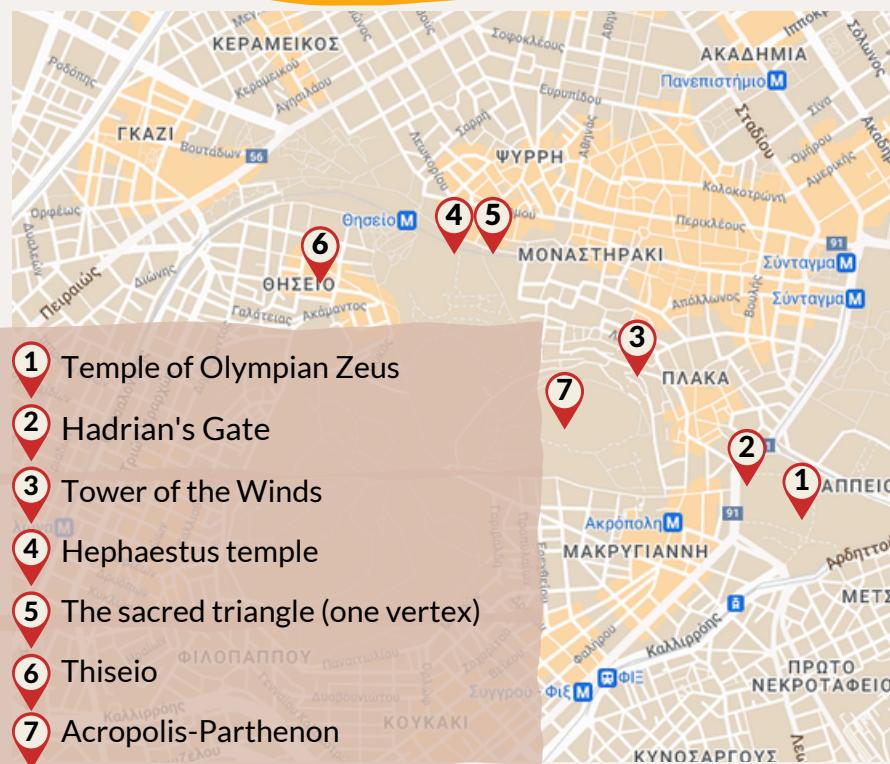


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# Itinerary



- 1 Temple of Olympian Zeus
- 2 Hadrian's Gate
- 3 Tower of the Winds
- 4 Hephaestus temple
- 5 The sacred triangle (one vertex)
- 6 Thisio
- 7 Acropolis-Parthenon

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# VisitMath Tours Athens



Kalimera! Or as English people say, Good morning.



I am a Greek philosopher and somehow I woke up this morning in Athens. In modern Athens!

Can we visit together some of the monuments we, the ancient Greeks, built in the past and see how they are preserved?

During our walk, I'll share with you various historical facts, but you need to help me do some mathematical calculations because, after all these years I don't remember all mathematical formulas.



Athens was the most powerful and magnificent city in ancient Greece. This peaked in the fifth century BC, known as Pericles' Golden Age, when he controlled Athens' political scene. Pericles' initiative culminated in the establishment of an entirely new political system: democracy.

Did you know that the city's name comes from Athena? Athena was the goddess of knowledge, war, and crafts.



The Temple of Olympian Zeus, also known as the Olympieion or Columns of Olympian Zeus, is a former gigantic temple in the heart of the Greek city, Athens. It was named after "Olympian" Zeus, the leader of the Olympian gods.

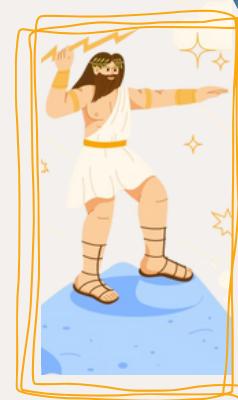


## Step 1: Temple of Olympian Zeus



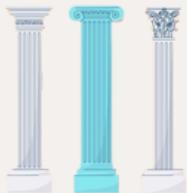
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It was once 17 metres high and had 104 columns, but only 16 have remained. Once inside, tourists are treated to a taste of nature, an amazing ancient ruin on a superhuman size, and one of the most breathtaking views of the temple-topped Acropolis in the area.





I discovered a miniature of the Temple while wandering around the gift stores. Its columns were 17cm high. The gift was a 1:100 scale replica of the original monument.



So, how high were the actual columns?

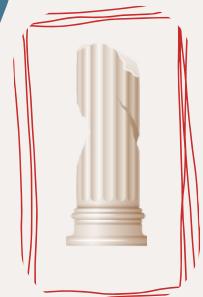
## Step 2: Hadrian's Gate



The Romans in Athens?  
When did it happen?

