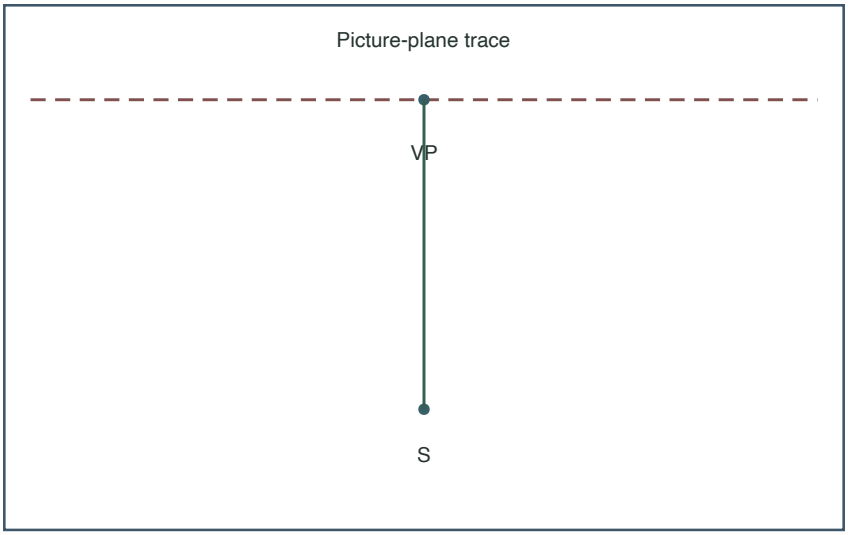
Perspective Drawing Mathematics

Answer | Task 1 of 4 | A4

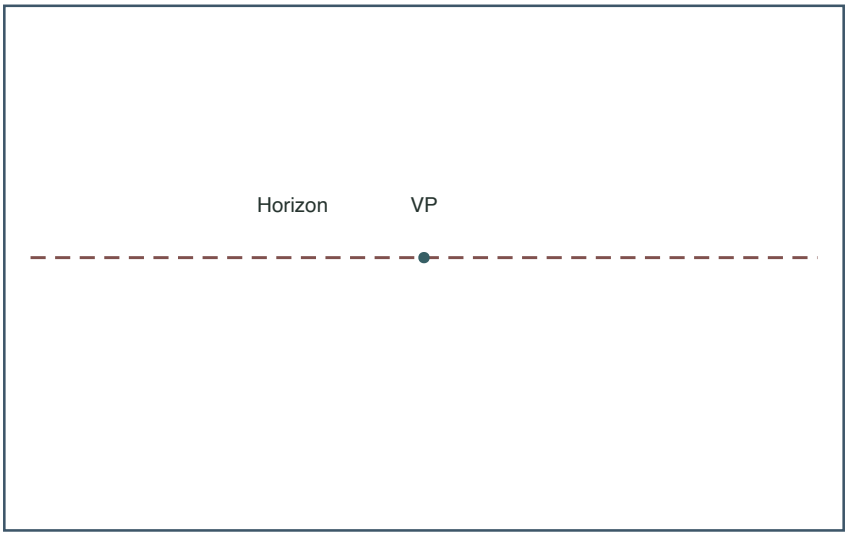
Prompt

Given a horizon line and a station point on the perpendicular through the picture center, construct the single vanishing point for a one-point perspective.

Plan view



Upright view



Answer

The vanishing point is the picture center on the horizon.

Reasoning

The depth direction in this centered example is perpendicular to the picture plane. Its ray from S meets the picture-plane trace at the center, which transfers to the center of the horizon.

Check

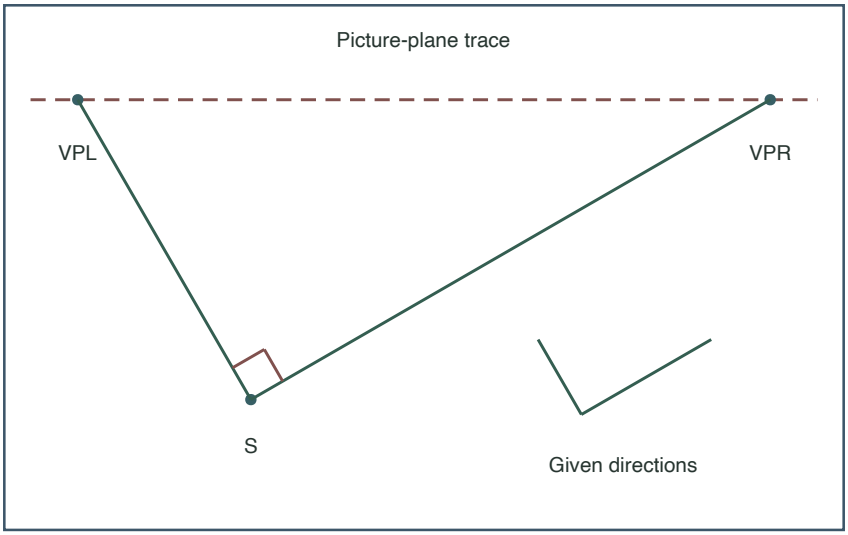
In plan confirm the perpendicular through S meets the picture-plane trace at its center. Transfer that location to the horizon.

