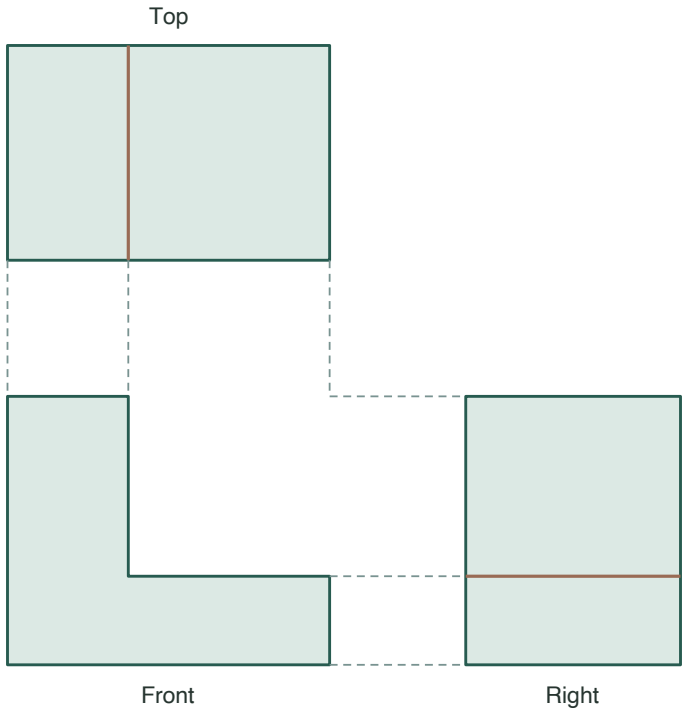
Glass Box Orthographic Projection

Original prompt

Task 1: Given a glass box containing a simple L-shaped block standing upright with its long leg vertical, draw the front, top, and right views as they would appear after unfolding. Label each view and show the alignment lines.



Answer

For the given L front profile extruded to a uniform depth, draw the L in the front. The top and right outer silhouettes are rectangles. The top shows a lengthwise line at the step width. The right shows a level line at the foot height.

Reasoning

The upper leg and lower foot have the same depth. The front keeps their vertical L outline. The other two projections keep the full depth but show the step as one straight change in the visible surface.

Check

Align the leg width between the front and top. Align the foot height between the front and right. Compare the equal depths shown in the top and right.

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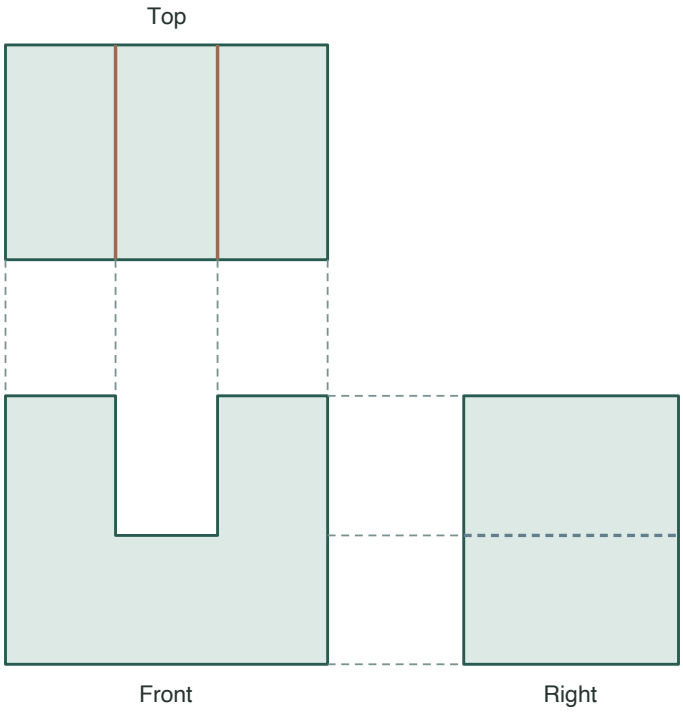
Task 2: A block has a rectangular slot cut through its top face, running front to back. Draw the unfolded layout showing front, top, and right views, and explain where the slot appears in each view.



Answer

Use the given open groove with a floor partway down. The top outline remains a rectangle with two continuous groove edges from front to back. The front silhouette has a square-sided notch. The right outline is rectangular and the concealed groove floor is a dashed level line.

Reasoning

From above you see the full-length groove and its floor. At the open front the groove removes the middle of the top outline. The intact right wall hides the internal floor.

Check

Compare the width between the two groove edges in the top and front. Transfer the front notch floor level to the dashed line in the right view.

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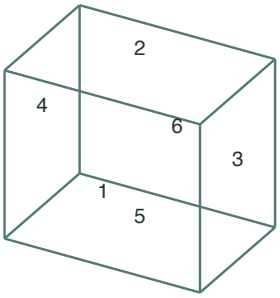
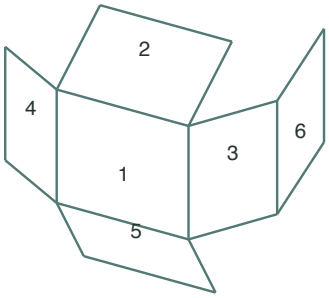
Task 3: Draw the unfolding sequence for a glass box with labeled planes (front, top, right, left, bottom, back). Show the box closed, then partially unfolded, then fully flat.

