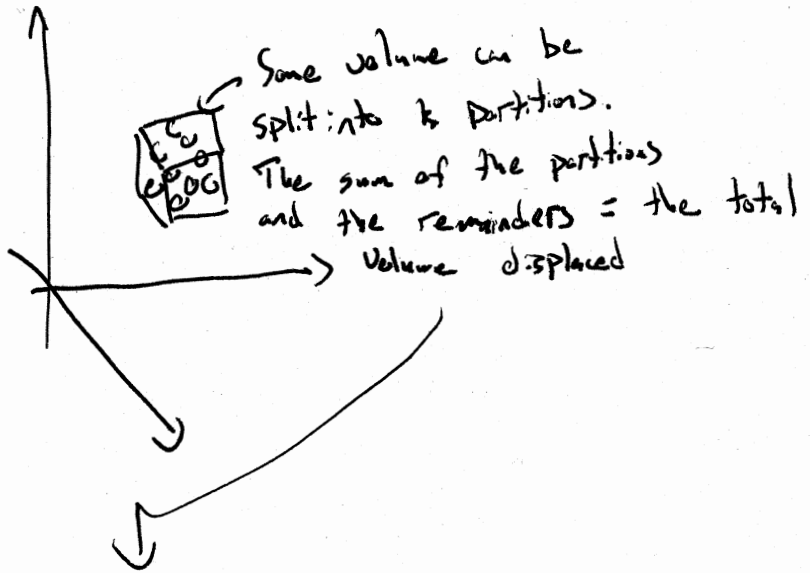
Assume Neutral Buoyancy

then

$$\frac{\sum m_{air}}{\sum V_{air}} = \frac{\sum m_{bo}}{\sum V_b}$$

These densities of the object or collection of objects is equal to the equivalent displaced air density.



$$\sum V_{air} = \sum V_{b \text{ or partitions}}$$

$$\frac{V}{1} \cdot \frac{\sum m_{air}}{\sum V_{air}} = \frac{\sum m_b}{\sum V_b} \cdot \frac{V}{1} \Rightarrow \sum m_{air} = \sum m_b$$ so volume/S.A. is not a factor

Consider a buoyant hollow concrete cube, that a led weight is added inside to make it not buoyant, no dense packing of the blocks will float b/c the sum of masses are greater than the water displaced.

Allowing a non dense packing to water in between the blocks will give a density less than the densely packed blocks but still greater than equivalent water volume.