Perspective Drawing Mathematics

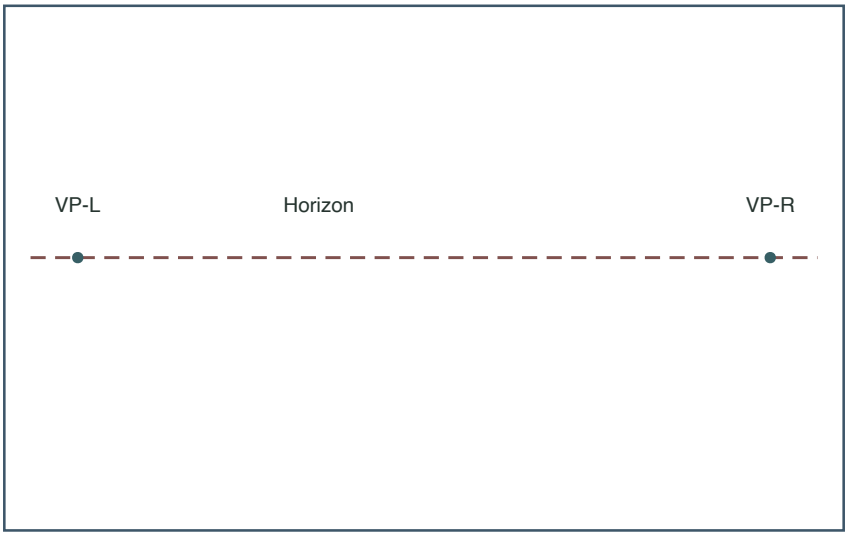
Prompt

Given a horizon line and an offset station point, construct two vanishing points for a rectangular object whose edges run left and right.

Plan view



Upright view



Answer

Use the two direction samples shown in the given plan. From S extend a ray parallel to each sample until it meets the picture-plane trace. Transfer the two intersections to the left and right places on the horizon.

Reasoning

Parallel lines in the object converge at the vanishing point of their direction.

Check

Compare each ray with its printed direction sample in plan. Verify the two horizon points have the same horizontal positions as the two intersections.

