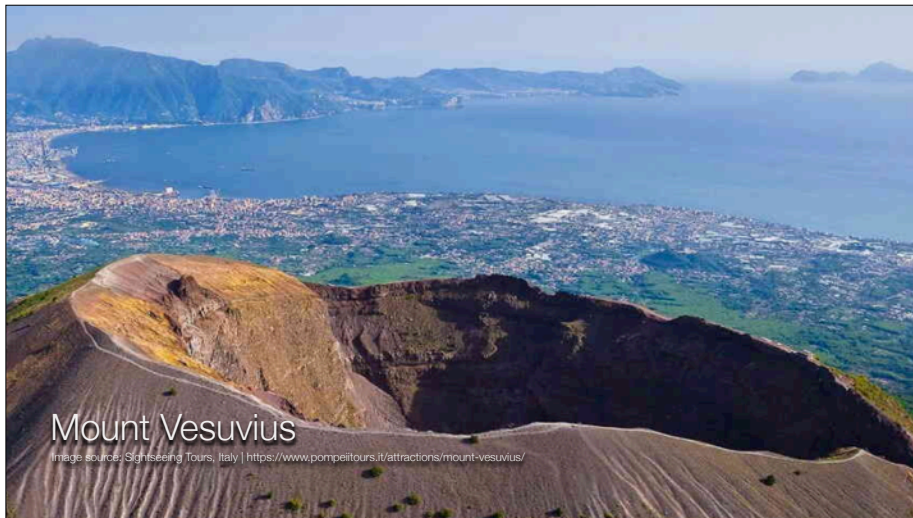# Mount Vesuvius

Characteristics of the Volcano

Mount Vesuvius
Location

- Located on the Gulf of Naples, about 5.6 miles east of Naples, Mount Vesuvius is part of the Campanian volcanic arc. The volcano sits above the convergent boundary between the African and Eurasian tectonic plates, where the African plate is subducting beneath the Eurasian plate.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Mount Vesuvius
Image source: Sightseeing Tours, Italy | https://www.pompeiitours.it/attractions/mount-vesuvius/

Mount Vesuvius
Volcano Type and Structure

- Vesuvius is a stratovolcano, characterized by its conical shape and steep profile. Stratovolcanoes are formed by layers of hardened lava, tephra, pumice, and volcanic ash from previous eruptions, making them prone to explosive eruptions.

- Vesuvius consists of a large cone partially encircled by the steep rim of a summit caldera formed by the collapse of an earlier, much higher structure called Mount Somma. This caldera, known as Monte Somma, forms a ridge that partially surrounds the newer cone of Vesuvius.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Slide 1

Mount Vesuvius

Slide 2

Mount Vesuvius
Volcanic Structure

- The current height of Vesuvius is about 4,203 feet, though it has fluctuated due to various eruptions.

- Vesuvius is one of the most dangerous and closely monitored volcanoes in the world due to its explosive potential and proximity to densely populated areas. It is classified as active, with its most recent eruption occurring in 1944.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Slide 3

Mount Vesuvius
Volcanic Activity

- Vesuvius has erupted many times over thousands of years, with major eruptions occurring long before recorded history. One such event, known as the Avellino eruption around 1800 BCE, was a massive eruption that buried nearby Bronze Age settlements.

- This is the most famous and devastating eruption, which occurred in 79 CE, buried the cities of Pompeii, Herculaneum, and other nearby settlements under ash, pumice, and pyroclastic flows.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Slide 4

Mount Vesuvius
Volcanic Activity

- After centuries of dormancy, Vesuvius erupted again in 1631, causing widespread destruction and killing around 4,000 people.

- Significant eruptions occurred in 1737, 1767, 1794, 1822, 1858, 1872, and 1906. The 1906 eruption caused extensive damage, claimed hundreds of lives, and led to the 1908 Summer Olympics being moved from Rome to London.

- The last major eruption lasted from March 18 to March 29, 1944. It damaged Allied aircraft stationed nearby during WWII. It marked the end of Vesuvius's last eruptive cycle.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Mount Vesuvius
The AD 79 Eruption

Destruction of Pompeii and Herculaneum
John Martin, Public domain, via Wikimedia Commons
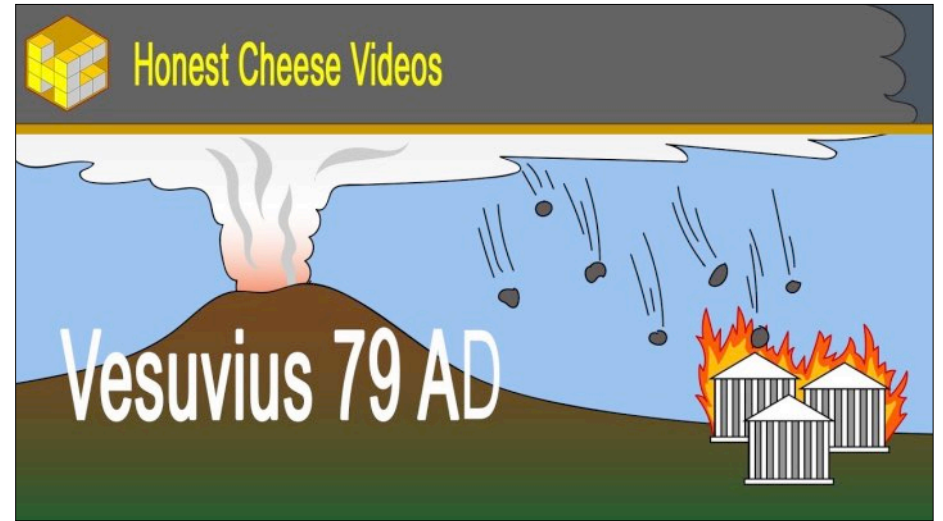

Mount Vesuvius
The AD 79 Eruption

- The eruption began on August 24, AD 79, with a powerful explosion that sent a column of volcanic ash, pumice, and gas high into the atmosphere. The eruption is believed to have reached a height of 20.5 miles, ejecting material at a rate of 1.5 million tons per second.

- Named after the Roman historian Pliny the Younger, who provided a detailed eyewitness account, the initial phase of the eruption is called the Plinian Phase. It involved a towering eruption column, widespread ashfall, and pumice rain. Pompeii and surrounding areas were blanketed in ash and pumice, with buildings collapsing under the weight.

Mount Vesuvius
The AD 79 Eruption

- The most devastating part of the eruption came when the column of ash and gas collapsed, generating pyroclastic flows—fast-moving currents of hot gas and volcanic matter that raced down the slopes of Vesuvius at speeds of up to 430 mph. These flows engulfed Pompeii, Herculaneum, and other towns, reaching temperatures of up to 1,292°F. The intense heat instantly killed anyone remaining in the cities.

Mount Vesuvius
Destruction of Pompeii

- Pompeii was buried under approximately 13 to 20 feet of volcanic ash and pumice. The city was left in a state of frozen destruction, preserving buildings, artifacts, and even the remains of its inhabitants in remarkable detail.

- The pyroclastic flows and ashfalls destroyed the city's infrastructure and caused the deaths of thousands of people, though many had fled before the worst of the eruption.

