2. A. The drawing to the right shows glass tubing, a rubber bulb and two bottles. Is the situation you see possible? If so, carefully describe what has taken place in order to produce the situation depicted. The situation is possible. The density of the liquid in bottle L is \( \rho_L \). Initially the bulb is squeezed and released. As a result the pressure in the glass tubing is \( \rho_0 \) and the liquids will rise up the tubes. In both cases \( \rho_L > \rho_H > \rho_0 \).

Thus, \( \rho_L h_L = \rho_H h_H \) and since \( \rho_L < \rho_H \), \( h_L > h_H \).

B. Heat is added to an unknown solid at a uniform rate. The temperature-time plot is shown to the right.

1. \( AB \) Region where solid is melting.
2. \( CD \) Region where liquid vaporizes.
3. \( \text{MELTING} \) The process involving the larger latent heat.
4. \( \text{DE}(\text{VAPOR}) \) The region showing the larger specific heat capacity.
5. \( T_a \) The melting temperature of the solid.
6. \( T_b \) The boiling temperature of the liquid.

C. The picture depicts three glass vessels, each filled with a liquid. The liquids each have different densities, and \( \rho_A > \rho_B > \rho_C \). In vessel B sits an unknown block halfway to the bottom.

1. \( C \) In which vessel would the block sit on the bottom?
2. \( A \) In which vessel would the block float on the top?
3. \( C \) In which vessel would the block feel the smallest buoyant force?
4. \( A + B \) In which vessels are buoyant forces on the block the same?
5. \( \text{SINK} \) Assume the coefficient of volume expansion for B and the block are \( \beta_B > \beta_{\text{block}} \). If the temperature of vessel B with the block is raised would block B rise to the surface, sink to the bottom, or remain where it is?

\( \text{the liquid in} \)