Problem 2.

Brass weights are used to weigh an aluminum-made sample on an analytical balance. The weighing is ones in dry air and another time in humid air with the water vapor pressure P_h =$2{\cdot}10^3$ Pa. The total atmospheric pressure ($P = 10^5$ Pa) and the temperature (t =20° C) are the same in both cases.

What should the mass of the sample be to be able to tell the difference in the balance readings provided their sensitivity is $m_0 = 0.1$ mg ?

Aluminum density ρ_1= 2700 kg/m^3, brass density ρ_2=.8500 kg/m^3.