

Target: I can calculate the density of objects

K

C

Q

What is happening???



Density

*How much “stuff”
crammed into
how much space?*

Density

Usually used for solid and gas

How much
"stuff"



mass

crammed into



"per"

How much
space



volume

$$\frac{\text{g}}{\text{mL}}$$

$$\frac{\text{g}}{\text{cm}^3}$$

$$\frac{\text{kg}}{\text{L}}$$

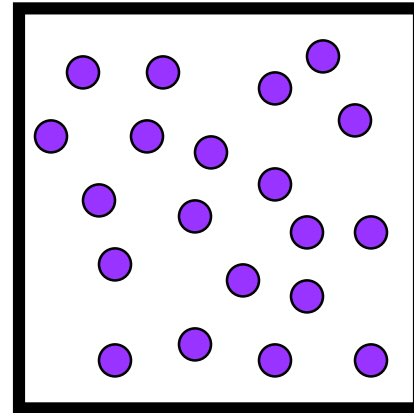
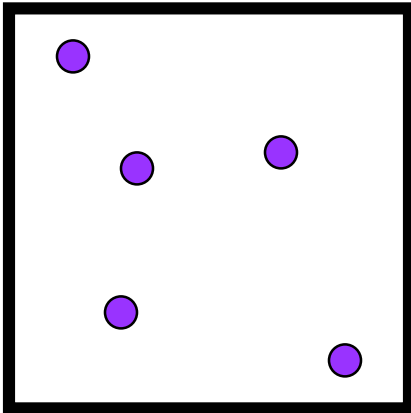
REMEMBER: 1mL = 1cm³

Etc...

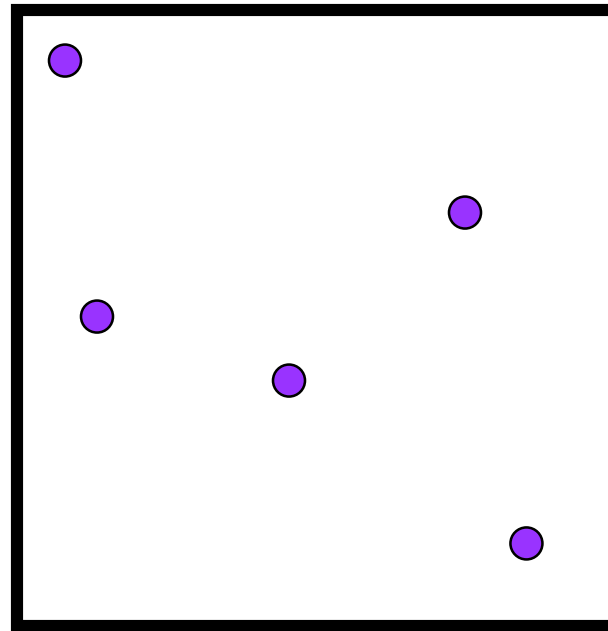
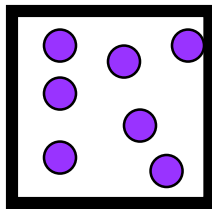
Density Equation

