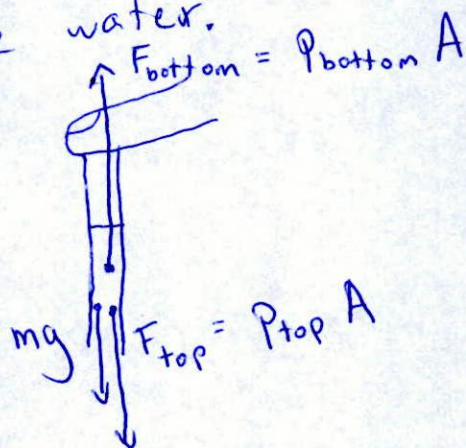


Reading 1/7 Solutions

- ① (a) The water doesn't fall because the upward force caused by atmospheric pressure is greater than the downward force caused by the pressure of air in the straw. Thus the net ^{upward} force due to pressure can support the weight of the water.

(b)



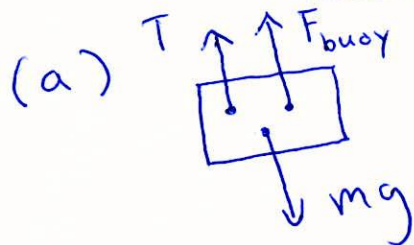
- ② From Eq. (14.9)

$$P_0 + \frac{F_1}{A_1} = P_0 + \frac{F_2}{A_2} + \rho g h$$

If we increase h by pushing down the piston and F_2 remains the same (force caused by the weight of the car), then F_1 increases

Reading 1/7 Solutions

③



(b)

$$mg = F_{\text{buoy}} + T \quad (1)$$

$$m = \rho_{\text{Al}} V = (2700 \text{ kg/m}^3)(10^{-4} \text{ m}^3) = 0.27 \text{ kg}$$

$$F_{\text{buoy}} = (\rho_{\text{ethyl alc}} V_{\text{disp}})g = (790 \text{ kg/m}^3)(10^{-4} \text{ m}^3)(9.8 \text{ m/s}^2) = 0.77 \text{ N}$$

$$(1) \Rightarrow T = mg - F_{\text{buoy}} = (0.27 \text{ kg})(9.8 \text{ m/s}^2) - 0.77 \text{ N}$$

$$\boxed{T = 1.9 \text{ N}}$$