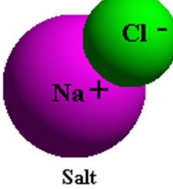


# MATTER



Pure Substances

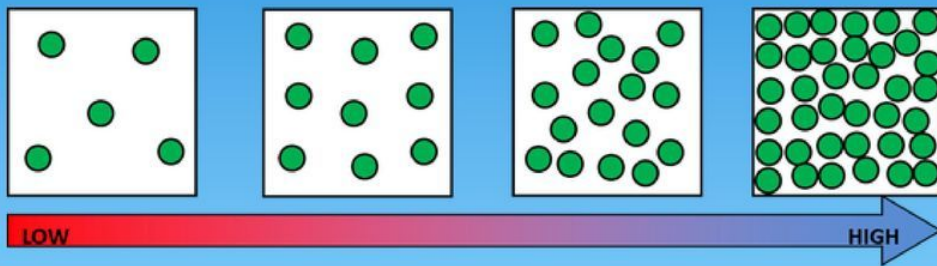
Mixtures

| Elements | Compounds |
|----------|-----------|
|          |           |
|          |           |

| Homogeneous | Heterogeneous |
|-------------|---------------|
|             |               |
|             |               |




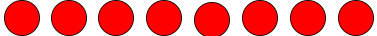
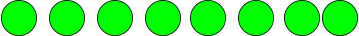



# Density



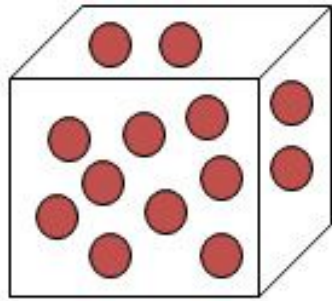
# Molecules and Density

Move the molecules under each cup to demonstrate the different levels of density.

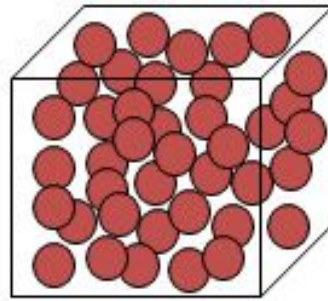
| Lowest Density  | Medium   | Highest Density   |
|---|--|---|
|  |  |  |
|  |  |  |

# Which is more dense?

## EXAMPLE 1

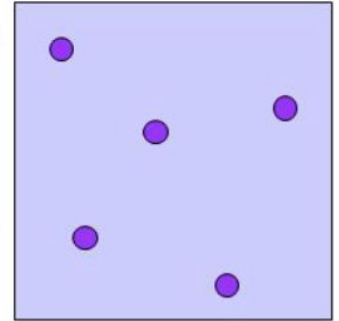
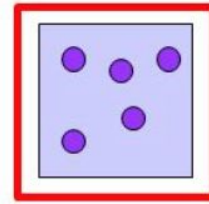


Box A



Box B

## EXAMPLE 2



# Calculating the Density of Solids

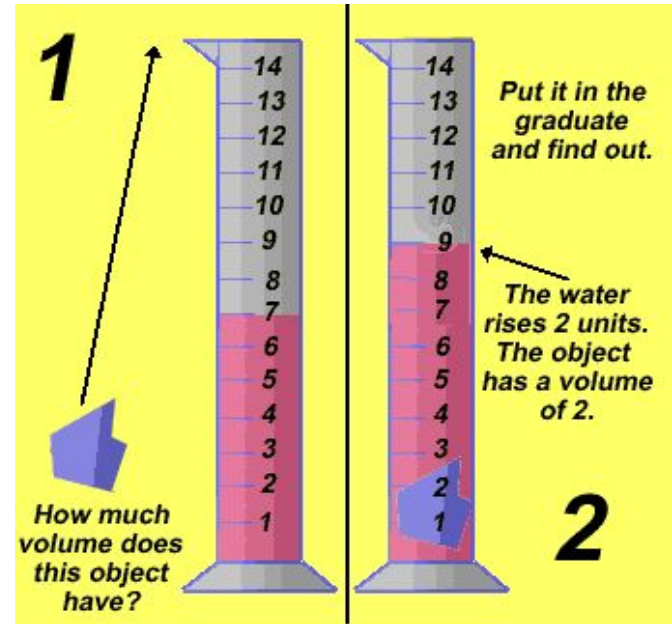
$$\text{Density} = \text{Mass} \div \text{Volume}$$

mass = the amount of matter in the object.