$$D = \frac{m}{V}$$

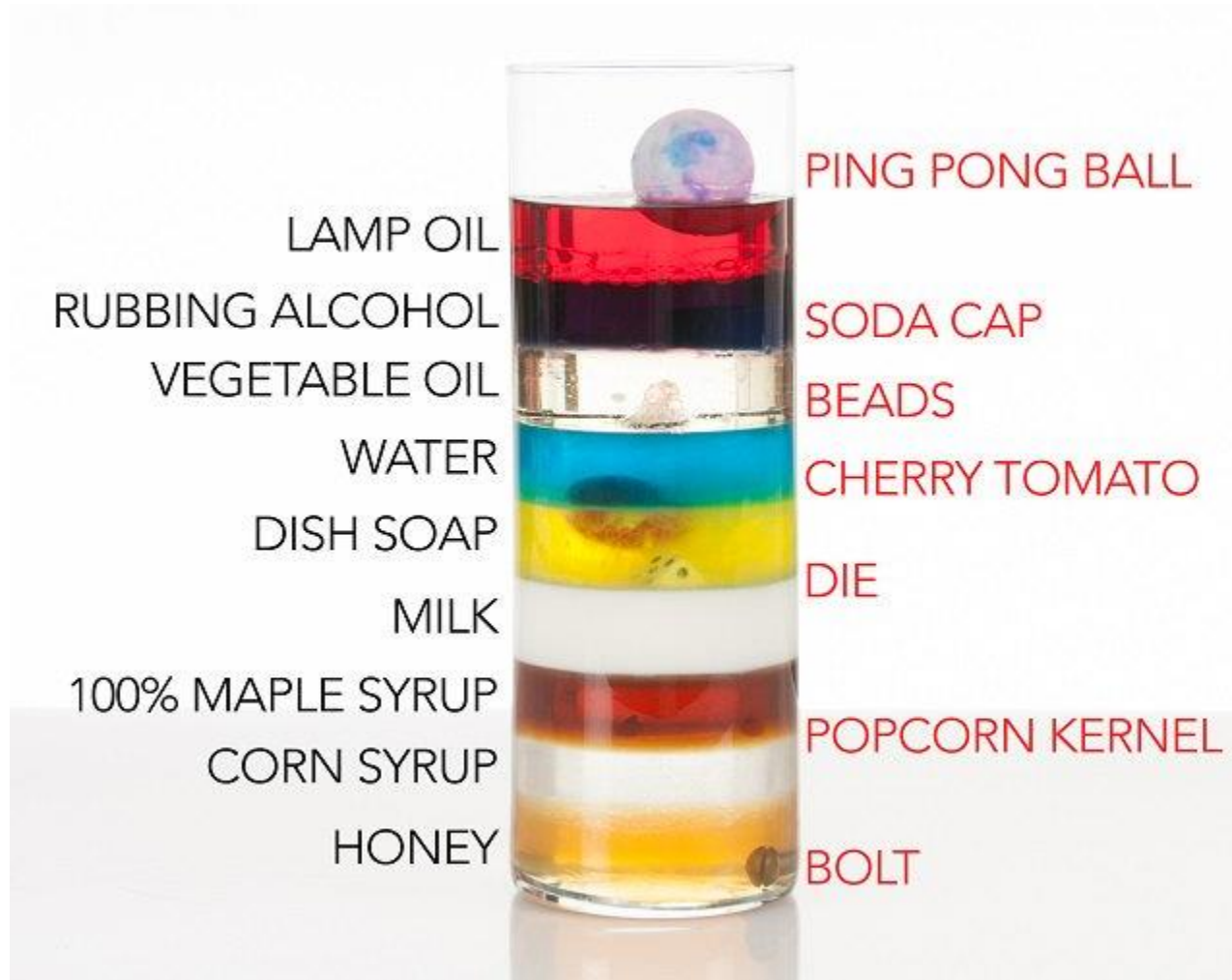
Which one is more dense?



Which one is more dense?