Mount Vesuvius
Destruction of Herculaneum

- Herculaneum, Pompeii's "sister city" was buried under an even thicker layer of volcanic material, up to 66 feet deep. Unlike Pompeii, which was buried by ashfall, Herculaneum was engulfed by pyroclastic flows. These flows carbonized and preserved wooden structures and organic materials, offering a unique glimpse into daily life in a Roman town.

- The eruption lasted for about 24 hours, leaving the landscape utterly transformed. The cities remained buried and largely forgotten until their rediscovery in the 18th century.

Pompeii
Archaeological Exploration

Pompeii
Archaeological Exploration

- The first known discovery of Pompeii's ruins occurred accidentally in 1592 during the construction of an underground water channel by the architect Domenico Fontana. Some artifacts and inscriptions were found, but the site was not identified as Pompeii, and the discovery was largely forgotten.

- Systematic excavations began in the nearby town of Herculaneum in 1738 under the patronage of Charles III of Spain (also King of Naples). This sparked interest in Pompeii, though work there did not begin immediately.

Pompeii
Archaeological Exploration

- Excavations at Pompeii began in earnest in 1748 under the direction of the Spanish military engineer Rocque Joaquín de Alcubierre. Initially, the focus was on treasure hunting rather than scientific exploration. Excavations uncovered frescoes, statues, and other artifacts, which were often removed and sent to the royal court,

Pompeii
Archaeological Exploration

- Scientific archaeology and major discoveries began to take place in the 19th century.

- Swiss engineer Karl Weber (1750s-60s) was among the first to take a more systematic approach to the excavations, documenting his finds and recognizing the importance of preserving the site's context.

- Francesco La Vega (1760s-1804) succeeded Weber and continued excavations, focusing on the public buildings and streets of Pompeii. His work led to the discovery of the Temple of Isis and other significant structures.

Pompeii
Archaeological Exploration

- Giuseppe Fiorelli (1860-1875) is considered one of the most important figures in the history of Pompeii's excavation. He introduced modern archaeological methods and prioritized the preservation of the site. His contributions include:

Systematic Excavation
Fiorelli divided Pompeii into a grid of nine regions and began excavating in a more organized manner, focusing on uncovering entire buildings and streets.

Pompeii
Archaeological Exploration

Plaster Casts of Victims
One of Fiorelli's most famous innovations was the creation of plaster casts of the victims of the eruption. He poured liquid plaster into the voids left by decomposed bodies in the hardened ash, creating hauntingly realistic casts of people and animals in their final moments.

Public Access
Fiorelli also opened Pompeii to the public, allowing visitors to tour the excavated areas.

Pompeii
Archaeological Exploration

- Amedeo Maiuri (1924-1961) led extensive excavations during his long tenure, uncovering large sections of the city, including the Villa of the Mysteries, famous for its well-preserved frescoes. He also expanded the excavation of Pompeii's necropolis (burial grounds) and the city's walls.

- After World War II, excavations continued, but the focus began to shift towards preservation and restoration rather than simply uncovering new areas. Efforts were made to protect the site from weathering and to maintain the structures and frescoes. During this period, more attention was also paid to understanding the city's infrastructure, including its water supply system, roads, and the layout of its residential areas.

Pompeii
Archaeological Exploration

- In response to concerns over the deterioration of the site, the European Union and Italian government launched the Great Pompeii Project in 2012. This initiative focuses on the conservation and restoration of Pompeii's structures and artwork, with an emphasis on preventing future damage.

- Advances in technology have transformed the way archaeologists study Pompeii. 3D scanning, ground-penetrating radar, and aerial photography have been employed to map the site and detect buried structures without the need for intrusive digging.
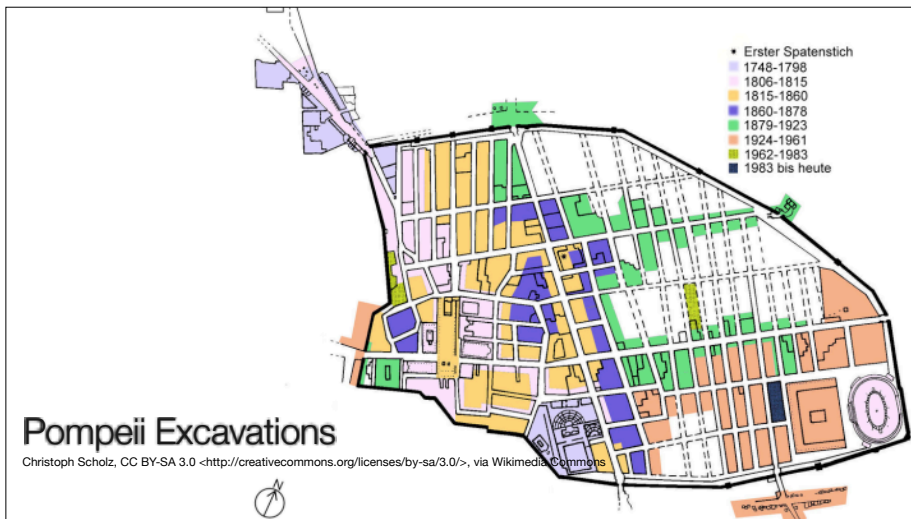

Pompeii
Archaeological Exploration

- New excavations continue to reveal exciting discoveries, including frescoes, mosaics, and even the remains of horses in a stable. Recently, archaeologists discovered an intact thermopolium (ancient fast-food stand), complete with vivid frescoes and traces of the food that was served there.

Erster Spatenstich
1748-1798
1806-1815
1815-1860
1860-1878
1879-1923
1924-1961
1962-1983
1983 bis heute

Pompeii Excavations

Christoph Scholz, CC BY-SA 3.0 <http://creativecommons.org/licenses/by-sa/3.0/>, via Wikimedia Commons
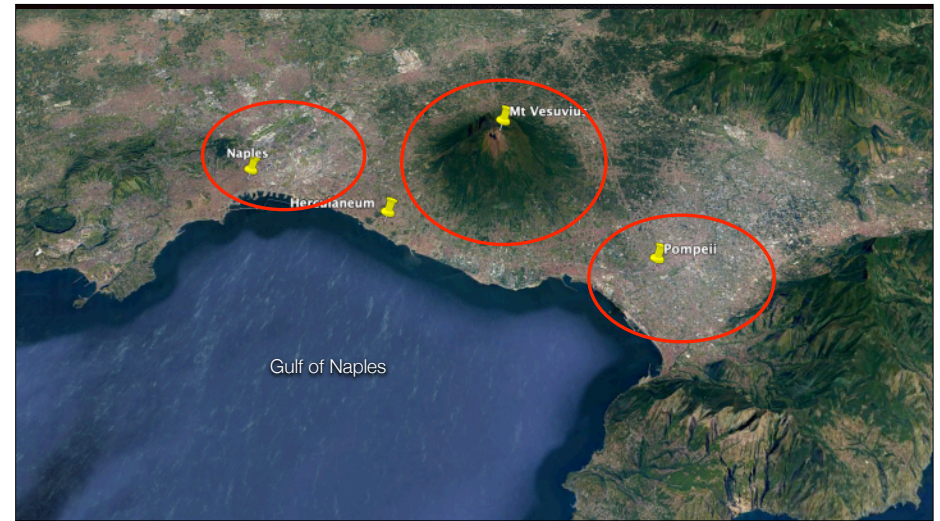

Pompeii
Location and Layout

Pompeii
Location

- Pompeii was located about 5 miles southeast of Mount Vesuvius and roughly 14 miles from Naples.