The Arch of Hadrian, also known as Hadrian's Gate in Greek, is a massive marble arch built by the Athenians to honor their philhellene ruler, the Roman Emperor Hadrian. The gateway is a colossal gateway to two eras: walk back, or east, into Greek antiquity, and ahead, or west, to Roman Athens.

The architrave has two inscriptions, one on each side: "This is Athens, the ancient city of Theseus" on the side facing the Acropolis. And "This is the city of Hadrian and not of Theseus" on the side facing the new city.



The upper part of the gate resembles half a semicircle. The gate length span is 6.5 meters, according to info I've found on the internet (!!!). (I am an ancient philosopher... but I have a mobile phone, or I could get lost in this enormous metropolis.)



Just for fun, what is the perimeter of the semicircle?



### Step 3: Tower of the Winds



The Tower of the Winds, also known as the Horologion of Andronikos Kyrristos, is an antique clocktower located in Athens. The object possesses eight sides, with each side representing a distinct wind direction and corresponding to the eight primary winds in ancient Greek mythology.

This monument served numerous purposes in antiquity. Initially designed as a solar clock, its purpose was to provide an estimation of time by utilizing the sun's position. Additionally, it served as a weather indicator and forecasting device.



Boreas (N), Kaikias (NE), Eurus (E), Apeliotes (SE), Notus (S), Livas (SW), Zephyrus (W) and Skiron (NW)



It is a regular octagon. Its height is 12m and each side is 3m and 20cm long.



Please, estimate

- the area of an octagon, and
- the volume of the Horologion.

### Step 4: The Temple of Hephaestus



In Greece, the Temple of Hephaestus is among the most well-preserved ancient temples. It was dedicated to the Olympian deities Athena, the goddess of intellect, war, and crafts, and Hephaestus, the god of fire. Constructed as a result of Pericles' scheme to restore sanctuaries in Athens, it exemplifies traditional Dorian architecture and was conceptualized by Iktinus, the principal architect of the Parthenon.

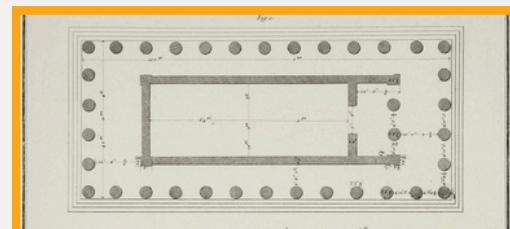


The east and west sides of the temple each have six columns, while the north and south sides each have thirteen. The temple's attics were embellished with renowned sculptures. The battle of the centaurs was portrayed in the western attic, while the eastern attic featured Hercules' acceptance on Mount Olympus and the birth of the deity Athena.

The length of the Temple of Hephaestus is 69.5 meters and the ratio of length to width is 9:4.



Please estimate the width of the temple.



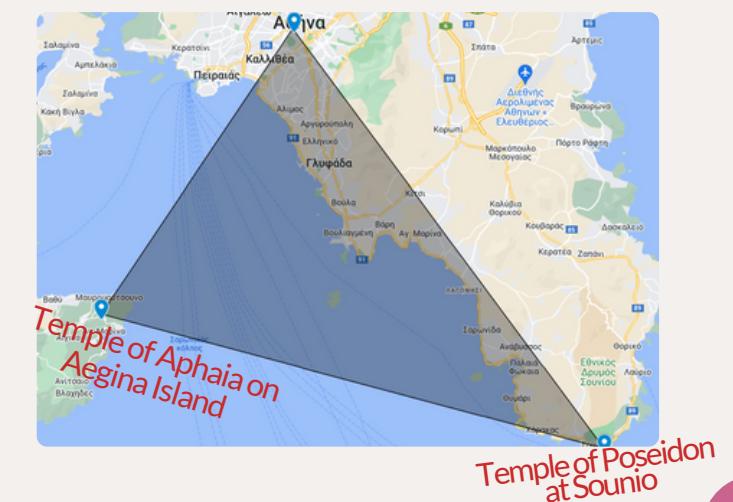
## Step 5: The sacred triangle



We, the Ancient Greeks, liked the symbolisms, the secrets, the riddles!!

The Sacred Triangle is the geometric configuration of the Temple of Hephaestus at Thissio in Athens, the Temple of Poseidon at Sounio, and the Temple of Aphaia on the island of Aegina. The sacred triangle has frequently been the focus of contemporary scholarly investigation, given that the divine principle underlying this peculiar symmetry continues to confound scientists.

Hehe...You look puzzled!!!



The distance between the Temple of Hephaestus and the Temple of Aphaia on Aegina is approximately 31km in a straight line (base side). The vertex angle formed by the lines Temple of Poseidon-Temple of Hephaestus and Temple of Poseidon-Temple of Aphaia is  $42^\circ$ . The other two angles (base) are equal in measure as it is an isosceles triangle.



Now, I have two questions.

- What are the degrees of the other two angles that have equal measure?
- What is the length of the other two equal sides of the triangle?

