

## Fluids In Motion (p. 92 - 94)

### I. Pascal's Principle

p. 92

**1. Define Pascal's Principle.**

Pascal's Principle - change in pressure at any point in an enclosed fluid will be transmitted equally to all parts of the fluid

**2. Write out the equation for determining Pascal's Principle.**

$$P_1 = P_2 \quad \text{or} \quad F_1/A_1 = F_2/A_2$$

**3. The science of applying Pascal's Principle is called hydraulics.**

**4. In a hydraulic lift system, an larger force is produced because pressure is transmitted equally to the larger area of the lifting piston.**

**5. List three uses of hydraulics.**

1. Dump Trailers    2. Hatch Cylinders    3. Wood Splitters

### II. Fluids In Motion

- (4) Amusement Park Rides    (5) Hydraulic Jack  
(6) Door Cylinders    (7) Chairs

**1. Identify if the following statements are true or false. (Circle one.)**

- |   |   |  |
|---|---|--|
| 1. <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">True</span> | False   | Fluids move faster through smaller areas than larger areas.  |
| 2. True   | <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">False</span> | All fluids flow at the <del>same</del> <sup>vary</sup> rate. |
| 3. <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">True</span> | False   | Fluid pressure decreases as speed increases.                 |

**2. Define the term viscosity.**

Viscosity - the resistance of a gas or liquid to flow  
(aa = slow-moving (↓ temp.); pahehoe = faster moving (↑ temp.))

**3. How does increasing temperature affect the viscosity of fluids?**

(↑ Temp. = ↓ Viscosity)

**4. Define Bernoulli's Principle.**

(↑ Speed = ↓ Pressure)

Bernoulli's Principle - as the speed of a moving fluid increases, the pressure of the moving fluid decreases

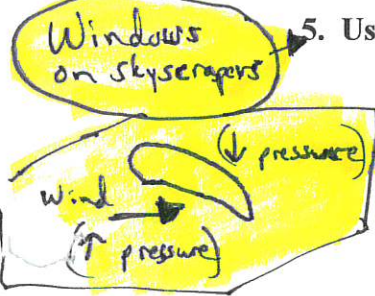
**5. Use Bernoulli's Principle to explain how each of the following operate. (Not in the book.)**

Airplane Glider: (1) Angle of attack produces lift (2) Higher pressure on bottom of wing (3) Lift produced due to pressure differences

Racecar Spoiler: - Creates a downward force that improves traction

Hose-End Sprayer: (1) Fast-moving water creates low pressure in chamber (2) Higher water pressure in solution (3) Pressure differences force fertilizer solution up tube

p. 94



Windows on skyscrapers