U-shaped pipe must be full of liquid.

8. Answers will vary. Examples: To empty a large kettle of water. To remove gasoline from a tank for a lawn mower.

Study Exercises: *Group D* (137)

1. upward
2. weight, displaces
3. (a) float
   (b) sink, it displaces only 62.4 pounds of water.
   (c) sink
   (d) float, its density is only 56 pounds per cubic foot (see page 127).
   (e) float, it can displace 6240 pounds of water (62.4 x 100). The boat weighs 6000 pounds (2000 x 3).
   (f) float, cork would float no matter how big the piece was.
4. The weight of the object must equal the weight of the water displaced by the object, or the weight of the object must equal the buoyant force.
5. 2 Kings 6:1-6. The students should by now know how to use a concordance to find the answer to such a question. If not, show them how to do so.
6. Air is forced into tanks that had been filled with water. This forces the water out and makes the ship lighter, thus lowering its density below the density of water.
7. Divide the total weight of the ship by the volume of water it will displace. If the result is less than 62.4 (the density of water), the ship will float.

Study Exercises: *Group E* (138)

1. All fluids are free to flow. See glossary.
2. About 14.6 pounds per square inch.
3. the atmosphere
4. The atmospheric pressure is very strong and will collapse cans and do other work if a partial vacuum is provided.
5. An increase in altitude causes a reduction in air pressure. The extra pressure on the inside of the ear causes the eardrum to bulge. Yawning or swallowing sometimes opens the eustachian tube to equalize the pressure. A similar experience, only opposite, occurs during a decrease in altitude.