6. We locate the coordinate origin at the lower left corner of the iron side of the composite slab. We orient the x axis along the length of the slab (the 22.0-cm side); the y axis along the width of the slab (the 13.0-cm side); and, the z axis along the height of the slab (the 2.80-cm side). The coordinates for the opposite corner on the aluminum side are then $x = 22.0\,\text{cm}$, $y = 13.0\,\text{cm}$, and $z = 2.80\,\text{cm}$. By symmetry $y_{\text{com}} = 13.0\,\text{cm}/2 = 6.50\,\text{cm}$ and $z_{\text{com}} = 2.80\,\text{cm}/2 = 1.40\,\text{cm}$. We use Eq. 9-5 to find x_{com}:

$$\begin{aligned} x_{\text{com}} &= \frac{m_i x_{\text{com},i} + m_a x_{\text{com},a}}{m_i + m_a} = \frac{\rho_i V_i x_{\text{com},i} + \rho_a V_a x_{\text{cm},a}}{\rho_i V_i + \rho_a V_a} \\ &= \frac{(11.0\,\text{cm}/2)\left(7.85\,\text{g/cm}^3\right) + 3(11.0\,\text{cm}/2)\left(2.70\,\text{g/cm}^3\right)}{7.85\,\text{g/cm}^3 + 2.70\,\text{g/cm}^3} = 8.30\,\text{cm}\ . \end{aligned}$$

Therefore, the center of mass is at $11.0\,\text{cm} - 8.3\,\text{cm} = 2.7\,\text{cm}$ from the midpoint of the slab.