14–24C In some climates, cleaning the ice off the windshield of a car is a common chore on winter mornings. Explain how ice forms on the windshield during some nights even when there is no rain or snow.

14–25C When are the dry-bulb and dew-point temperatures identical?

14–32 The air in a room has a dry-bulb temperature of 22°C and a wet-bulb temperature of 16°C. Assuming a pressure of 100 kPa, determine (*a*) the specific humidity, (*b*) the relative humidity, and (*c*) the dew-point temperature. *Answers:* (*a*) 0.0090 kg H_2O/kg dry air, (*b*) 54.1 percent, (*c*) 12.3°C

14–66C How do relative and specific humidities change during a simple heating process? Answer the same question for a simple cooling process.

14–67C Why does a simple heating or cooling process appear as a horizontal line on the psychrometric chart?

14–69E A heating section consists of a 15-in.-diameter duct that houses a 4-kW electric resistance heater. Air enters the heating section at 14.7 psia, 50°F, and 40 percent relative humidity at a velocity of 25 ft/s. Determine (*a*) the exit temperature, (*b*) the exit relative humidity of the air, and (*c*) the exit velocity. *Answers:* (*a*) 56.6°F, (*b*) 31.4 percent, (*c*) 25.4 ft/s

14–73 Air at 1 atm, 15°C, and 60 percent relative humidity is first heated to 20°C in a heating section and then humidified by introducing water vapor. The air leaves the humidifying section at 25°C and 65 percent relative humidity. Determine (*a*) the amount of steam added to the air, and (*b*) the amount of heat transfer to the air in the heating section. *Answers:* (*a*) 0.0065 kg H_2O/kg dry air, (*b*) 5.1 kJ/kg dry air