Homework Assignment #3 Chapter 5

(Please typewrite your homework.)

- 1. Ninety kilojoules of heat were added to a 2.0-kg piece of wood whose temperature then rose from 20°C to 48°C. What was the specific heat of the wood?
- 2. A 1200-kg concrete slab that measures $2 \text{ m} \times 1 \text{ m} \times 20 \text{ cm}$ is delivered to a building under construction. Does the slab contain steel reinforcing rods or is it plain concrete?
- 3. A U-shaped tube contains water and an unknown liquid separated by mercury, as shown below. How does the density of the liquid compare with the density of water? How do the pressures at A and B compare?



- 4. A 40-kg girl dives off a raft whose area is 3 m^2 that is floating in a freshwater lake. By how much does the raft rise?
- 5. A weather balloon carries instruments that measure temperature, pressure, and humidity as it rises through the atmosphere. Suppose such a balloon has a volume of 1.2 m³ at sea level where the pressure is 1 atm and the temperature is 20°C. When the balloon is at an altitude of 11 km (36,000 ft) the pressure is down to 0.5 atm and the temperature is about -55°C. What is the volume of the balloon then?