Pompeii
Location

- The city was built on a plateau formed by ancient lava flows, about 100 feet above sea level, offering a view of the coast and the surrounding countryside.

- The area around Pompeii was known for its agriculture, with vineyards, orchards, and fertile fields that thrived thanks to the volcanic soil.
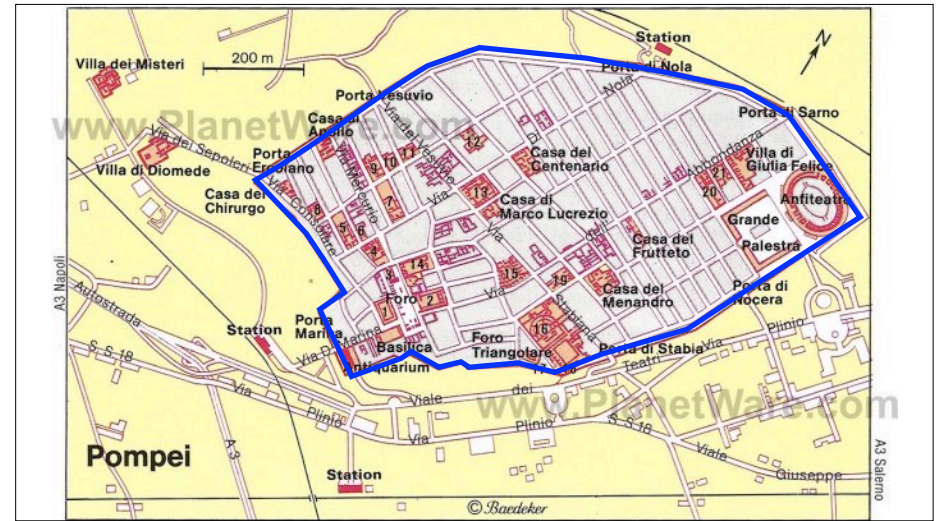
Pompeii
City Layout

- Pompeii was a bustling city, laid out in a structured and organized manner, reflecting the influence of Roman urban planning. It featured a complex grid of streets, markets, homes, baths, and temples.

- The city covered about 170 acres and had a population of approximately 11,000 to 15,000 people.
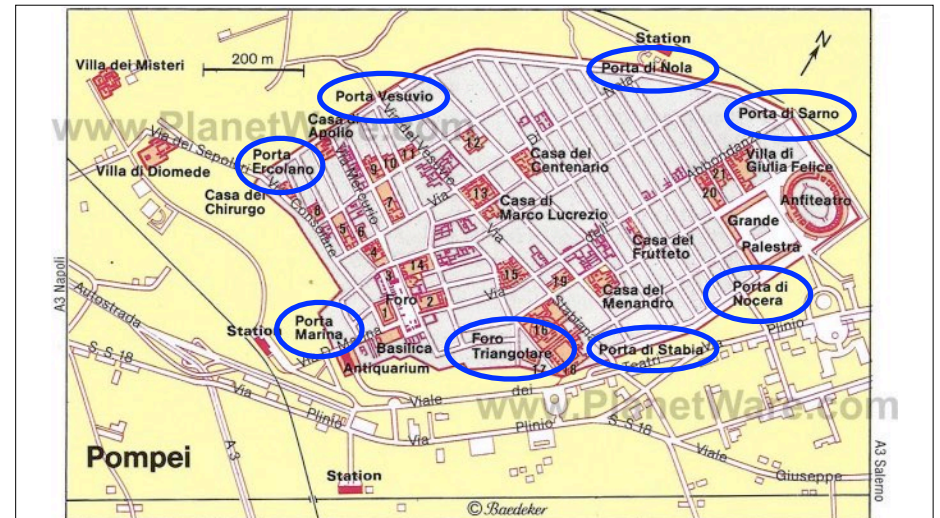
Pompeii
City Layout

- Pompeii was surrounded by protective walls, built initially for defense, though their role diminished over time as the city became more peaceful.

Pompeii
City Layout

- There were eight main gates, each leading to different roads connecting Pompeii to nearby cities. Some prominent gates included the Herculaneum Gate to the northwest, the Vesuvius Gate to the north, and the Nola Gate to the northeast.
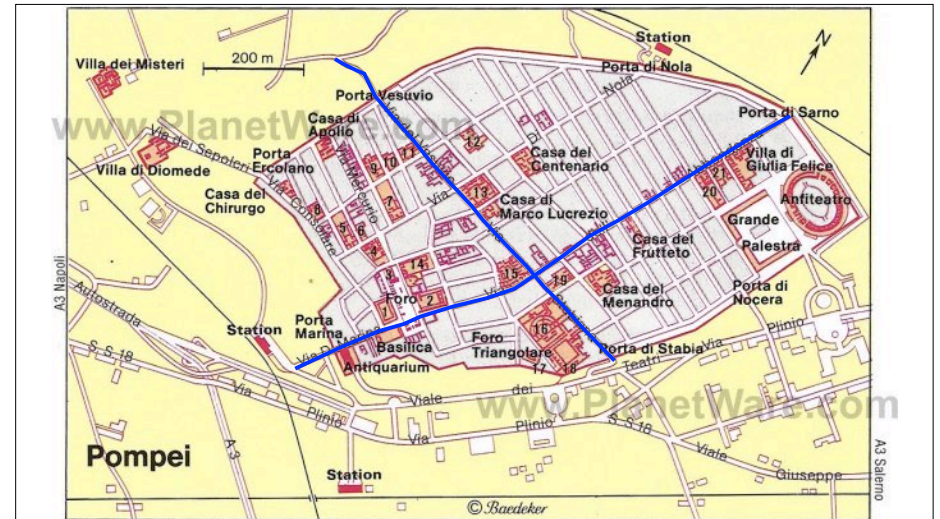
Pompeii
City Layout

- The city was organized around a grid plan, with two main streets intersecting:

- The Cardo, the main north-south street, known as the Via Stabiana, ran through the heart of the city.

- The Decumanus, the main east-west street, known as the Via dell'Abbondanza, was the busiest and most important thoroughfare in Pompeii. It was lined with shops, businesses, and public buildings.

