concerning the distribution of... Euclid's Elements the ensuing centuries, mathematicians sought, and failed, to find some formula with which they could produce an unending sequence.... Barrow embarked on a European tour before the Elements was published, as the political climate.... This stands in complete contrast to the situation described above for Egyptian and Babylonian documents.

Although, in general outline, the present account of Greek mathematics is secure, in such important matters as the origin.... The ratio theory of the Elements provided a means of expressing the various relations of the quantities associated with moving.... Euclid's Elements Article. Euclid work by Euclid. Share Share. Facebook Twitter. Learn about this topic in these articles: Assorted References major reference.