

What Is Sustainable Architecture?

Worksheet

Sustainable architecture is the practice of designing buildings that reduce environmental impact through energy efficiency, passive design, sustainable materials, and resource-conscious site strategies.

Questions

1. What is the main goal of sustainable architecture?

- A) Maximizing building height
- B) Minimizing environmental impact across a building's life cycle
- C) Reducing construction time only
- D) Increasing glass facade area

2. What is passive design?

- A) Using solar panels exclusively
- B) Reducing energy needs through orientation, shading, and material choices without mechanical systems
- C) Ignoring climate in design
- D) Automating building systems

3. What does 'embodied carbon' refer to?

- A) Carbon released while a building is occupied
- B) Emissions from extracting, manufacturing, and transporting materials
- C) Carbon absorbed by landscaping
- D) Emissions from a car commute

4. What is adaptive reuse?

- A) Demolishing a building to build new
- B) Renovating an existing building for new use instead of demolition
- C) Adding solar panels to a roof
- D) Recycling construction waste only

5. An architect designs a house in a hot climate. Which passive strategies reduce cooling energy?

6. A renovation project must reduce embodied carbon. What material choices help?

7. A school wants to cut its water use. What sustainable design features apply?

8. Define: What is sustainable architecture?

9. Define: What is passive design?

10. Define: What is embodied carbon?

Answer Key

1. B) Minimizing environmental impact across a building's life cycle - Sustainable architecture focuses on reducing environmental impact from material extraction through demolition.
2. B) Reducing energy needs through orientation, shading, and material choices without mechanical systems - Passive design leverages the building's form and materials, not mechanical equipment, to manage comfort.
3. B) Emissions from extracting, manufacturing, and transporting materials - Embodied carbon is locked into materials before the building is even occupied.
4. B) Renovating an existing building for new use instead of demolition - Adaptive reuse extends a building's life, avoiding the environmental cost of demolition and new construction.
5. Orient the building to minimize west-facing glass exposed to afternoon sun Add deep roof overhangs to shade windows in summer Use thermal mass materials (concrete, masonry) to buffer temperature swings Design cross-ventilation paths to allow natural airflow
6. Reuse the existing structural frame instead of demolishing it Specify low-carbon concrete mixes or mass timber where new structure is needed Source reclaimed wood and recycled steel for finishes Avoid materials with high manufacturing energy, like virgin aluminum, where alternatives exist
7. Install low-flow fixtures and dual-flush toilets Design a rainwater harvesting system for irrigation Use permeable paving to reduce stormwater runoff Specify drought-tolerant, native landscaping
8. Designing buildings to minimize environmental impact through energy efficiency, passive design, and responsible materials.
9. Using orientation, shading, and materials to reduce heating/cooling energy without mechanical systems.
10. The carbon emissions from extracting, manufacturing, and transporting building materials.

Bounlu

All cards, step-by-step solutions and an AI tutor are in the Notek app.
Promy turns exam dates into automatic reminders.