Density of Liquids Not Just Solids



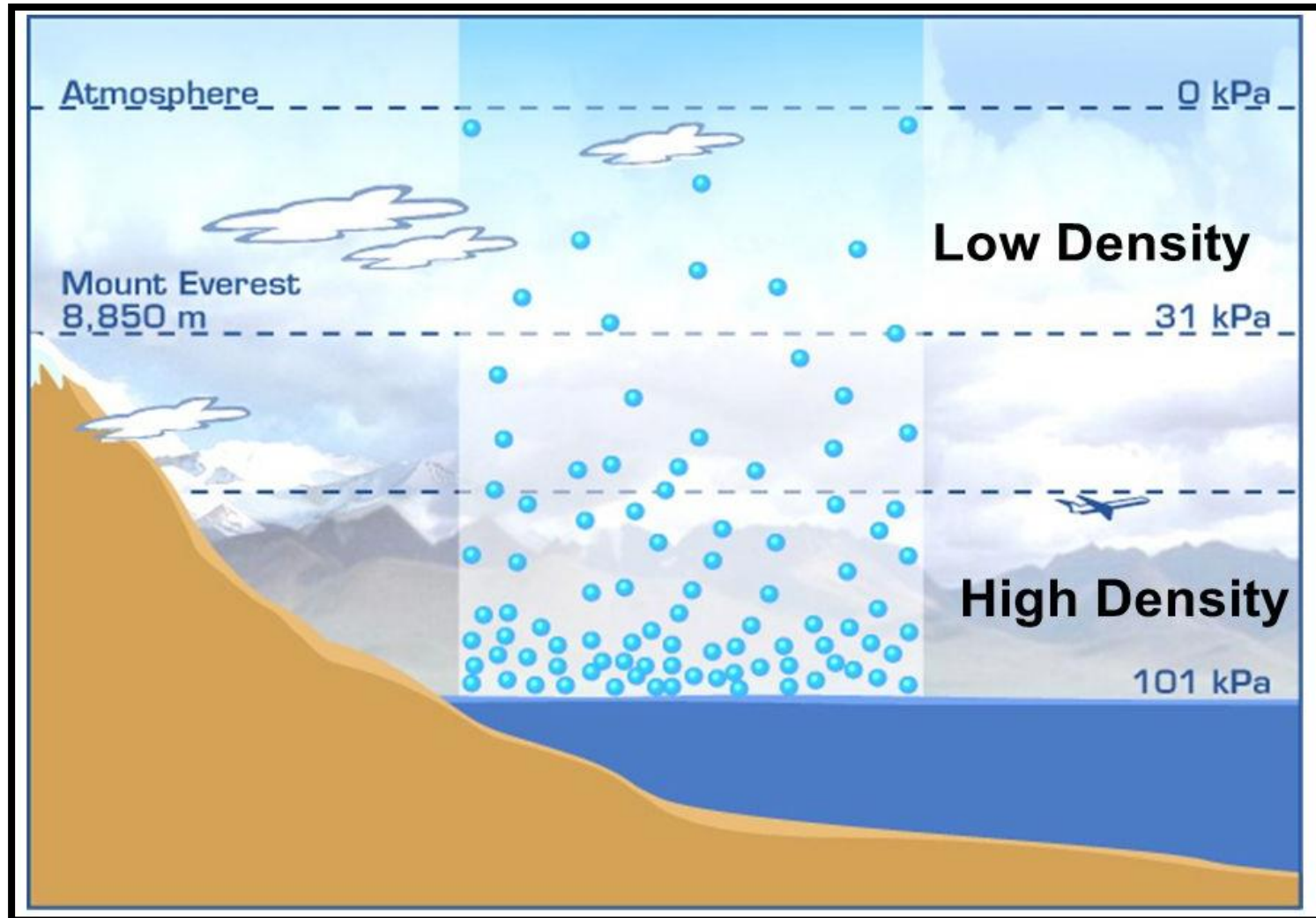
Density of Water

