

**A**ctivity**Fluid Forces**

Solve the following problems. Show all your work. Remember to include the correct units.

1. What is the pressure applied by a piston that has an area of  $10 \text{ cm}^2$  and exerts a force of  $10 \text{ N}$ ?
  
  
  
  
  
  
  
  
  
  
2. A  $0.7\text{-kg}$  mass measures  $5 \text{ cm}$  in width,  $10 \text{ cm}$  in length, and  $2 \text{ cm}$  in height. It is resting on a wooden floor.
  - a. What pressure does it exert on the floor?
  
  
  
  
  
  
  
  
  
  
  - b. If it is turned so that the  $5\text{-cm}$  and  $2\text{-cm}$  sides are in contact with the floor, will the pressure on the floor be increased or decreased?
  
  
  
  
  
  
  
  
  
  
3. What volume will a gas occupy at  $975 \text{ mm}$  of pressure if the gas occupies  $525 \text{ cc}$  at  $650 \text{ mm}$  of pressure?
  
  
  
  
  
  
  
  
  
  
4. A container with equal sides of  $10 \text{ cm}$  is filled with  $500 \text{ g}$  of fluid.
  - a. What is the force in newtons on the bottom of the container?
  
  
  
  
  
  
  
  
  
  
  - b. What is the density of the fluid in grams per cubic centimeter?
  
  
  
  
  
  
  
  
  
  
  - c. What is the pressure on the bottom of the container in newtons per square centimeter?