"Density. Practical Application of Knowledge"

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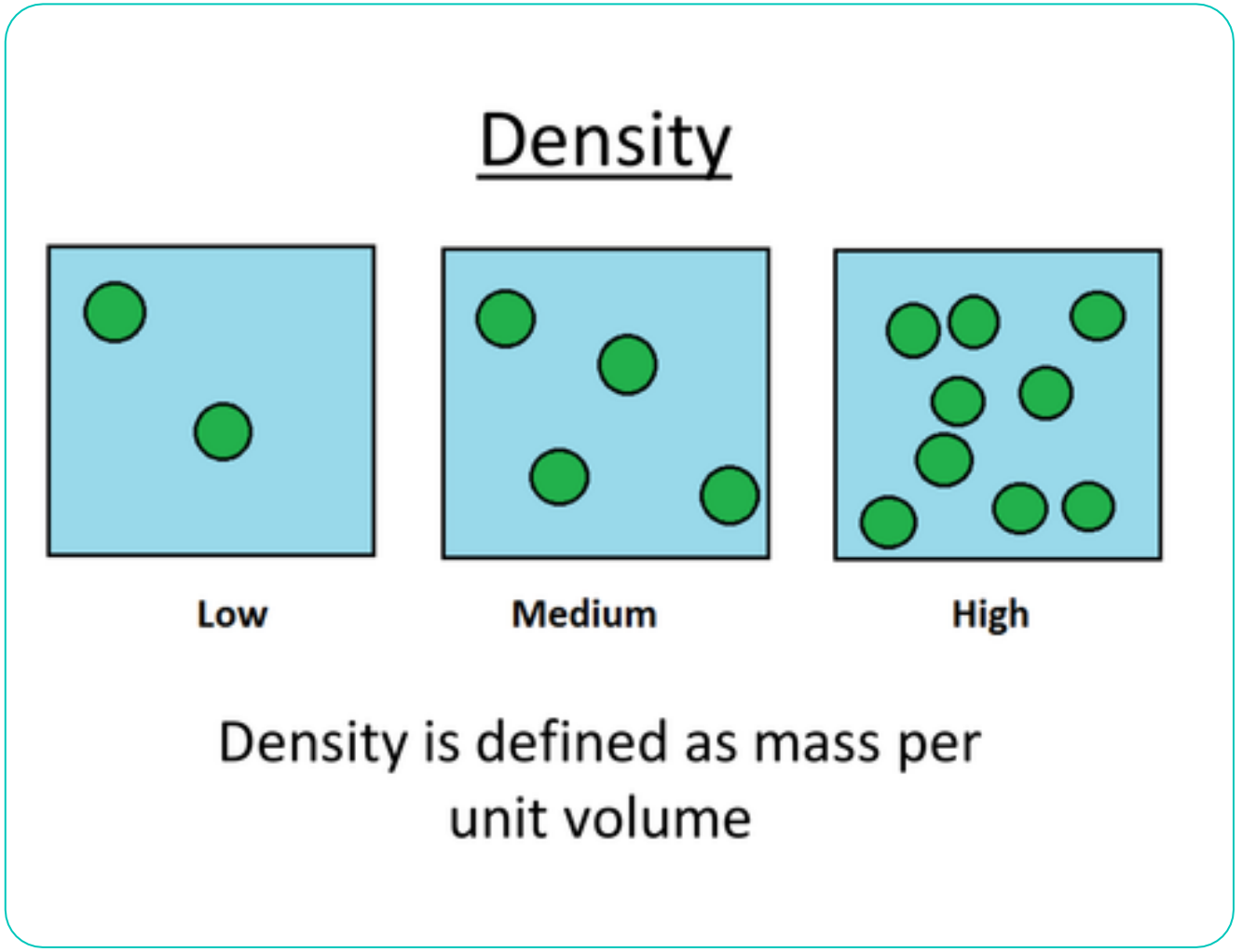
What is Density

Density is a measure of mass per volume in other words how much of something is in a certain amout of space

Density can be calculated whith o bjects mass divided by its total vol ume **Density = Mass / Volume**

We write density in for e.g kg/m^3



How do you find the density of a stone (or other solid object) using water?

