

What are Advanced CAD Techniques?

Worksheet

Advanced CAD techniques are computer-aided design methods - such as parametric modeling, BIM, and generative design - that let architects build intelligent, data-rich 3D models instead of static 2D drawings.

Questions

1. A line measures 5 cm on a 1:200 drawing. What is its real length?
 - A) 10 m
 - B) 5 m
 - C) 20 m
 - D) 2.5 m
2. What does BIM primarily add over standard 2D CAD?
 - A) More layers
 - B) Embedded data & parametric intelligence
 - C) Faster printing
 - D) Larger file size only
3. In parametric modeling, changing one dimension...
 - A) breaks the file
 - B) only affects that one drawing
 - C) automatically updates all linked views
 - D) requires redrawing everything manually
4. Generative design in CAD is best described as...
 - A) manual freehand sketching
 - B) algorithm-driven exploration of design options
 - C) printing at full scale
 - D) 2D layer management
5. A wall measures 8 cm on a 1:100 scale drawing. Find its real length.
6. On a 1:50 site plan, a driveway measures 24 cm. What is its actual length?
7. An architect needs to draw a 6 m wide room on a 1:100 sheet. How long should the line be?
8. Define: What does BIM stand for?
9. Define: What is parametric modeling?
10. Define: Why use CAD scale conversion?

Answer Key

1. A) $10\text{ m} - 5\ 200\ 100 = 10\text{ m}$.
2. B) Embedded data & parametric intelligence - BIM links geometry to real data - material, cost, schedule - not just extra lines.
3. C) automatically updates all linked views - Parametric objects propagate changes across all linked plans, sections, and elevations.
4. B) algorithm-driven exploration of design options - It uses algorithms and constraints to generate and rank many design alternatives.
5. $L_{\text{real}} = L_{\text{drawing}} S / 100 = 8\ 100 / 100 = 8\text{ m}$
6. $L_{\text{real}} = 24\ 50 / 100 = 12\text{ m}$
7. $L_{\text{drawing}} = L_{\text{real}} 100 / S = 6\ 100 / 100 = 6\text{ cm}$
8. Building Information Modeling - a parametric, data-rich 3D design method.
9. A CAD technique where geometry updates automatically when linked parameters (dimensions, rules) change.
10. To translate measurements between the drawing sheet and the real building using the drawing's scale ratio.

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