Find the mass → use a scale to measure how much the object weighs in grams.

volume = the amount of space that the object takes up.

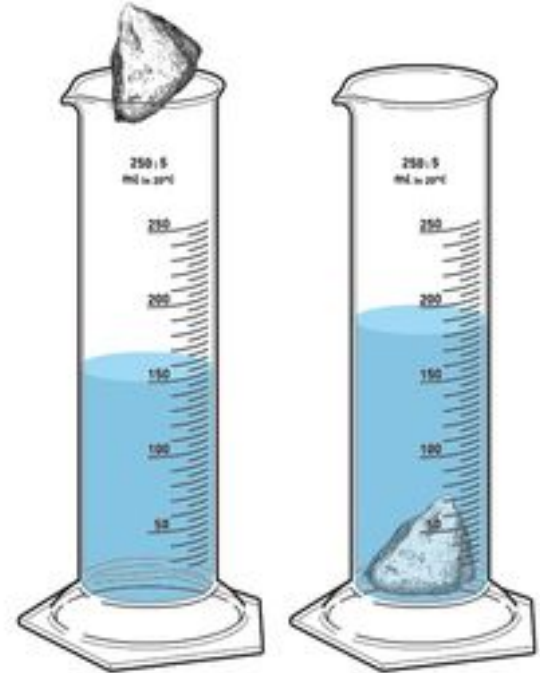


# Volume of Irregular Objects

**Water Displacement Method** -- Use for measuring Volume of objects with irregular shapes.

**Volume** = Final water level – Original water level

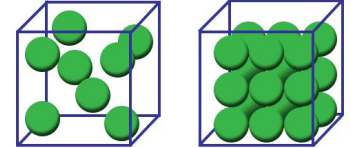
$$1 \text{ cm}^3 = 1 \text{ mL}$$















# PRACTICE: Calculating Density of Solids

Select small solid objects that fit in a graduated cylinder and follow the steps in previous slide to calculate their density.

Density



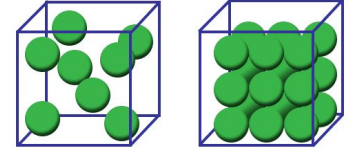
TheEngineeringMindset.com

| Object | Mass (g) |  | Volume (mL) |  | Density (g/cm <sup>3</sup> ) |
|--------|----------|---|-------------|---|------------------------------|
|        |          |  |             |  |                              |
|        |          |  |             |  |                              |
|        |          |  |             |  |                              |
|        |          |  |             |  |                              |
|        |          |  |             |  |                              |

# PRACTICE: Calculating Density of LIQUIDS

Calculating the density of a liquid is a lot easier because you just measure the mass and divide that by the total liquid you have.

Density

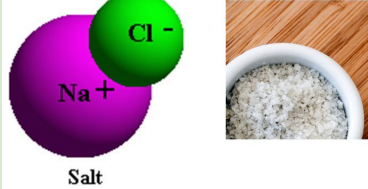


TheEngineeringMindset.com

| Object | Mass (g) | Volume (mL) | Density (g/cm <sup>3</sup> ) |
|--------|----------|-------------|------------------------------|
|        |          |             |                              |
|        |          |             |                              |
|        |          |             |                              |
|        |          |             |                              |
|        |          |             |                              |



# MATTER



Pure Substances

Mixtures

| Elements | Compounds |
|----------|-----------|
|          |           |
|          |           |

| Homogeneous | Heterogeneous |
|-------------|---------------|
|             |               |
|             |               |



A

F