$$1 \frac{\text{g}}{\text{mL}}$$

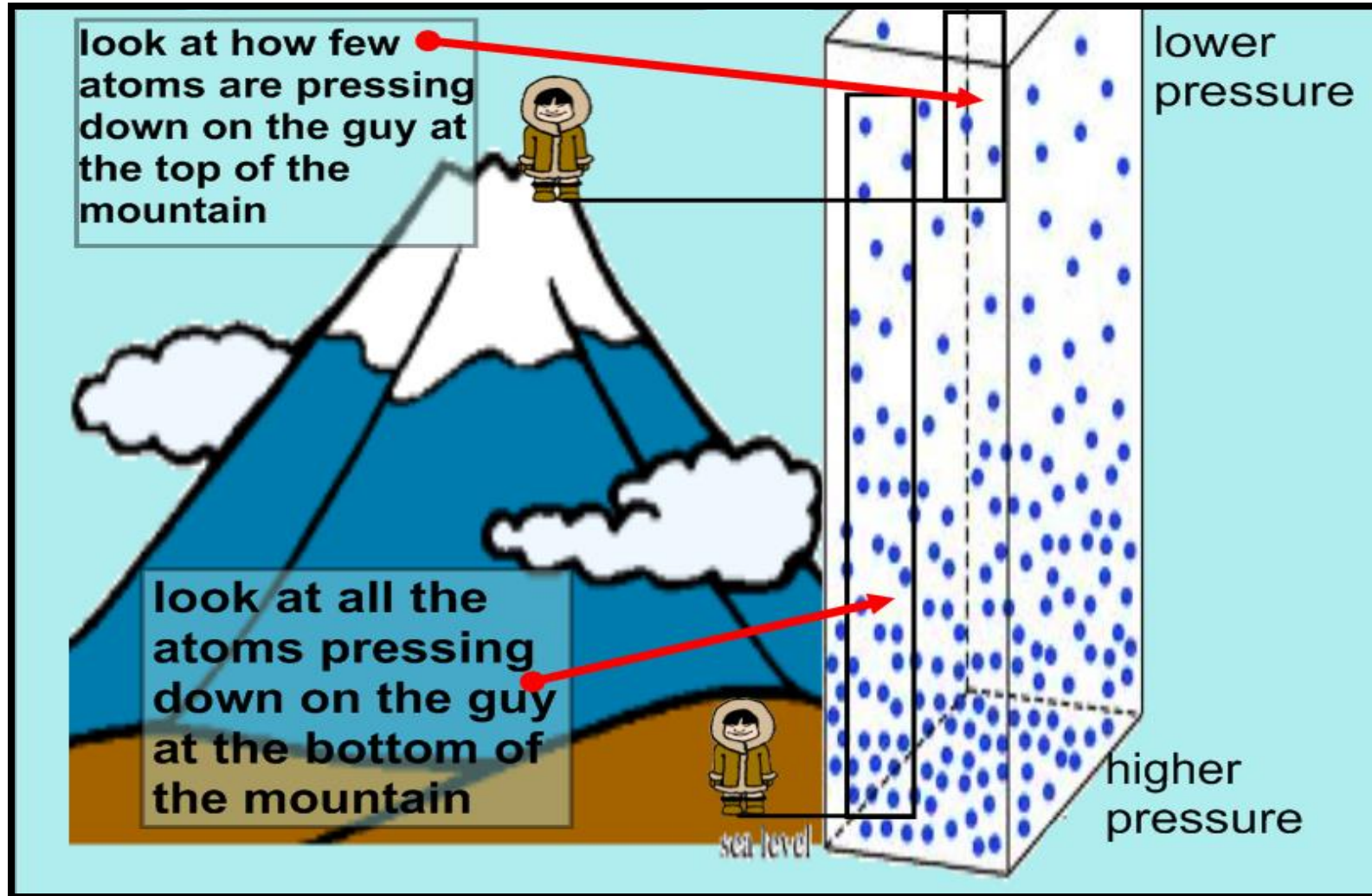
$$1 \frac{\text{g}}{\text{cm}^3}$$

Memorize this!

