

Chapter 13 Forces in Fluids

## Section 13.2 Forces and Pressure in Fluids

(pages 394–397)

*This section presents Pascal’s and Bernoulli’s principles. Examples of each principle from nature and industry are discussed.*

### Reading Strategy (pages 394)

**Predicting** Imagine two small foam balls hanging from strings at the same height with about three centimeters of space between them. Before you read the section, write a prediction about what will happen to the balls when you blow air through the space between them. Identify your reasons. After you have read the section, check the accuracy of your prediction. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Predicting Forces and Pressure in Fluids	
Prediction	
Reason for Prediction	

### Transmitting Pressure in a Fluid (pages 394–395)

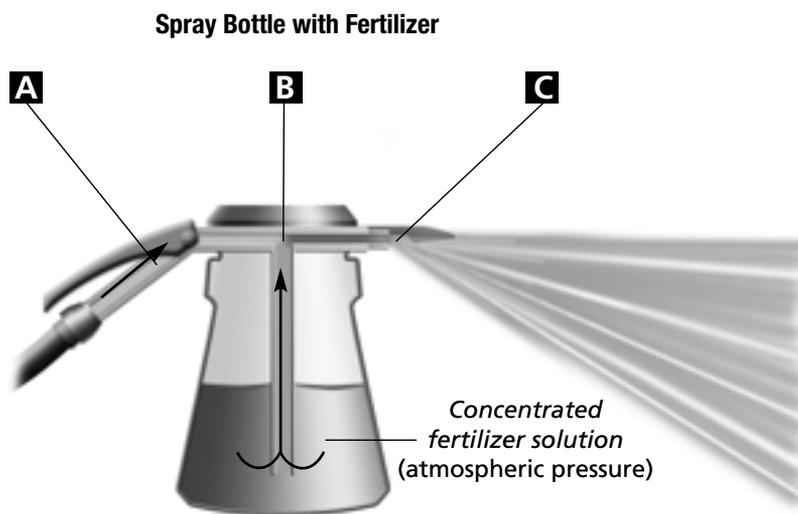
- In a fluid-filled container, why is the pressure greater at the base of the container? \_\_\_\_\_  
\_\_\_\_\_
- Is the following sentence true or false? If you squeeze a container filled with fluid, the pressure within the fluid increases equally throughout the fluid. \_\_\_\_\_
- According to Pascal’s principle, what happens when there is a change in pressure at any point in a fluid? \_\_\_\_\_  
\_\_\_\_\_
- The science of applying Pascal’s principle is called \_\_\_\_\_.
- In a hydraulic lift system, an increased output force is produced because constant \_\_\_\_\_ is exerted on the larger area of the output piston.
- Is the following sentence true or false? In a hydraulic system, the output force is greater than the input force because the pressure acting on the output piston is greater than the pressure acting on the input piston. \_\_\_\_\_

**Chapter 13 Forces in Fluids**

**Bernoulli's Principle (pages 396–397)**

7. Circle the letter of the sentence that correctly states Bernoulli's principle.
  - a. As the speed of a fluid decreases, the pressure within the fluid decreases.
  - b. As the speed of a fluid increases, the pressure within the fluid increases.
  - c. As the speed of a fluid increases, the pressure within the fluid decreases.
  - d. Fluid motion has no effect on pressure within the fluid.
8. Because the air traveling over the top of an airplane wing moves faster than the air passing underneath the wing, the pressure above the wings is \_\_\_\_\_ than the pressure below the wing.
9. What is lift, and how does it relate to an airplane's flight? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
10. What is a spoiler on a racecar designed to do? \_\_\_\_\_  
 \_\_\_\_\_

For questions 11 through 14, refer to the figure below. Place the correct letter after each phrase.



11. Location where the water and fertilizer solution mix. \_\_\_\_\_
12. Location where water enters the sprayer at high speed. \_\_\_\_\_
13. Location where the water-fertilizer mixture exits the sprayer. \_\_\_\_\_
14. Use Bernoulli's principle to explain why the fertilizer solution moves up the tube.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_