Monday, April 22/13
Science 122

Announcements

**** Need an activity re a course topic before the end of May.**

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1. Continuity Equation: Cutnell-Johnson Problems
   Page 332: #50-55 56-59
   Worksheets: Continuity and Bernoulli

2. Quiz: Hydrodynamics Tuesday

3. Cutnell - C12, Page 366 7 problems.

4. Macroscopic Description of Gases - Gas Laws

5. Avogadro's Number

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6. Ideal Gas Law

7. Cutnell - Page 412 - Problems

   #9. 1.0×10^3 kg
   #10. 304 K
   #11. 2.3×10^{-2} mol
   #13. a) 202 mol, b) 1.22×10^5 Pa
   #15. 2.5×10^{21}
   #16. 0.140 m
   #18. 39

Hydrodynamic Fluids Formulas

mass flow rate $\frac{m}{t} = \rho A v$ (1)

$\frac{kg}{s} \Rightarrow \frac{m}{t}$

Volume flow rate $Q = \frac{V}{t} = Av$ (2)

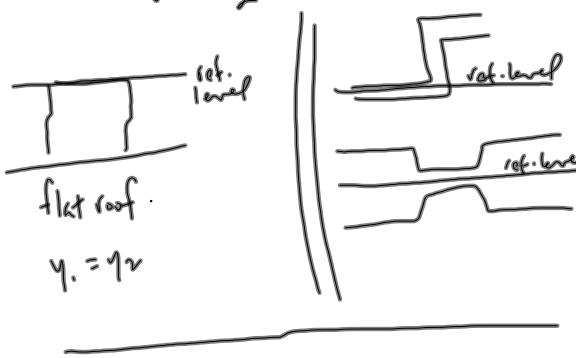
Continuity Equation $A_1 v_1 = A_2 v_2$ (3)

$A_1 v_1 \rho_1 = A_2 v_2 \rho_2$

fluid $\Rightarrow$ incompressible

Bernoulli's Equation

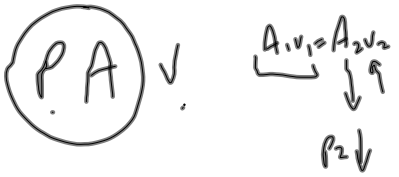
$P_1 + \rho g y_1 + \frac{1}{2}\rho v_1^2 = P_2 + \rho g y_2 + \frac{1}{2}\rho v_2^2$ (4)



$y_1 = y_2$

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

$* \quad F = \Delta P A$



$A_1 v_1 = A_2 v_2$

$\downarrow \quad \uparrow$

$P_2 \downarrow$

$P_1 - P_2$?

$P_2 - P_1$?

$\Delta P =$ (-)

$A = x^2$