Density of Air – Air Pressure

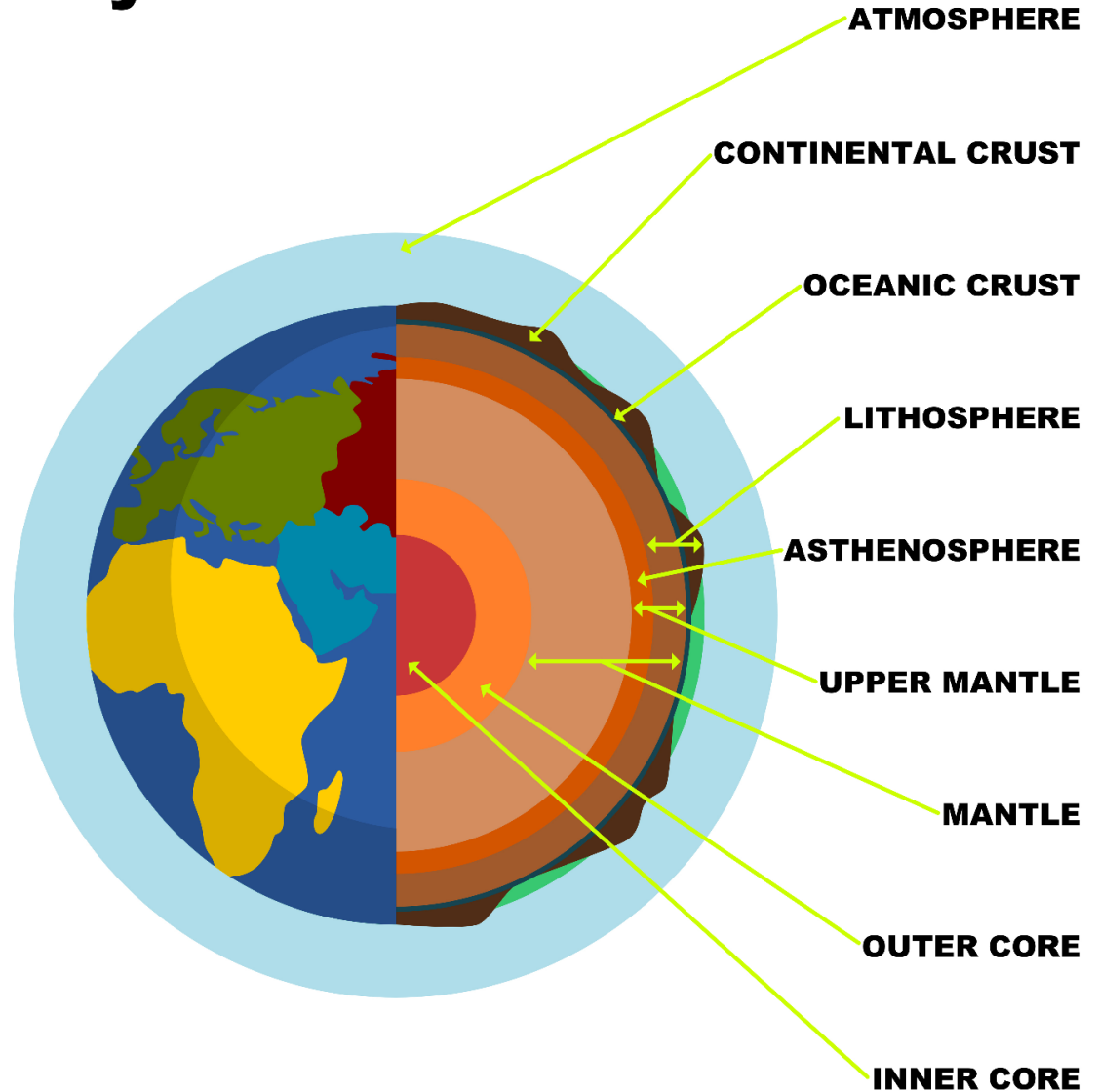


Density of Air – Air Pressure

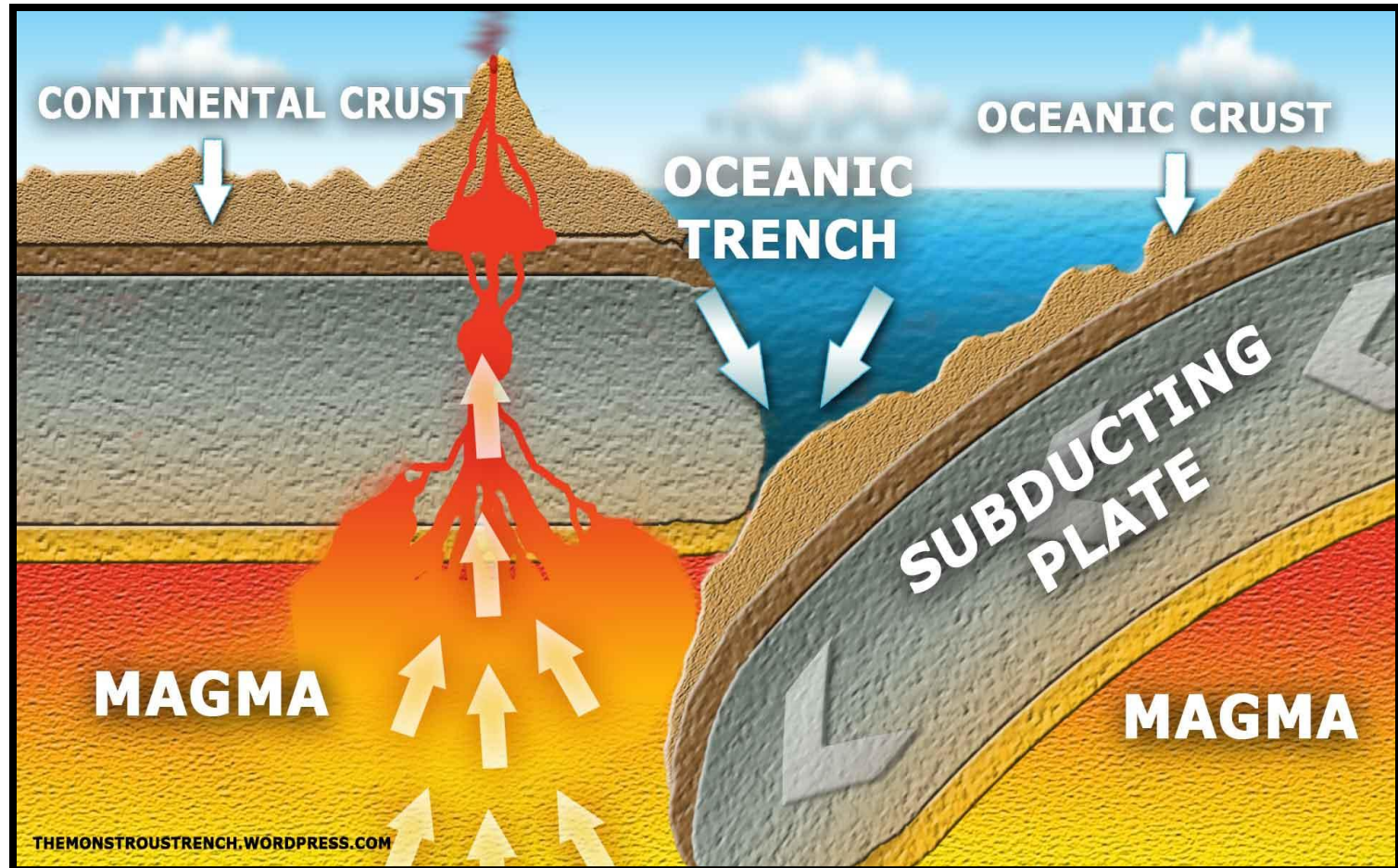


Layers of the Earth

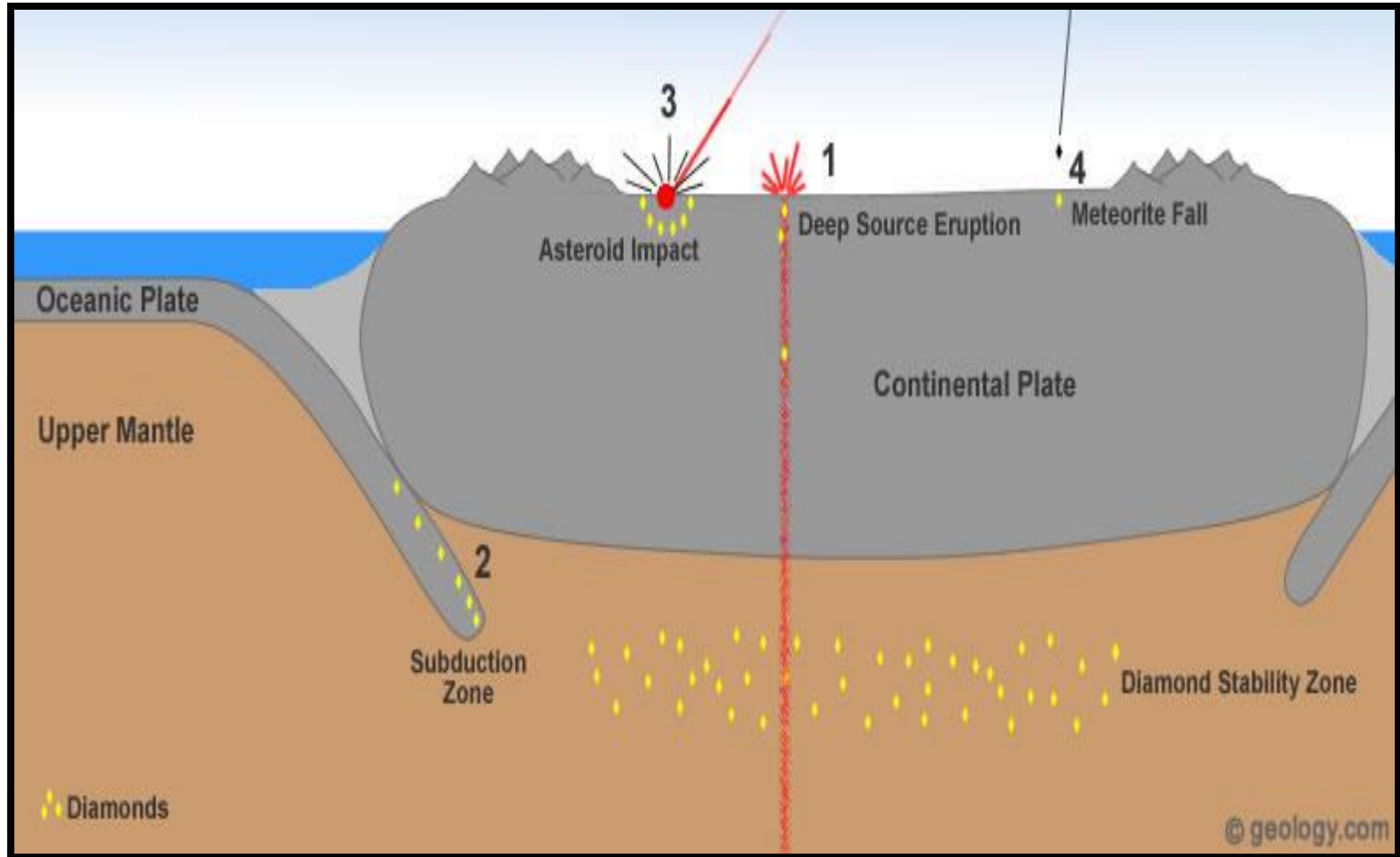
**Different
densities
lead to
earth
having
layers**



Denser plate goes under less dense plate



One way diamonds get to the surface!



Japan - 2013



Japan - 2014



A new island!



Try these...

- 1) Jack has a rock. The rock has a density of 6.73 g/mL and a volume of 8cm^3 . What is the mass of the rock? ($1 \text{ mL} = 1\text{cm}^3$) **53.84 g**