- We can easily calculate any object's density with the help of water
  - Take a beaker and fill it with water in ml
  - Place the object in the beaker and see how much mililiters it increased
  - The amount of mililiters that the water level have risen is the volume of the cube in cm^3
  - Measure the mass of the object and divide it by the volume in cm^3

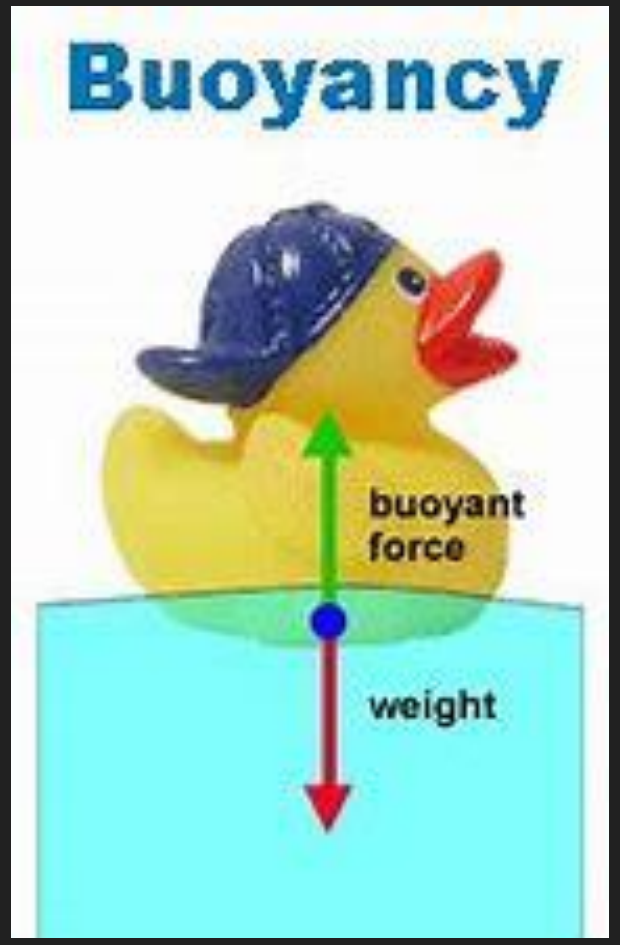
Why do people float on water ?

Because of Buoyancy

What is Buoyancy ?

Buoyancy is upward thrust by liquid which helps to float an object.