Closed

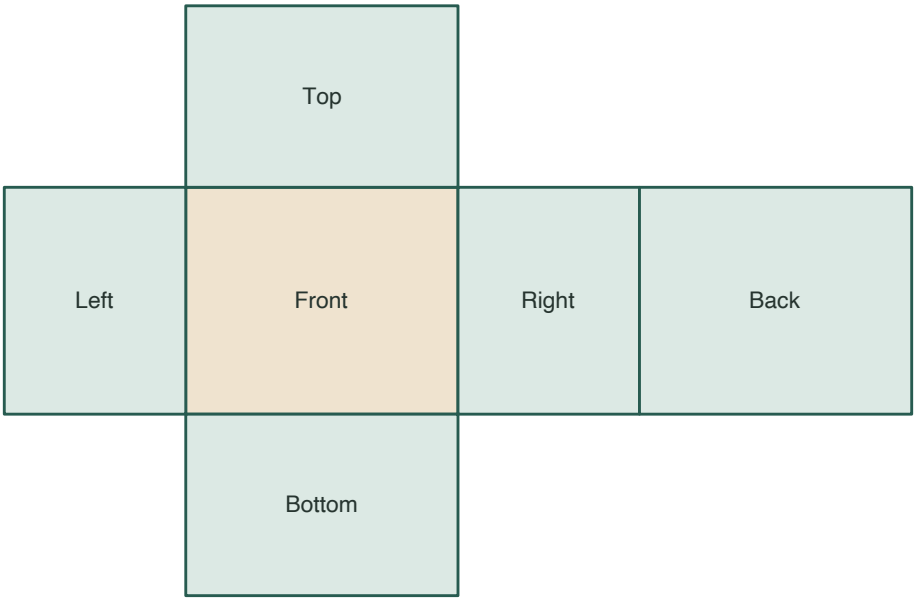


Partly open



1 Front 2 Top 3 Right 4 Left 5 Bottom 6 Back

Flat after all five hinges open



Answer

Pin the front. Open the top, bottom, left and right around their shared edges. The back moves with the right plane and can swing out around their common edge. The fully open cross has the top above, bottom below, left and right beside the front, and back beyond the right.

Reasoning

A rigid panel rotates around its hinge without changing its shape. Five selected hinges keep the six faces attached. The other original seams separate as the net opens.

Check

Check that each selected hinge joins the same two faces from the closed box to the net. Every flat face has its own interior with clear labels.

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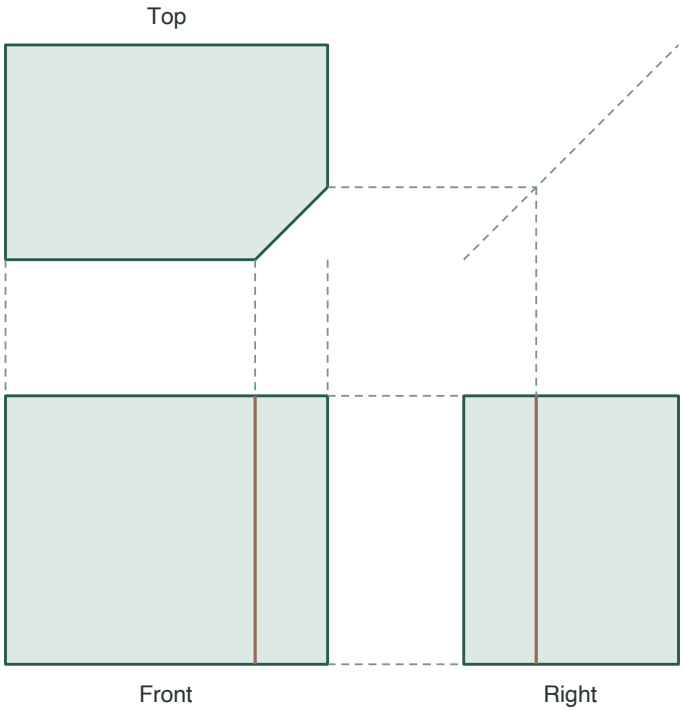
Task 4: Given an unfolded glass-box sheet with front, top, and right views of a simple object, identify which view is which and explain how the unfolding produced their positions.



Answer

The central view is the front view because the front plane stays fixed. The view above is the top view because the top plane swung up. The view to the right is the right view because the right plane swung right. Alignment lines confirm the shared edges.

Reasoning

Positions on the flat sheet are determined by which box face each view came from and the direction it swung during unfolding.

Check

Trace the alignment lines from the front view to the top and right views; if they connect corresponding edges, the identification is correct.