

Fluids #1

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①

p383 - Multiple Choice

(9)

1) Pressure of  $10 \text{ N/m}^2$  means?

a) Fluid had  $F$   $10 \text{ N}$

b) Surface area  $1 \text{ m}^2$

(c) ratio of  $F$   $\perp$  to surface area  
is  $10 \text{ N/m}^2$

d) All 3 correct

$$P = F/A$$

(3)

3) Choose device to reduce pressure

a) scissors

b) knife

(c) snowshoes

d) nail

e) syringe

4) Density of material is  $2000 \text{ kg/m}^3$

a) mass is  $2000 \text{ kg}$

b) Volume is  $1 \text{ m}^3$

(c) ratio of mass to volume =  $2000 \text{ kg/m}^3$

## p 384 - Problems

4) Floor area =  $200 \text{ m}^2$   
 $h = 2.6 \text{ m}$   
 $M_{\text{air}} = ?$

$$\rho = \frac{m}{V} \quad m = \rho V$$

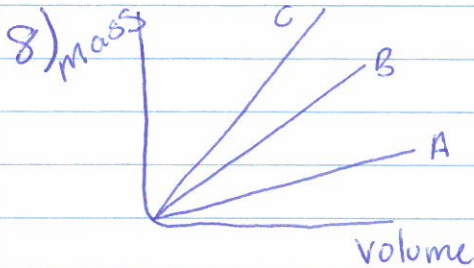
$$m = \rho \cdot A \cdot h$$

$$= (1.29 \frac{\text{kg}}{\text{m}^3}) (200 \text{ m}^2) (2.6 \text{ m})$$

(1)

(density chart pg 360)

$$m = 670 \text{ kg}$$



use graph determine density

a)  $\rho_A = ?$   $\rho = \frac{m}{V}$

$$= \frac{.4 \text{ kg}}{.5 \times 10^{-3} \text{ m}^3}$$

$$\rho_A = 800 \text{ kg/m}^3$$

b)  $\rho_B = ?$   $\rho = \frac{m}{V} = .8 \text{ kg} / .8 \times 10^{-3} \text{ m}^3$

$$\rho_B = 1000 \text{ kg/m}^3$$

c)  $\rho_C = ?$   $\rho = \frac{m}{V} = .5 \text{ kg} / .4 \times 10^{-3} \text{ m}^3 = 1250 \text{ kg/m}^3$

d) How arrange themselves?

A B C

e)  $V \uparrow$  w/ same  $m$   $\rho?$   $\rho \downarrow$

f)  $m \downarrow$  w/ same  $V$   $\rho?$   $\rho \downarrow$

continued



8) continued

g) Same volume, rank mass

$$\rho = m/v \quad m = \rho V \quad \uparrow \rho \uparrow m$$

$$m_c \quad m_B \quad m_A$$

(1)

h) Same mass, rank volume

$$V = m/\rho \quad \uparrow \rho \downarrow V$$

$$V_A \quad V_B \quad V_C$$

19)  $m = 980 \text{ kg}$   
 $P = 3.0 \times 10^5 \text{ N/m}^2$   
 $A = ?$   
 each tire

$$F = PA_{\text{total}}$$

$$mg = P(4A)$$

$$A = \frac{mg}{4P} = \frac{(980 \text{ kg})(9.81 \text{ m/s}^2)}{4(3.0 \times 10^5 \text{ N/m}^2)}$$

$$A = 8.0 \times 10^{-3} \text{ m}^2$$

(1)

26) Vacuum picks up paper

(1)

