

BAE 103
Energy in Biological Systems

Quiz 3 Supplemental
Concepts: Heat Capacity

Name: _____

- 3.1 An unknown fluid, in a perfectly insulated container, experiences a 30°F change in temperature after 400 BTUs of heat energy is added to the system. If the mass of the fluid is 25.0 lb_m, what is the specific heat (BTU/lb_f/°F) of this fluid?
- 3.2 A 2 kg block of ice (specific gravity of 0.92) is placed in an insulated tub containing 200 kg of water at 80 C. Assuming the tub is insulated (no heat gain or loss), what is the equilibrium temperature (C) of the system at steady state?
- 3.3 Assume 750 BTUs of heat energy is removed from the initial system in problem 3.1 above. At the end of the heat removal process the temperature of the system is 25 °F cooler and all of the liquid has changed to a solid. Once the liquid has solidified the system is in thermal equilibrium (no temperature change in the solid). What is the latent heat of fusion (BTU/lb_f) of the unknown liquid?