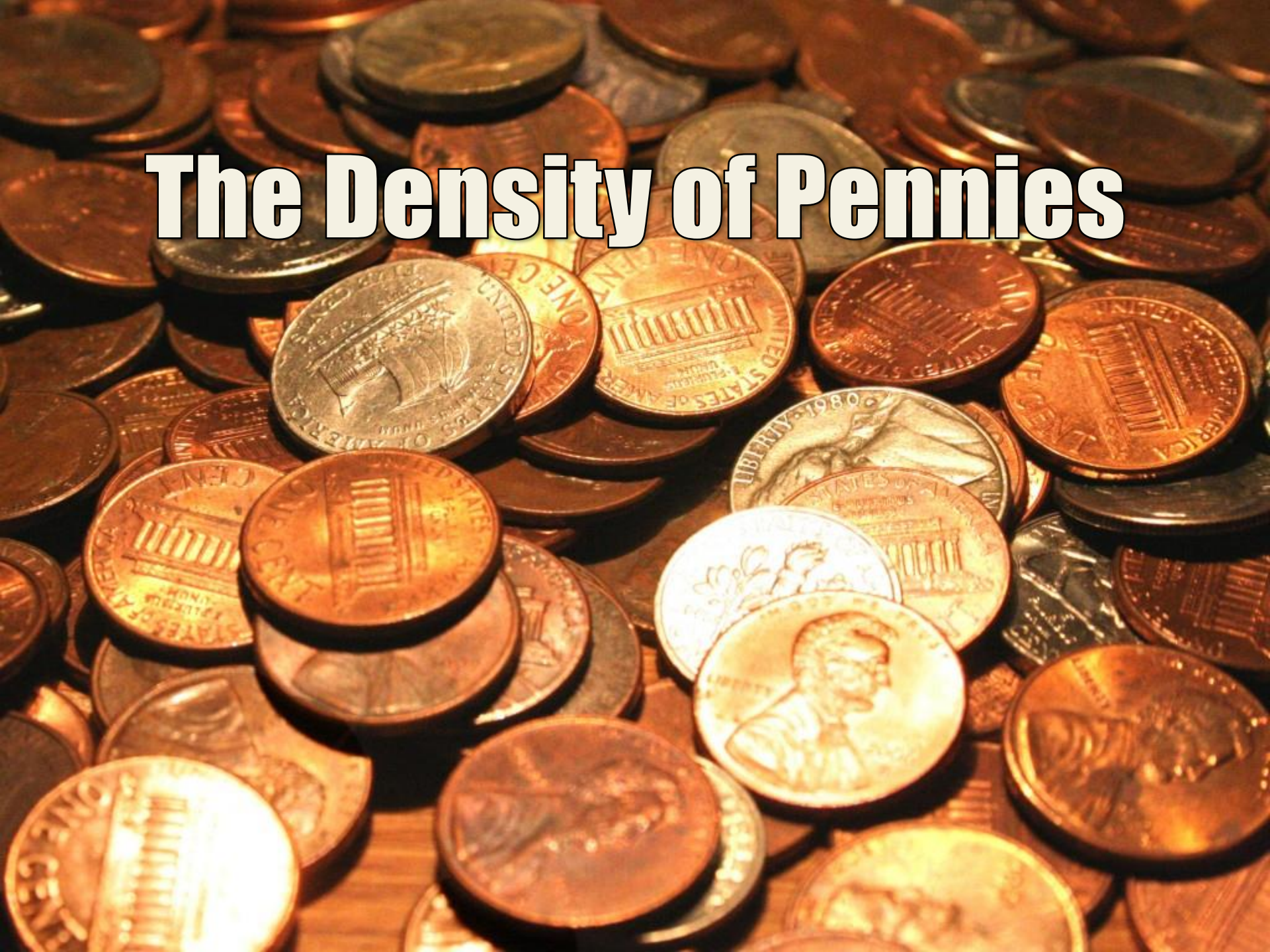
Try these...

- 2) What is the volume of an object if the density is 1.45g/mL and it has a mass of 15.2 grams? **10.48 mL**

Try these...

3) What is the density of a block if it has the following dimensions and it weighs 45.8 g? 12 cm long, 3 cm tall, and 6.5 cm wide **0.196 g/cm³**