### Step 6: Let's relax a bit at Theseio

Ok, the ancient Greeks were pioneers in Maths, Science, Philosophy, Medicine, Astronomy, etc. and I stop here as I am modest!!!



But the modern Greeks have so many delicious dishes, drinks and sweets... famous worldwide..



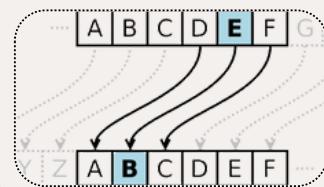
Galaktoboureko (Greek Custard Pie)      Portokalopita (Greek Orange Phyllo Cake)



Now I am a happy, full, and a bit sleepy, ancient Greek philosopher!!!



While I drink my Frappe coffee, I think of hidden messages... Why? Why not? I am a philosopher! I always think!!!



Herodotus describes how confidential communications were secreted in physical form, such as wax-coated wooden tablets or tattoos hidden by regrown hair on the heads of slaves. The term for this is steganography.

"The Polybius square" was a numerical system that Polybius employed; it was associated with cryptographic manipulation.

In order to demonstrate reverence for the Romans, an additional renowned civilization, we shall utilize the shift cipher, also referred to as Caesar's cipher.

Caesar shift is one of the most basic and well-known encryption schemes. It is a substitution cipher in which each letter in the plain text is substituted for a letter from a preset position down the alphabet. As we can see above, E becomes B in the ciphered message... F is now C... So, BCD is ciphered to YZA. The same process is used for decoding the message.

Let's find the most important contribution of the Greeks to humanity.

The ciphered word is "Ghprfudfb"

Decode it and you'll find out. But I'm sure you already know. The word is ciphered using a 3-letter shift, i.e "a" becomes "d" and "z" is now "c", etc.



### Step 7: Last but definitely not least!

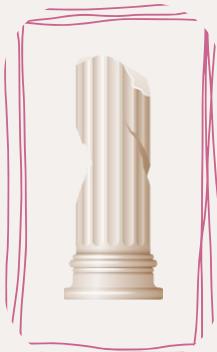
The Acropolis and the Parthenon



Situated atop a rocky mountain in the vicinity of Athens, Greece, the Acropolis of Athens was constructed in antiquity. It is adorned with the remnants of numerous ancient structures that held immense historical and architectural importance, the most renowned of which was the Parthenon. As the title "acropolis" is generic, Greece is home to an abundance of additional acropolises (or acropoleis or citadels).

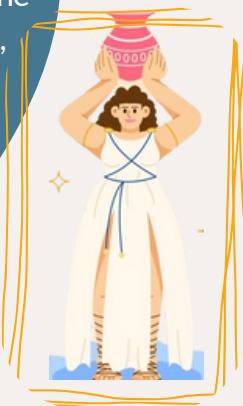
The Parthenon, which the Athenians erected in honor of their city's patron goddess Athena Parthenos, represents the pinnacle of Athenian democracy at its height of power. Conceived and executed with excellence, it is also the most magnificent structure on the Acropolis. Constructed from 447 to 438 BC as an integral component of the Periklean architectural epoch. The Parthenon, a double-peripheral Doric temple, is distinguished by a number of novel and inventive architectural elements.





A caryatid is an architectural support in the form of a sculpted female figure whose head supports an entablature in lieu of a column or pillar.

Diverse hypotheses exist regarding the etymology of the name Caryatids. The Korai, as interpreted by Vitruvius, symbolized the women residing in Caryae, a small community in Laconia, who were subjected to arduous labor in retaliation for their aiding the Persians during the second Persian invasion of Greece.



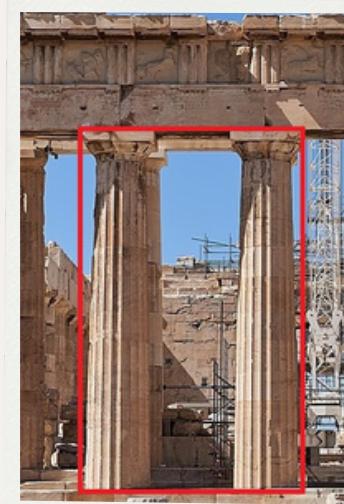
Some of the original caryatids are in the Acropolis museum and the missing one(s) are in the British Museum! When you visit the Acropolis museum, can you find out how many caryatids are in the museum?



The golden ratio, also known as the divine proportion, is a ratio between two numbers that equals approximately 1.618.



It is frequently attributed to the fifth-century BCE Greek scholar Pythagoras that he discovered the golden ratio..



The height of the Parthenon, from the base of the second step to the top of its roof peak (projected lines), is a golden ratio to its width. The height (length) is 10.4m



Thank you for all your help. Now you can enjoy the Greek delicacies and I can travel back to my era! Ooops! I've just revealed that we, the ancient Greeks, have also invented the time travel machine!

