What Are Perspective and Projection Systems?

Worksheet

Projection systems (orthographic, axonometric) preserve true measurements, while perspective systems use vanishing points and a scaling relationship - apparent height shrinks with distance - to show a building the way it actually looks to an observer.

Questions

1. A 5 m tall wall is drawn with picture plane distance 2 m and object distance 10 m. What is its apparent height?

A) 0.5 m
B) 1 m
C) 2 m
D) 5 m

2. Which projection type preserves true, measurable dimensions on every view?

A) One-point perspective
B) Two-point perspective
C) Orthographic projection
D) Three-point perspective

3. In perspective drawing, what happens at a vanishing point?

A) Objects become larger
B) Parallel lines appear to converge
C) Colors intensify
D) Scale stays constant

4. Which perspective type is typically used to show a building's corner, with two walls receding to separate vanishing points?

A) One-point perspective
B) Two-point perspective
C) Axonometric projection
D) Orthographic projection

5. A 6 m tall facade is drawn with the picture plane 3 m from the viewer and the facade 15 m away. Find its apparent height on the drawing.

6. A 4 m column stands 8 m from the viewer, with the picture plane set 2 m away. Find its apparent height.

7. A 10 m tower is drawn with the picture plane 5 m from the viewer; the tower is 50 m away. Find the apparent height.

8. Define: What is orthographic projection?

9. Define: What is axonometric projection?

10. Define: What is a vanishing point?

Answer Key

1. B) 1 m - h' = 5 2 / 10 = 1 m.

2. C) Orthographic projection - Orthographic projection uses parallel lines and preserves true scale, unlike perspective views.

3. B) Parallel lines appear to converge - A vanishing point is where receding parallel lines visually meet on the horizon.

4. B) Two-point perspective - Two-point perspective uses two vanishing points, ideal for corner views of buildings.

5. h' = h D / d h' = 6 3 / 15 h' = 1.2 m

6. h' = h D / d h' = 4 2 / 8 h' = 1 m

7. h' = h D / d h' = 10 5 / 50 h' = 1 m

8. A projection using parallel lines (no vanishing point) that keeps true, measurable proportions - used for plans and elevations.

9. A type of parallel projection (isometric, dimetric, oblique) that shows 3D form while keeping measurable scale along its axes.

10. The point on the horizon where parallel lines appear to converge in a perspective drawing.