The Density of Pennies



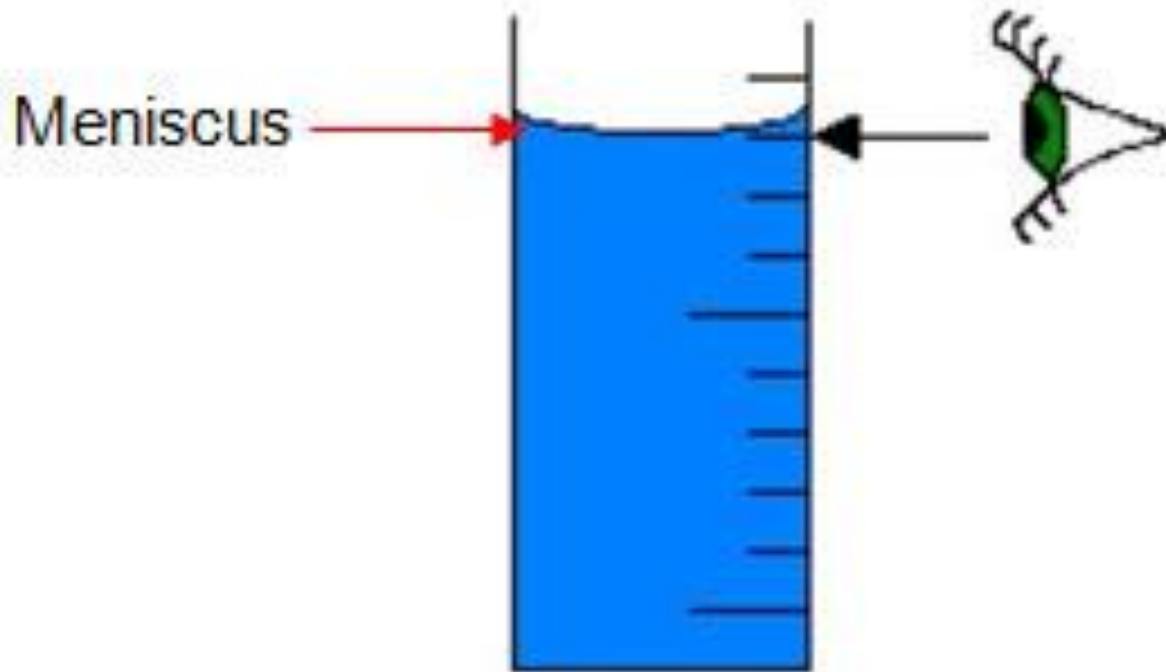
Not all pennies are the same!

Some are 95% copper and 5% zinc
Some are 2.4% copper and 97.6% zinc



Using a Graduated Cylinder

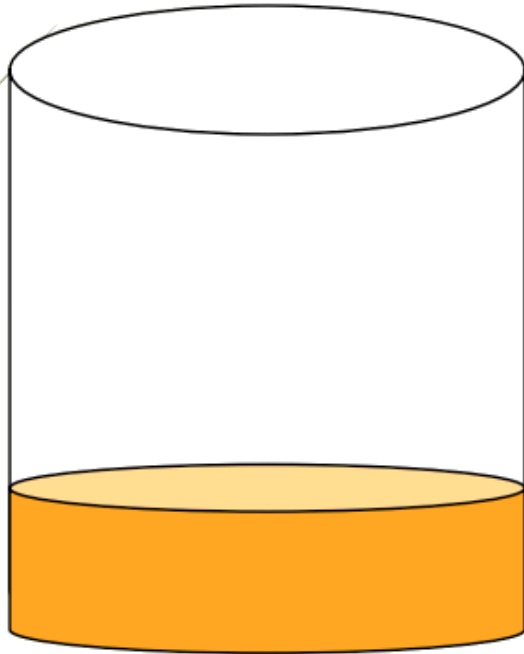
Read from eye level at the bottom of the meniscus!!!!!!!



Water Displacement

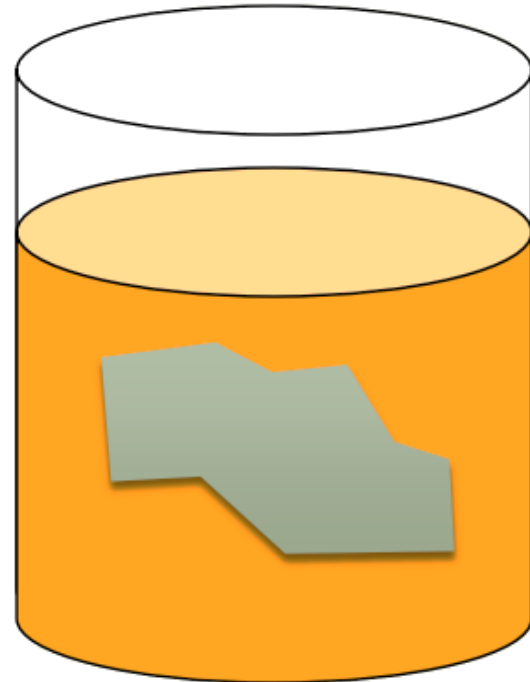
A way to measure irregularly shaped objects

10 mL



30 mL
- 10 mL
20 mL
= object
volume!

30 mL



Calculating % Error

$$\% \text{ Error} = \frac{| \textit{Accepted Value} - \textit{Your Value} |}{\textit{Accepted Value}} \times 100$$

GROUP #	PRE-1982 % error	POST-1982 % error
1		
2		
3		
4		
5		
6		
7		
8		

YouTube Links to This Presentation

Main Presentation Portion

<https://youtu.be/vWDfuq5lusA>

Density of Pennies Portion

<https://youtu.be/DrTQYOfQGil>