

# Barometer And Manometer Notes

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## Barometer and Manometer Notes

Compressibility: Volume change caused by a pressure change }  
Incompressibility: Volume DOES NOT change by pressure change }

Liquids & Solids: Incompressible

Gases: Compressible

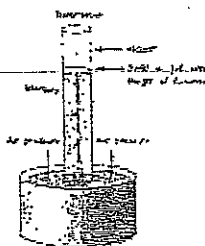
Reason: How far apart are base units or particles

### Different Ways of Measuring Pressure

Principle of Barometer and Manometer: Use the movement of a liquid to indirectly measure pressure of gas.

Barometric Pressure: Atmospheric pressure

Barometer (see figure below):

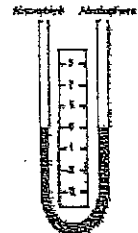


Think of barometer as a U-tube manometer where one side is atmosphere and other side is a constant gas.

Manometer:

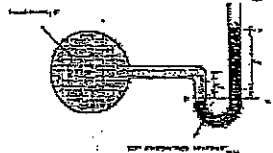
Gas pressure device comparing difference in pressure of 2 gases using a liquid column.

Manometer with equal pressure on both sides.



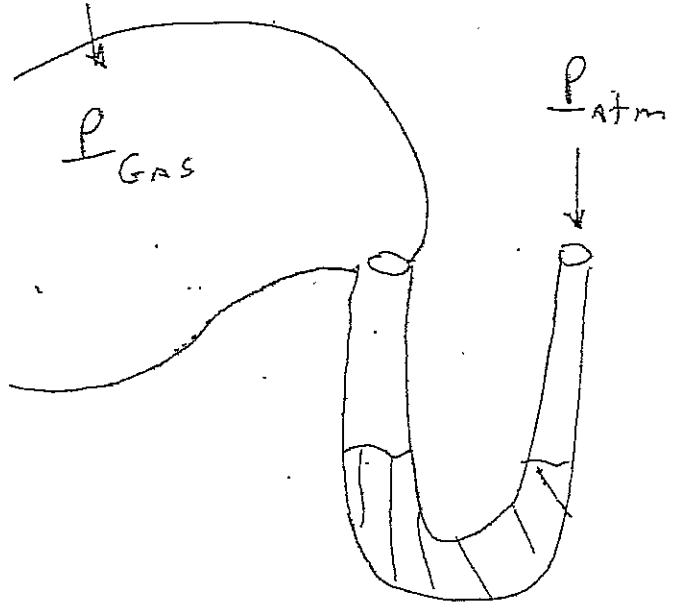
• Think of a seesaw to calculate pressure with a manometer or barometer.

Manometer with gas pressure on one side and atmosphere on other.

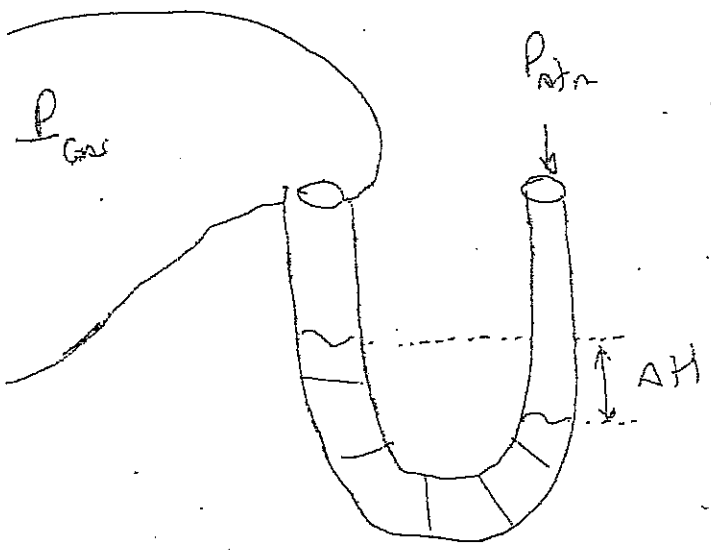


Balloon

Manometer (U-tube)