Buoyancy = weight of displaced fluid

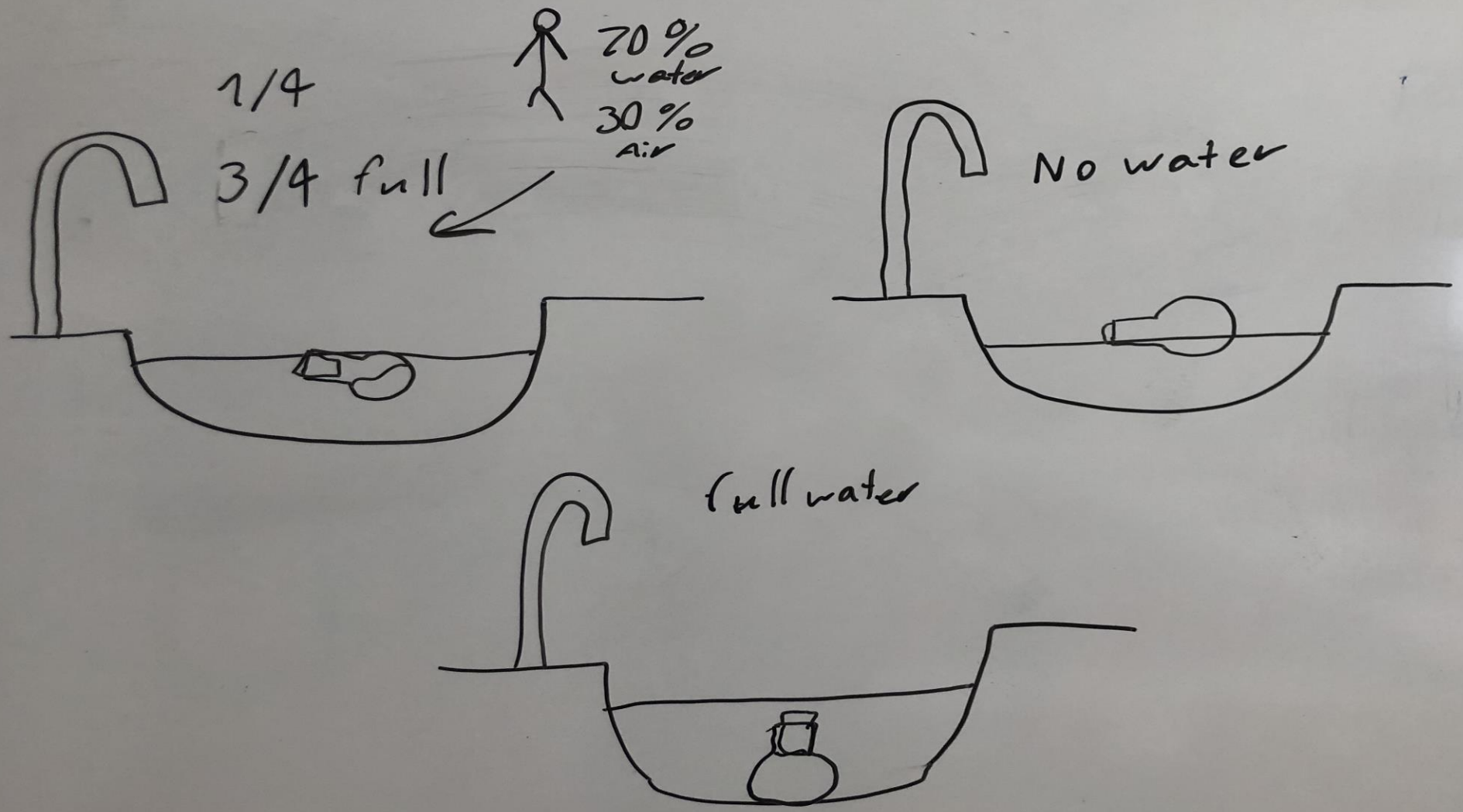


We actually tested this with beakers that had different amount of water inside them:

Full of water

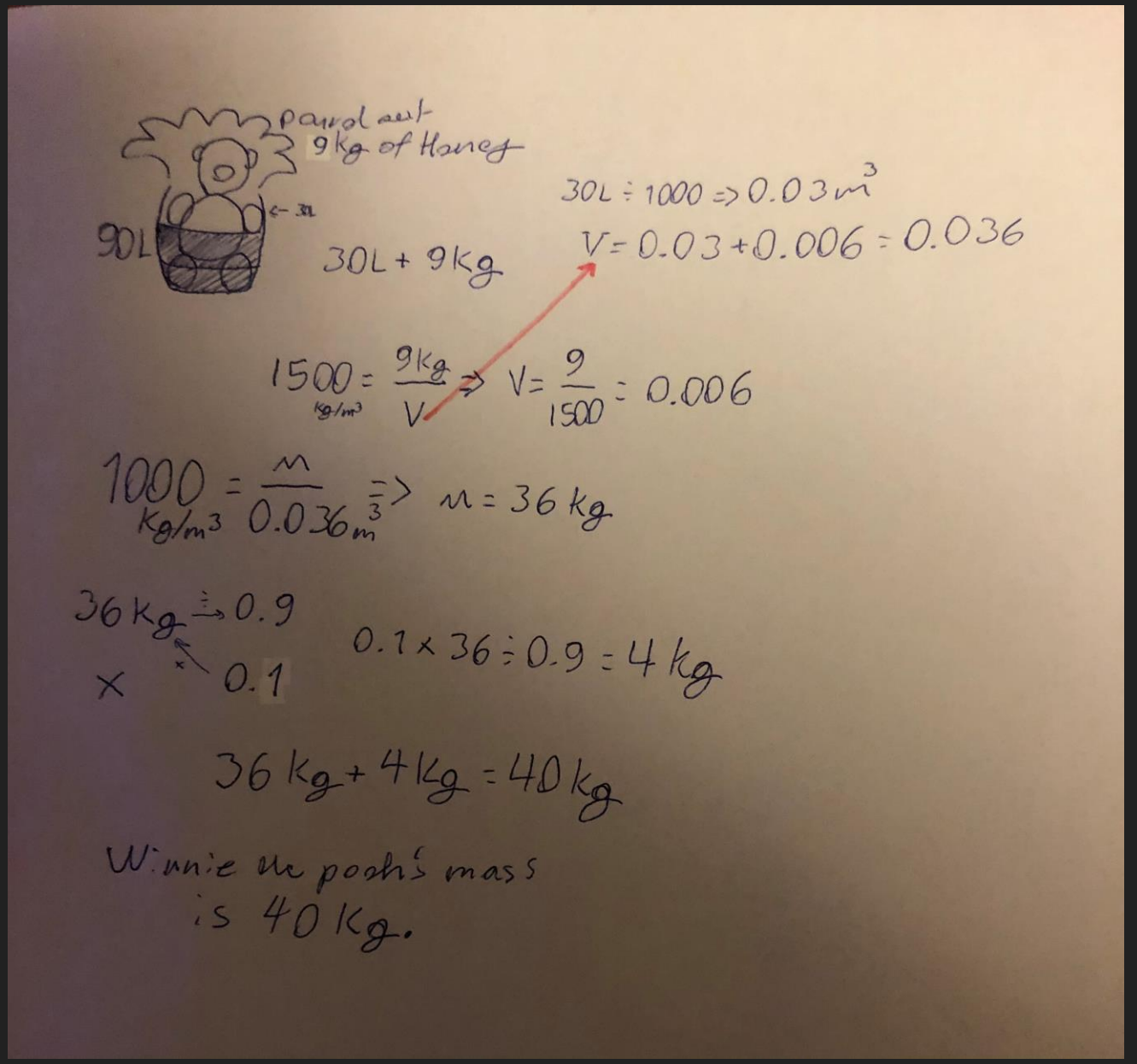
¾ of it is full

We know that 70% of our body is water and the other 30% is air so the 70% of our weight is balanced by buoyancy force then the remaining 30% have to balance by our force of hand or we can use life jacket to displace total amount of water to create buoyancy force equal to the 30% of remaining weight or life jacket's weight.


1/4
3/4 full
70 % water
30 % Air
No water
full water

Winnie The Pooh Problem

Winnie the pooh climbed into a 90-liter barrel, which was two-thirds filled with honey. At the same time, the level of honey rose to the brim and poured out 9kg of honey. Only the head of Winnie the pooh remaind out of the barrel, the volume of which is one-tenth the volume of a bear. Determine thr mass of Winnie the pooh if its average density is 1000 kg/m^3. The density of honey is 1500 kg/m^3.



Eggs floating at different depths

Why does the egg on the salt water float ?