- Branching off from the main roads were smaller, narrower streets and alleys, many of which were paved with stone and had stepping stones for pedestrians.
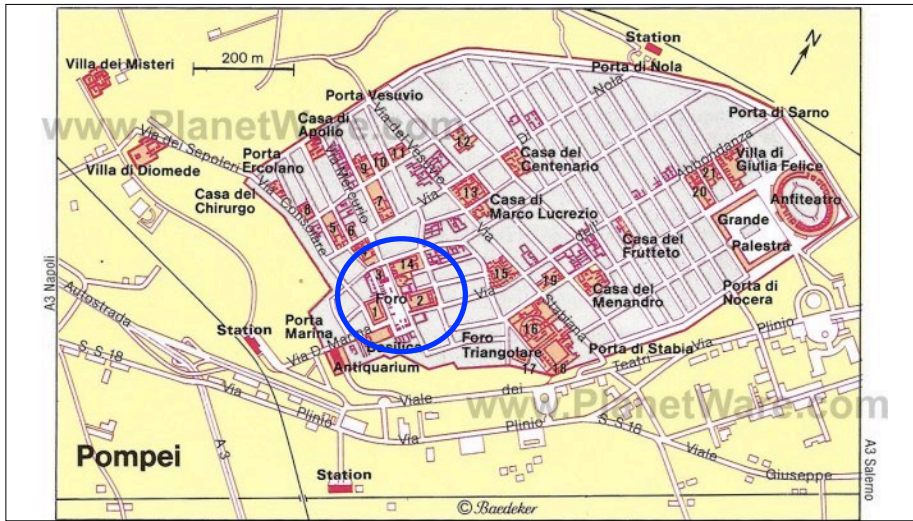
Pompeii
Significant Structures

Pompeii
Significant Structures

- The Forum, the city's central square, was located near the intersection of the main streets and served as the political, economic, and religious hub.

- The heart of Pompeii, the Forum was the political, religious, and economic center.

- Surrounding the Forum were important buildings such as the Basilica (a law court and business center), Temples (including the Temple of Jupiter and Temple of Apollo), the Macellum (a food market), and various public offices.

Pompeii Forum

Image source: https://www.planetware.com/tourist-attractions/pompeii-3campa-cm-pp.htm

Pompeii
Significant Structures

- Temples dot the landscape of Pompeii, some of the most significant being:

- Temple of Apollo: One of the oldest temples in Pompeii, this temple is located near the Forum and dedicated to the god Apollo.

- Temple of Jupiter: Dominating the Forum, this temple was dedicated to the chief Roman deity, Jupiter.

- Temple of Isis: Located east of the little theater, and dedicated to the Egyptian goddess, this temple reflected the influence of Egyptian religion in Pompeii.

Temple of Apollo
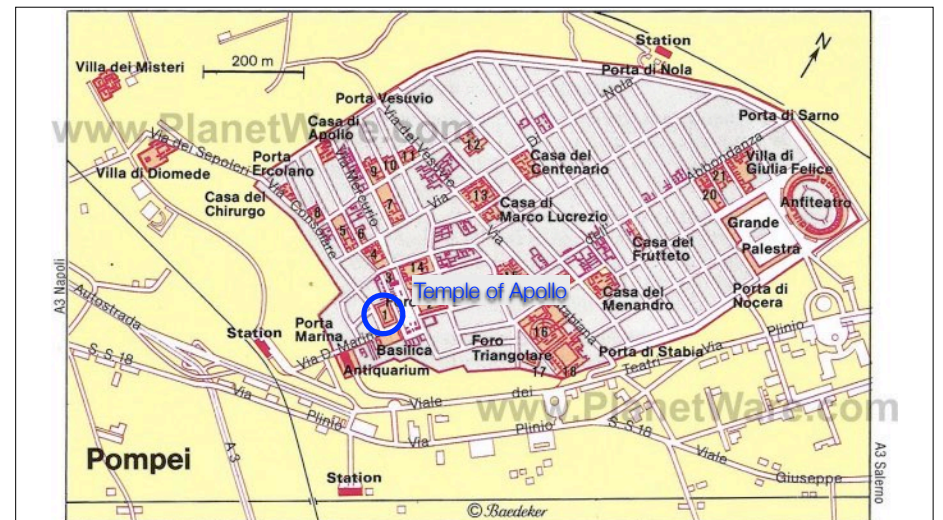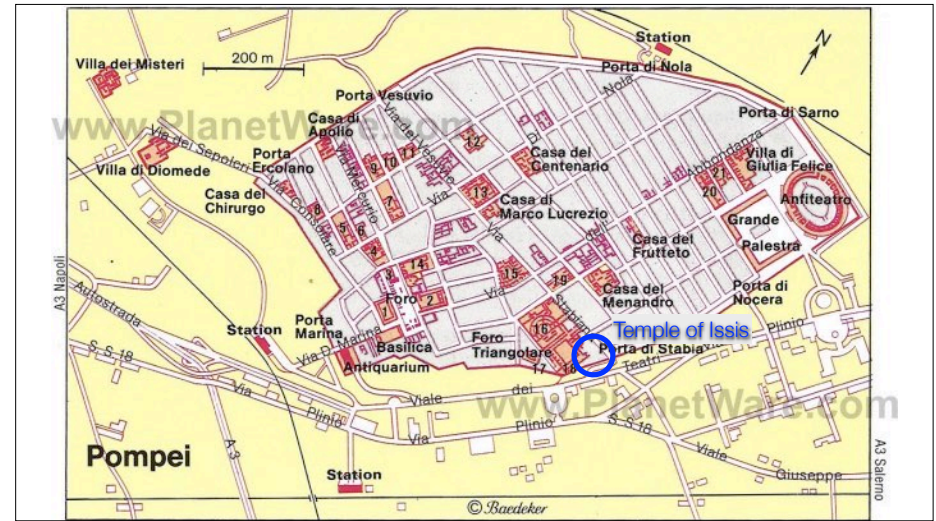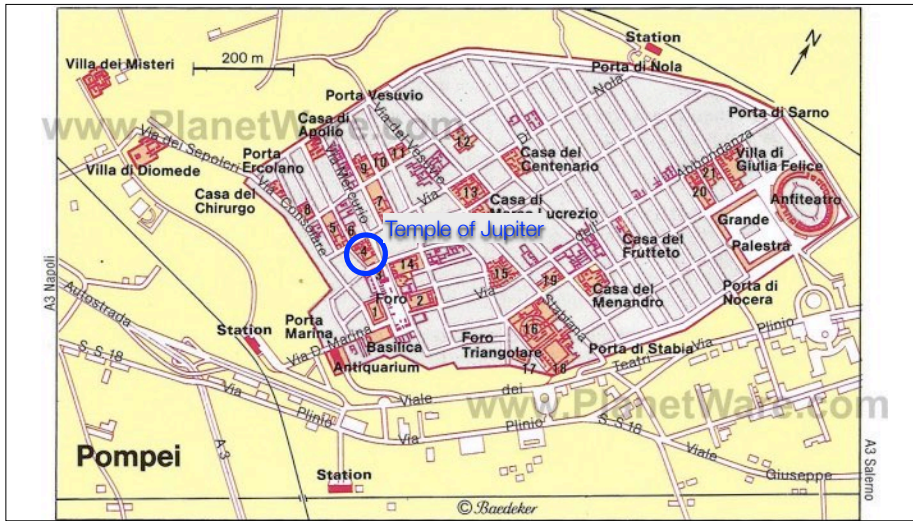
Pompeii
## Significant Structures

- Pompeii's main market, the Macellum, was located near the Forum

- Other open-air markets, food stalls and bakeries were scattered throughout the city, catering to the daily needs of the inhabitants.

