

What Is Classical Architecture?

Worksheet

Classical architecture is the architectural tradition of ancient Greece and Rome, characterized by the Greek orders (Doric, Ionic, Corinthian) and Roman innovations like the arch, vault, dome, and concrete construction.

Questions

1. How many Doric columns surround the Parthenon?
A) 12
B) 24
C) 46
D) 60
2. What material innovation let Romans build the Pantheon's wide dome?
A) Reinforced steel
B) Roman concrete with variable aggregate weight
C) Cast iron beams
D) Glass curtain walls
3. What is the key structural advantage of the arch over post-and-lintel construction?
A) It uses less decoration
B) It transfers load along a curve, spanning wider gaps than a straight lintel
C) It requires no foundation
D) It only works with wood
4. Which capital style features leaf-like (acanthus) decoration?
A) Doric
B) Ionic
C) Corinthian
D) Tuscan
5. The Parthenon in Athens (completed 438 BCE) measures about 69.5 m by 30.9 m and is surrounded by 46 Doric columns (8 across the front, 17 along each side). What structural system made this exterior colonnade possible?
6. The Pantheon in Rome, completed around 126 CE under Hadrian, has an unreinforced concrete dome with an interior diameter of 43.3 m - a record unmatched for over a thousand years. What Roman innovation made this possible?
7. A Roman aqueduct bridge, such as the Pont du Gard (built roughly 40-60 CE, about 49 m at its highest point), uses a triple tier of stone arches. Why did Romans favor the arch over the post-and-lintel system for this structure?
8. Define: What are the three classical Greek orders?
9. Define: What Roman invention enabled the dome of the Pantheon?
10. Define: What is post-and-lintel construction?

Answer Key

1. C) 46 - The Parthenon has 46 Doric columns: 8 across each short end and 17 along each long side (corners shared).
2. B) Roman concrete with variable aggregate weight - Roman concrete, lightened with pumice near the top, allowed a dome spanning 43.3 m without modern reinforcement.
3. B) It transfers load along a curve, spanning wider gaps than a straight lintel - Arches direct forces outward and down through their curve, letting them span distances a single stone lintel cannot.
4. C) Corinthian - The Corinthian order is known for its ornate capitals carved with acanthus leaves.
5. The Parthenon uses post-and-lintel (trabeated) construction: vertical stone columns support horizontal stone beams (the entablature). Because stone lintels can only span short distances, columns had to be spaced closely and regularly - hence the dense colonnade around all four sides. Subtle refinements, like columns swelling slightly (entasis) and leaning inward a few centimeters, corrected optical illusions and added visual harmony.
6. Roman concrete (opus caementicium), made from volcanic ash (pozzolana), lime, and aggregate, could be cast into complex curved shapes unlike cut stone. Builders varied the aggregate by height: heavier stone at the base, lighter pumice near the top oculus, reducing the dome's weight where it mattered most. The central oculus (about 8.2 m across) also reduced weight at the dome's peak while providing the only light source.
7. An arch transfers weight outward and downward along a curve into its supports, letting it span far wider gaps than a straight stone lintel could without cracking. Stacking arches in tiers (as at Pont du Gard) let builders reach great heights while keeping each tier structurally efficient and using less material than a solid wall. This arch-based engineering let Romans span valleys and build aqueducts, bridges, and amphitheatres at a scale Greek trabeated construction couldn't achieve.
8. Doric (sturdy, no base), Ionic (scroll capitals), and Corinthian (leaf-like capitals).
9. Roman concrete (opus caementicium), cast with lightweight aggregate near the top to reduce weight.
10. A system where vertical columns support horizontal beams - the basis of Greek temples.

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