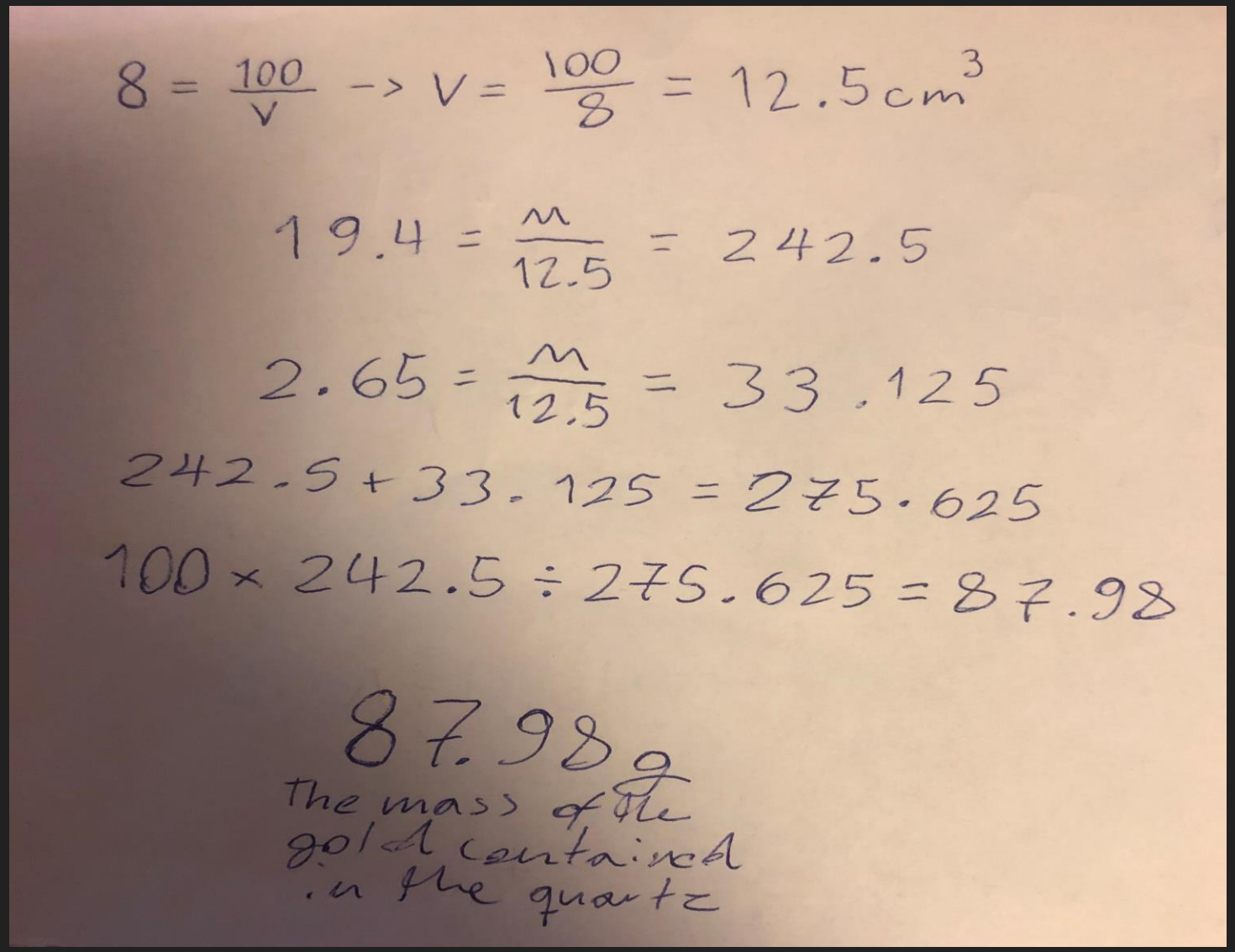
Because the salt water has a higher density than the fresh water.

Salt Water

Water

Gold Nugget problem

A piece of quartz contains a small nugget of gold.
The mass of the piece is 100g, and its average density is 8 g/cm^3.
Determine the mass of the gold contained in the piece of quartz if the density of the quartz is 2.65 g/cm^3 and the density of gold is 19.4 g/cm^3.



That's it