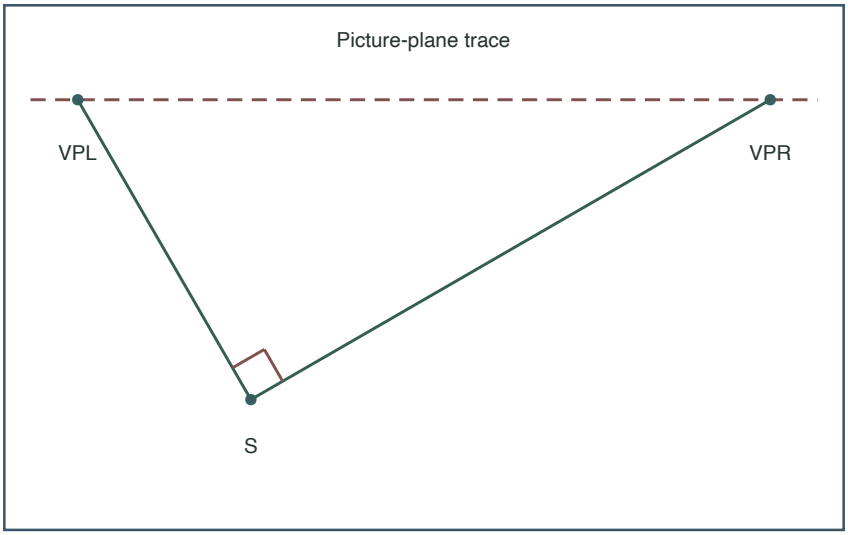
Perspective Drawing Mathematics

Answer I Task 3 of 4 I A4

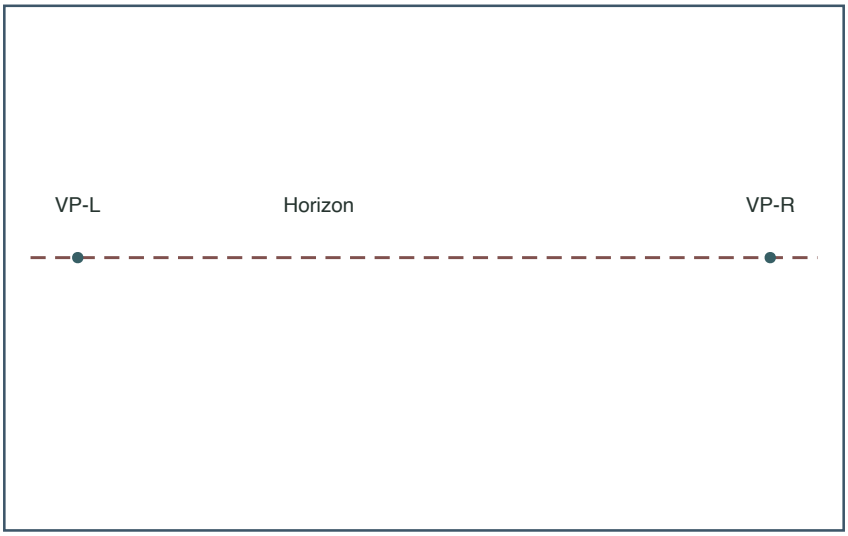
Prompt

Given a horizon line, a station point, and one vanishing point VPL, construct the second vanishing point VPR for an object whose two edge families are perpendicular in plan.

Plan view



Upright view



Answer

Draw a ray from S perpendicular to the line from S to VPL in plan. Mark where it intersects the picture-plane trace. Transfer that horizontal position to VPR on the horizon.

Reasoning

Perpendicular edge families in plan project to vanishing points whose station-point lines are perpendicular.

Check

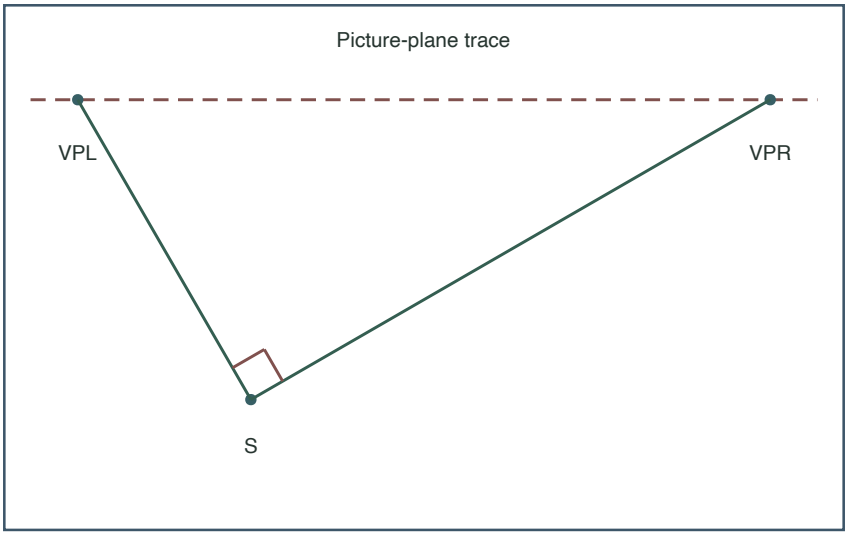
Check the right angle at S in plan. On the upright drawing both corresponding points lie on the horizon.

Perspective Drawing Mathematics

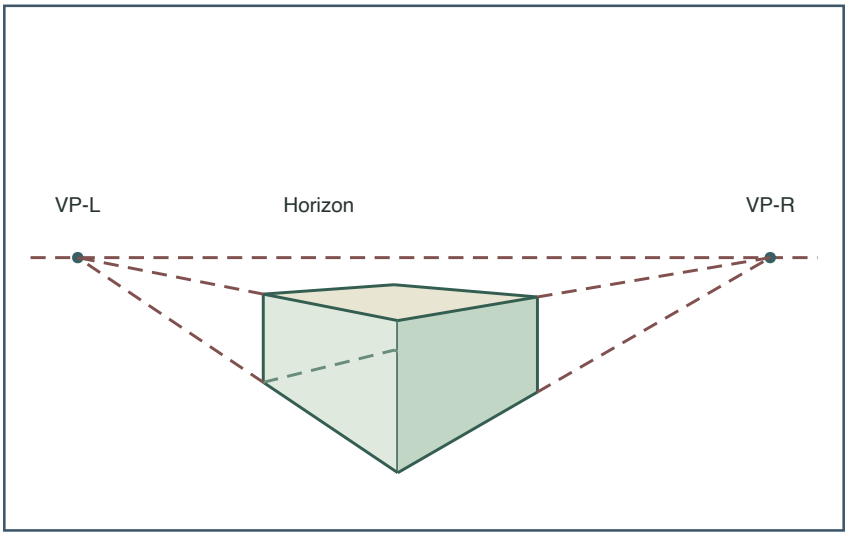
Prompt

Given a completed two-point plate with horizon, station point, VPL, and VPR, redraw a simple rectangular box in perspective using both vanishing points.

Plan view



Upright view



Answer

On the upright view, draw a near vertical edge. Send its upper and lower endpoints toward both vanishing points. Place outer upright edges, then close the top by running each far edge toward the opposite point.

Reasoning

Each face's edges are parallel to one edge family, so they converge at that family's vanishing point.

Check

Confirm all left-family edges meet at VPL, all right-family edges meet at VPR, and vertical edges remain vertical.