

## Phys171 - Fri 4/27

- Fri/Mon: Fluids - HW due next Fri
- Following week: Relativity - Last HW
- Last week: gases / review

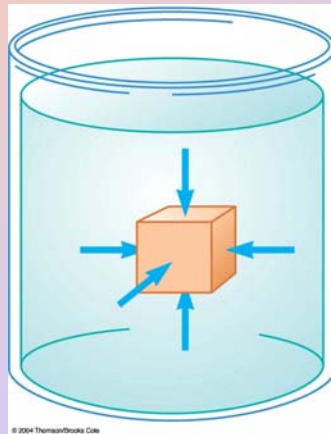
## Chapter 15: Forces in Fluid - Pressure

Pressure  $P$ : Force per  
unit area

$$P \equiv \frac{F}{A}$$

Unit of pressure is pascal  
(Pa)

$$1 \text{ Pa} = 1 \text{ N/m}^2$$



## Pascal's Law

*Pressure is the same at every point of the fluid and at the walls of the container*

$$P_1 = P_2$$

$$\frac{F_1}{A_1} = \frac{F_2}{A_2}$$

*Change in pressure gets transmitted everywhere in the fluid instantaneously*

A container is filled with oil and fitted on both ends with pistons. The area of the left piston is  $10 \text{ mm}^2$ ; that of the right piston  $10,000 \text{ mm}^2$ . What force must be exerted on the left piston to keep the  $10,000\text{-N}$  car on the right at the same height?

1.  $10 \text{ N}$
2.  $100 \text{ N}$
3.  $10,000 \text{ N}$
4.  $10^6 \text{ N}$
5.  $10^8 \text{ N}$
6. insufficient information

