

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

Units of Pressure:

$$1Pa = 1 \frac{N}{m^2} \quad (\text{standard SI unit called Pascal})$$

$$1bar = 100kPa = 10^5 Pa$$

Atmospheric Pressure is very close to 1 Bar :

$$1atm \approx 1.01bar$$

Pressure in fluids

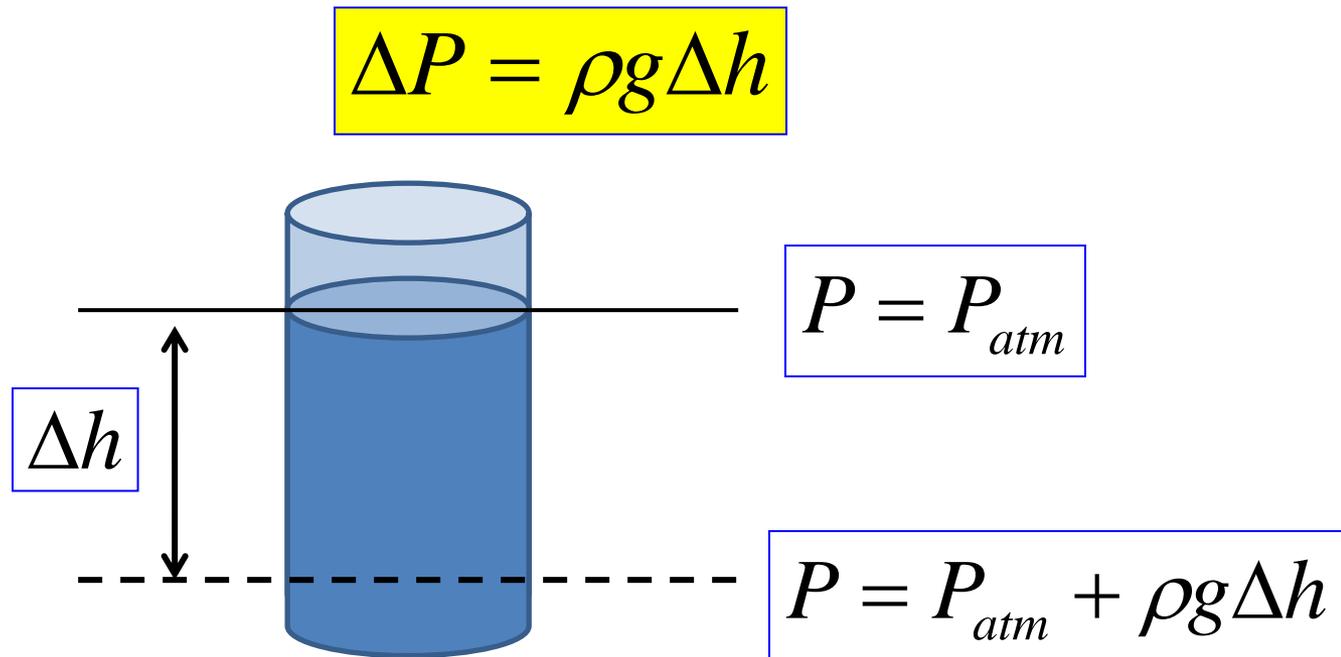
- Pascal's Principle:

“Pressure in static fluid is transmitted uniformly in all directions”

$$P = \text{const}$$

(static fluid, no gravity)

- **Hydrostatic Pressure.** Due to gravity, the pressure increases as you go deeper in fluid:



Homework

Problem 1

- Estimate the pressure under your feet when you are walking.
- Estimate the pressure applied to paper by a staple when you are stapling it.

Problem 2

The figure shows the famous experiment conducted in German city of Magdeburg in 1656. Air has been pumped out of a hollow sphere made of two separate halves. After that, the hemispheres could not be separated by two strong horses. **Why?**

How much force would be needed to separate them, if the sphere radius is 25 cm?