- Many homes also had storefronts facing the street, where owners conducted business.

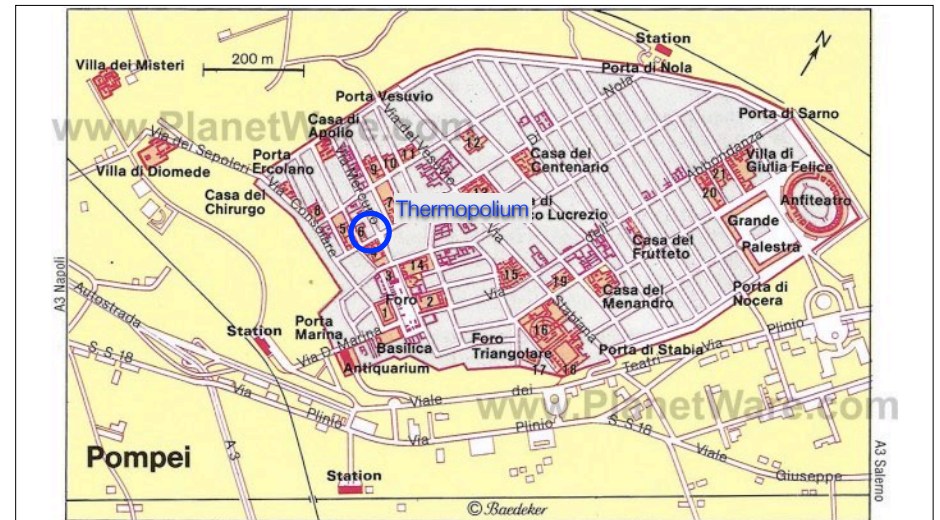- Lining the main streets were numerous shops, workshops, and taverns.

Slide 1
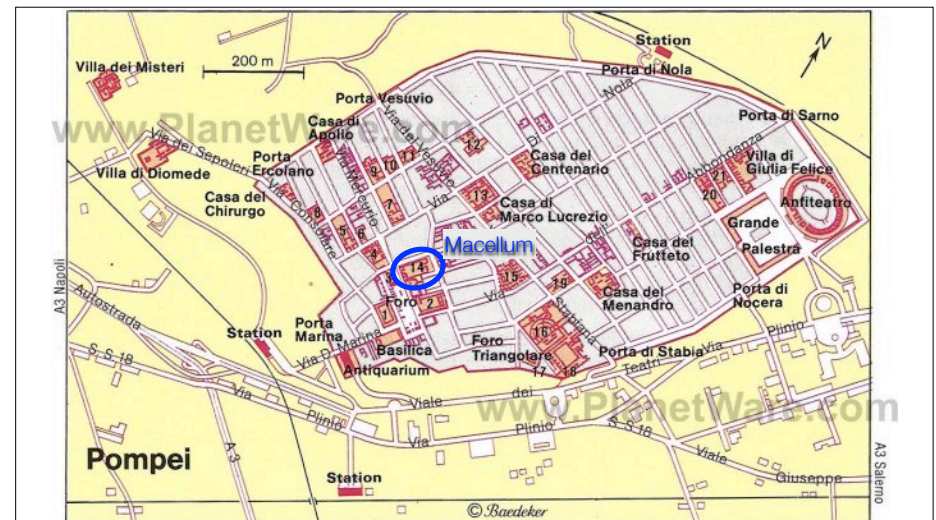
Pompeii
Additional Sites

- **The Thermopolium**: Recently uncovered, this well-preserved food stand showcases colorful frescoes and remnants of the food served to Pompeii's citizens.

Slide 2

Map of Pompeii showing Thermopolium location circled.

Slide 3

Thermopolium

Image source: https://news.artnet.com/art-world/pompeii-opens-recently-discovered-ancient-fast-food-restaurant-1998265

Slide 4

Pompeii
Significant Structures

- Residential areas in Pompeii were a mix of wealthy villas and modest homes.

- **House of the Faun**: One of Pompeii's largest and most luxurious residences, famous for its intricate mosaics, including the Alexander Mosaic, depicting the battle between Alexander the Great and Darius III of Persia.

- **The House of the Vettii**: A wealthy residence featuring stunning frescoes and sculptures, offering insight into the opulent lifestyle of Pompeii's elite.

- **Villa of the Mysteries**: This villa, located on the outskirts of Pompeii, is renowned for its well-preserved frescoes depicting mysterious initiation rites, possibly related to the cult of Dionysus.

Map 1 (top left):

Villa dei Misteri
200 m
Station
Porta di Nola
Porta Vesuvio
Casa di Apollo
House of Faun
Porta di Sarno
Villa di Diomede
Porta Ercolano
Casa del Centenario
Villa di Giulia Felice
Casa del Chirurgo
Casa di Marco Lucrezio
Anfiteatro
Casa del Frutteto
Grande Palestra
Station
Porta Marina
Foro
Casa del Menandro
Porta di Nocera
Basilica
Antiquarium
Foro Triangolare
Porta di Stabia
Pompei
Station
Giuseppe
A3 Napoli
A3 Salerno
© Baedeker

Map 2 (top right):

Villa dei Misteri
200 m
Station
Porta di Nola
Porta Vesuvio
Casa di Apollo
Casa del ...ario
Villa di Diomede
Porta Ercolano
House of the Vetti
Casa di Marco Lucrezio
Porta di Sarno
Casa del Chirurgo
Villa di Giulia Felice
Anfiteatro
Foro
Casa del Frutteto
Grande Palestra
Station
Porta Marina
Foro Triangolare
Casa del Menandro
Porta di Nocera
Basilica
Antiquarium
Porta di Stabia
Pompei
Station
Giuseppe
A3 Napoli
A3 Salerno
© Baedeker

Photo (bottom left):

House of Vetti
Image source: https://www.planetware.com/tourist-attractions-/pompeii-pompei-i-cm-pp.htm

Map 3 (bottom right):

Villa dei Misteri
Villa of the Mysteries
Station
Porta di Nola
Porta Vesuvio
Casa di Apollo
Casa del Centenario
Villa di Diomede
Porta Ercolano
Casa di Marco Lucrezio
Porta di Sarno
Casa del Chirurgo
Villa di Giulia Felice
Anfiteatro
Casa del Frutteto
Grande Palestra
Foro
Casa del Menandro
Porta di Nocera
Station
Porta Marina
Basilica
Antiquarium
Foro Triangolare
Porta di Stabia
Pompei
Station
Giuseppe
A3 Napoli
A3 Salerno
© Baedeker