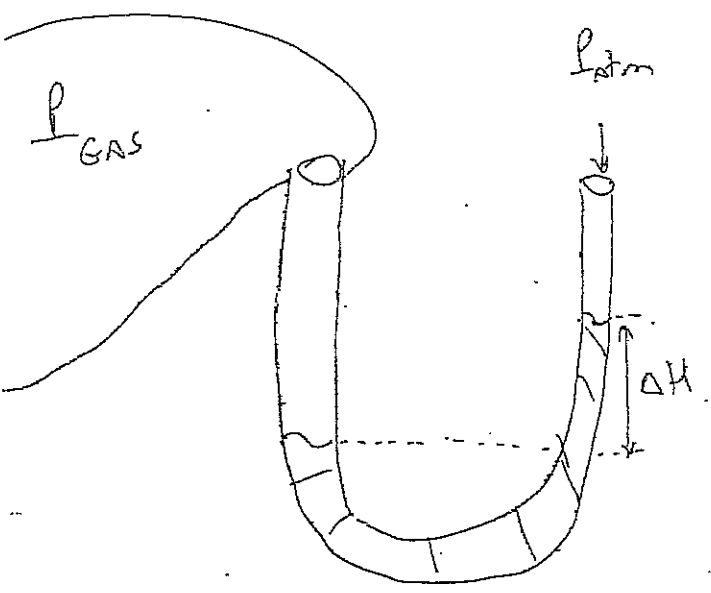


$$P_{GAS} = P_{atm}$$



$$P_{GAS} < P_{atm}$$

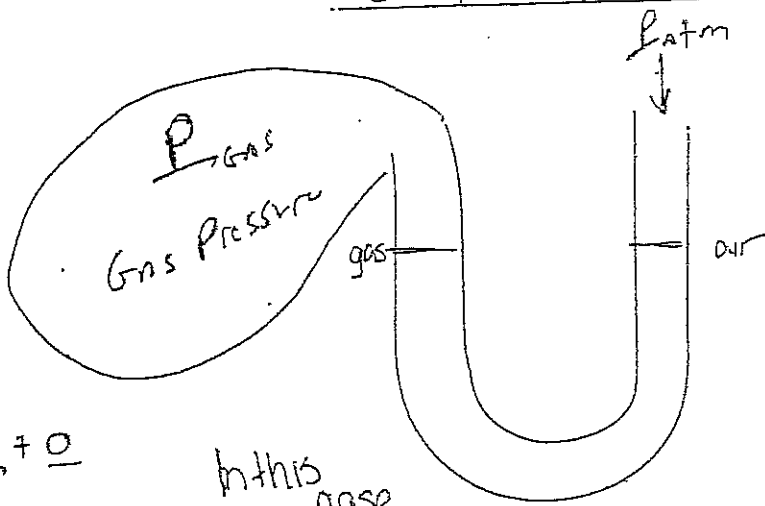
< by  $\Delta H$



$$P_{GAS} > P_{atm}$$

> by  $\Delta H$

# U-tube Manometer



\* With pencil/pen, show where liquid level is for each.

$$P_{GAS} = P_{ATM} \pm 0$$

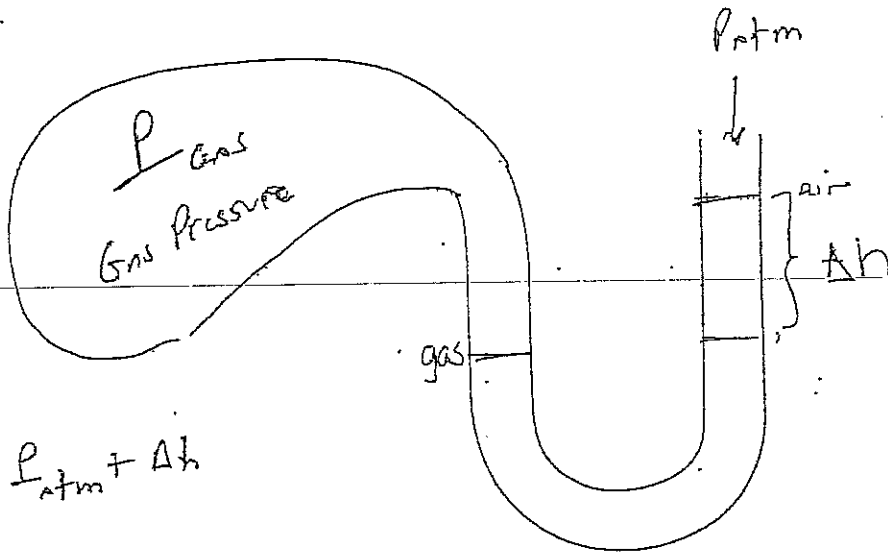
In this case

$$P_{GAS} = P_{ATM}$$

Calculate U-tube problem, use:

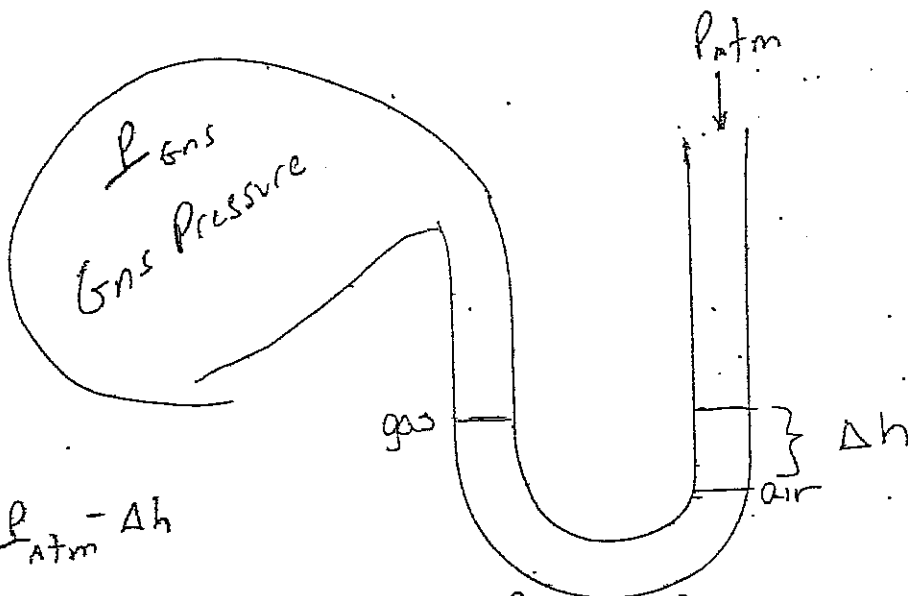
$$P_{GAS} = P_{ATM} \pm \Delta h$$

$\Delta h$  - difference in heights of each side of liquid level.



$$P_{GAS} = P_{ATM} + \Delta h$$

$$P_{GAS} > P_{ATM}$$



$$P_{GAS} = P_{ATM} - \Delta h$$

ANSWER TO A, B, C  
on opposite page.  
A. 798 mmHg  
B. 630. mmHg  
C. 794. mmHg

DO THE MATH, CALCULATE PRESSURE