Villa of Mysteries

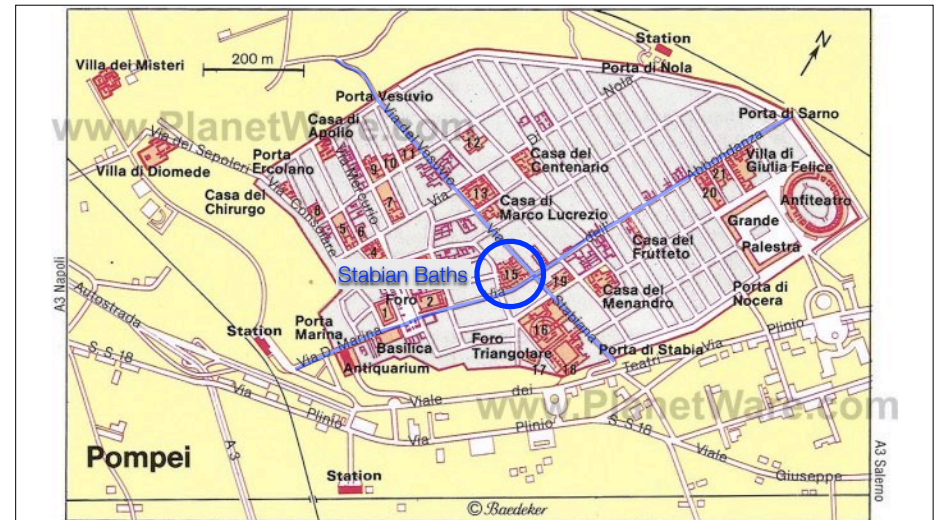Image source: https://www.planetware.com/tourist-attractions/pompeii-pompei-i-cm-pp.htm

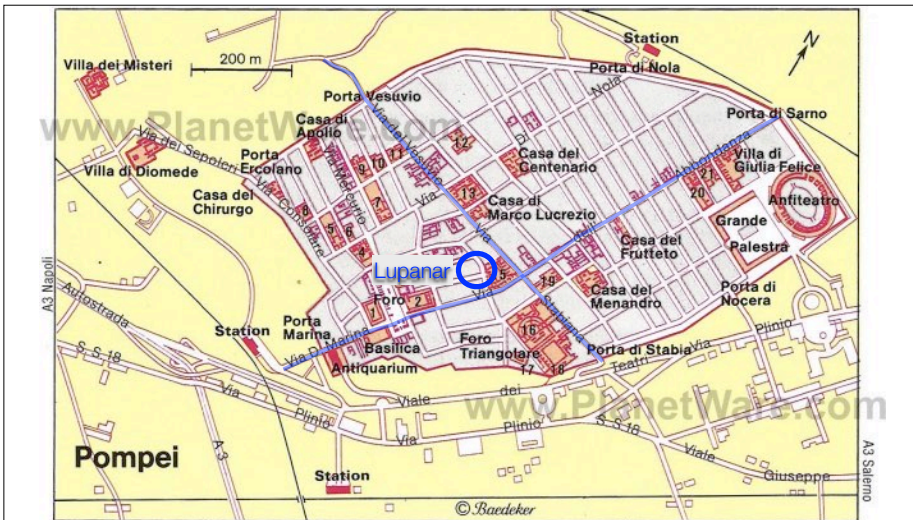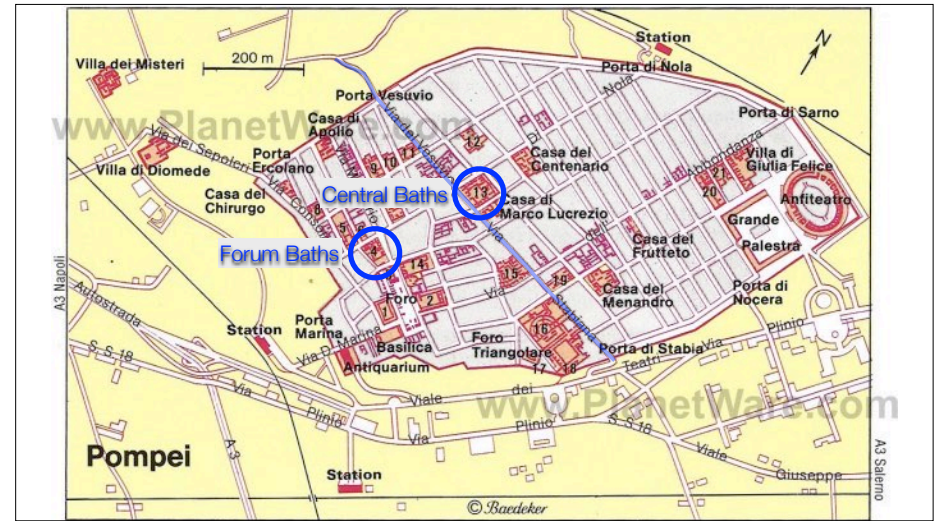# Pompeii
Significant Structures

- Several important facilities were located along the main north-south road:

- The Lupanar: Located near the center of the city is Pompeii's most famous brothel. With preserved erotic frescoes and graffiti, it offers a glimpse into the more personal aspects of Roman life.

- Public baths were not only places for bathing but also for socializing. The oldest are the Stabian Baths, which showcase the Roman bathing culture with well-preserved rooms and heating systems.

- The Forum and Central were additional baths.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model].* OpenAI. https://chat.openai.com/

Stabian Baths
image source: https://www.planetware.com/tourist-attractions/pompeii-pompeii-i-cm-pp.htm

Pompei
Central Baths
Forum Baths

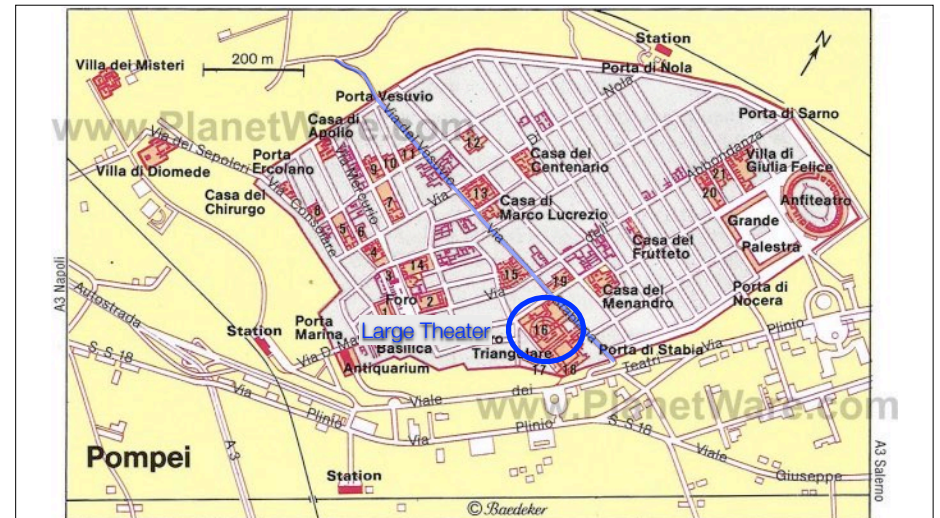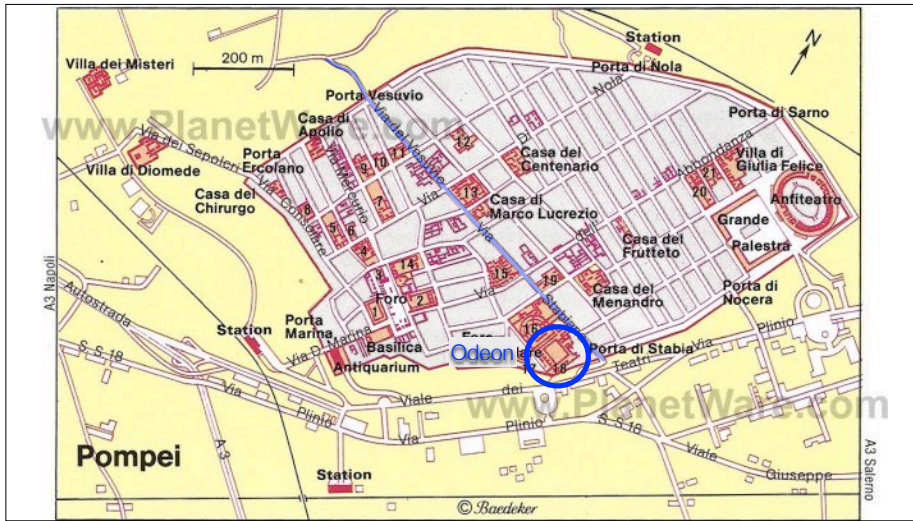# Pompeii
Significant Structures

- Pompeii had two theaters:

- The Large Theater was built into a natural hill in the 2nd century BC and was one of the first permanent stone theaters in the Roman Empire. With a seating capacity of around 5,000 spectators, it was used primarily for theatrical performances, including comedies and tragedies.

- The Odeon was for more intimate gatherings and musical performances. Built during the early years of the Roman colony (80-75 BC) it had a seating capacity of approximately 1,500. It was intended for council meetings, musical and singing performances, and miming, which was the most popular theatrical genre at the time.
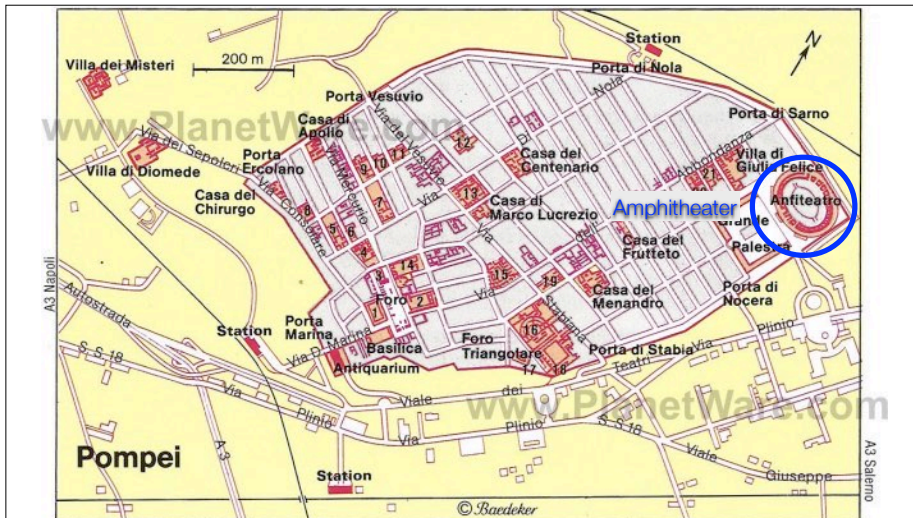
Pompei
Large Theater

Pompeii
Significant Structures

- On the southwest corner of the city was the Amphitheater. Built around 70 BC, it is one of the oldest known stone amphitheaters in Rome.

- The amphitheater measures 443 feet long and 341 feet wide. The arena is nearly 20 feet below ground level.

- The seating area, known as the cavea, is tiered and semicircular and could hold up to 12,000 spectators, with some historians estimating a capacity of 20,000.

- The arena had only two entrances: the *Porta Triumphalis*, used for the opening procession of gladiators, and the *Porta Libitinensis*, used as an exit point for the dead. Its "painted posters" have given insight into gladiatorial culture.
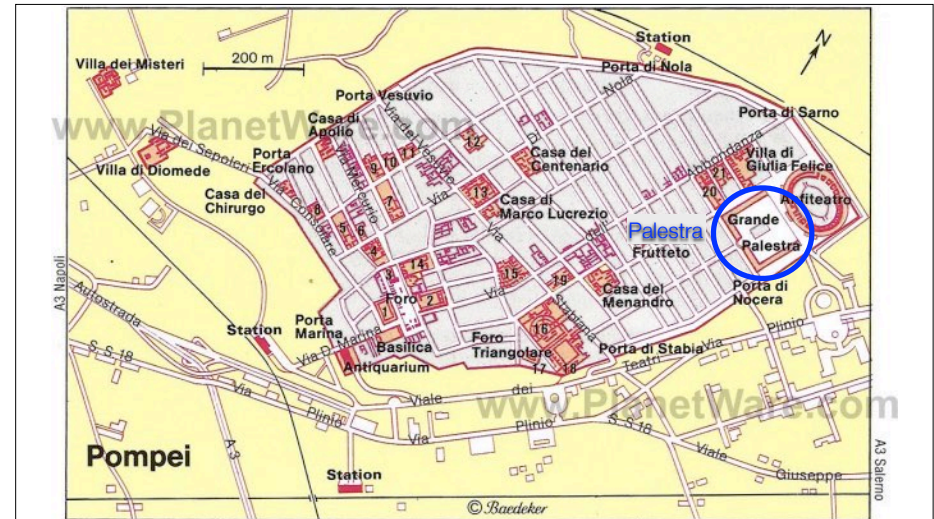
Amphitheater

Pompeii
Significant Structures

- The Palaestra was a gymnasium intended for the physical and intellectual training of young citizens. Built by Augustus, it cononsisted of a large open air square, approximately 460 x 460 feet, surrounded by porticoes and enclosed by a high wall with 10 doors.
- Three sides had colonnades with 48 columns on the longer side and 35 columns on each of the shorter sides. A double row of plane-trees grew all along its sides to provide shade for the sports ground. A swimming-pool measuring 144 by 72 feet was situated right in the middle of the palaestra.
- Excavation uncovered erotic or poetic graffiti left on the walls by visitors, along with remains of numerous victims who sought refuge there during the eruption.

https://pompeiisites.org/en/archaeological-site/large-palaestra/ • https://www.planetpompeii.com/en/map/the-large-palestra.html

Pompeii
Significant Structures

- At the south of the city is the Garden of the Fugitives: which contains the haunting plaster casts of 13 victims of the eruption, frozen in their final moments as they tried to escape.
- During his excavations of Pompeii in the 1860s and 70s, Italian archaeologist Giuseppe Fiorelli realized that voids in the hardened ash and pumice were caused by the decomnpisiton of human bodies. He came up with the innovative idea of filling the areas with plaster. When the ash was removed the plaster revealed a detailed cast of the victims at the moment of their death.

Garden of the Fugitives, Pompeii
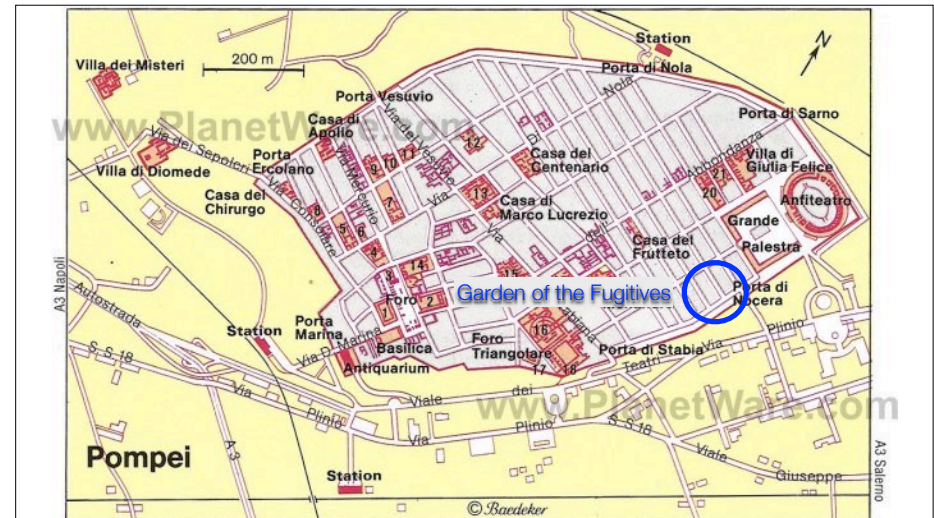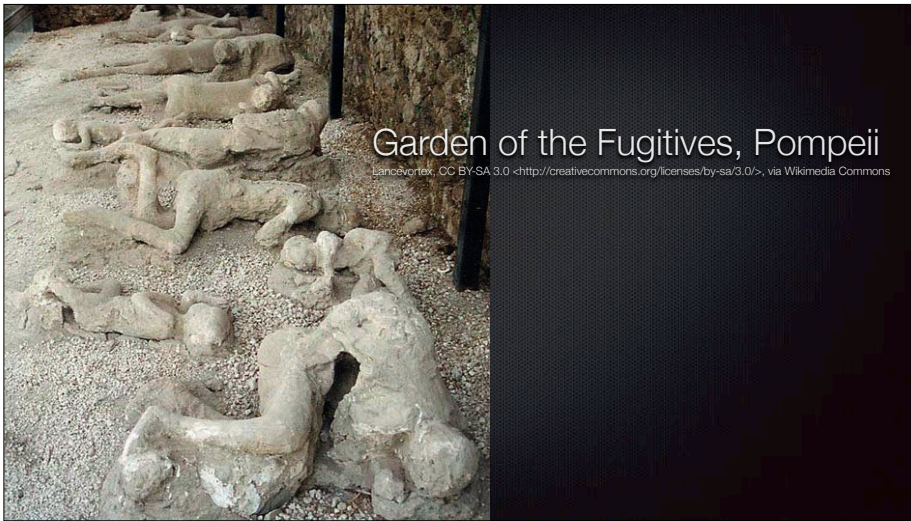
Pompeii
Significant Structures

- **Fountains and Water Towers**: Pompeii had a well-developed water supply system, with aqueducts, public fountains, and water towers that distributed water throughout the city.

- **Sewage System**: The city had a complex drainage system, with waste channeled away through underground sewers.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Pompeii
Cultural and Historical impact

- The excavation of Pompeii has provided unparalleled insights into the daily life, culture, and social structure of an ancient Roman city. The preservation of buildings, artifacts, and even graffiti offers a vivid snapshot of life in the 1st century AD.

- The rediscovery of Pompeii in the 18th century had a profound impact on European art and culture, inspiring the Neoclassical movement and becoming a symbol of the fragility of human existence. Writers, artists, and poets have been captivated by Pompeii's story for centuries.

OpenAI. (2024). *ChatGPT (Version GPT-4) [Large language model]*. OpenAI. https://chat.openai.com/

Pompeii
Significant Structures

- The **Large Palaestra** consists of a large open air square, approximately 460 x 460 feet, surrounded by porticoes and enclosed by a high wall with battlements in which there are 10 doors.

- It was built at the beginning of the 1st century, and was intended for the physical and intellectual training of young citizens. Many erotic or poetic graffiti have been left by visitors on the walls and columns. Numerous victims who had looked for a refuge in the building were found during the excavation.

- Date of excavation: 1935-1939.

-

https://pompeiisites.org/en/archaeological-site/large-palaestra/

Herculaneum
Pompeii's "Sister City"

Herculaneum
Pompeii's "Sister City"

Herculaneum is an ancient Roman city that was destroyed by the eruption of Mount Vesuvius in AD 79, just like Pompeii. While Pompeii is more famous, Herculaneum is often referred to as its "sister city" for several reasons:

- Both cities were buried under volcanic ash, pumice, and rocks, preserving many of their buildings, artifacts, and even human remains.
- Herculaneum is located halfway between Naples and Pompeii, making it a natural comparison.
- Both have well-preserved ruins, however Herculaneum's are even better than Pompeii's due to a westerly wind that spared it from the initial eruption, allowing inhabitants to flee and minimizing damage.

Herculaneum
Physical Setting

- Herculaneum was closer to Mount Vesuvius, lying about 4 miles to the west of Pompeii and situated directly on the coast.
- Unlike Pompeii, Herculaneum was built on a rocky promontory overlooking the Bay of Naples. This elevated position offered protection from some natural elements but made it vulnerable to the volcanic pyroclastic flows that buried the city.
- The city was smaller and more affluent than Pompeii, with luxurious villas and a vibrant social scene. Its seaside location made it a favored retreat for wealthy Romans.

Herculaneum
Urban Layout

- Herculaneum had narrow streets and grand homes, many of which featured elaborate mosaics and frescoes. The city's proximity to the sea also meant that fishing and maritime activities were integral to its economy.

3D Animation of Herculaeum (32:59)
https://www.youtube.com/watch?v=5IY_7jRdgFAk&t=1122s (32:59)

Villa of the Papyri
Herculaneum

- The Villa of the Papyri is a private house in the ancient Roman city of Herculaneum. It was owned by Lucius Calpurnius Piso Caesoninus, the father-in-law of Julius Caesar. The villa is situated along the shore, away from the main Herculaneum ruins, which helped preserve it remarkably well.

- The villa is famous for its unique library of papyrus scrolls, discovered in 1750. The site has yielded over 1,800 carbonized papyrus scrolls, making it one of the most significant archaeological discoveries in the history of classical scholarship.

https://www.getty.edu/about/

Villa of the Papyrii Model
Image source: https://www.reddit.com/r/ancientrome/comments/12ktplu/the_villa_of_the_papyri_was_an_ancient_roman/#lightbox

The Getty Villa
Remembering Herculaneum

- The Getty Villa is an educational center and art museum located in Pacific Palisades, Los Angeles, California. It is one of two campuses of the J. Paul Getty Museum, dedicated to the study and appreciation of the arts and cultures of ancient Greece, Rome, and Etruria.

- The villa was established in 1954 by oil tycoon J. Paul Getty, who opened a gallery adjacent to his home. As the collection grew, a new museum was built on the property, inspired by the Villa of the Papyri at Herculaneum and incorporating architectural details from other ancient sites.

https://www.getty.edu/about/

Getty Villa
Image source: https://www.getty.edu/visit/villa/

Google Earth