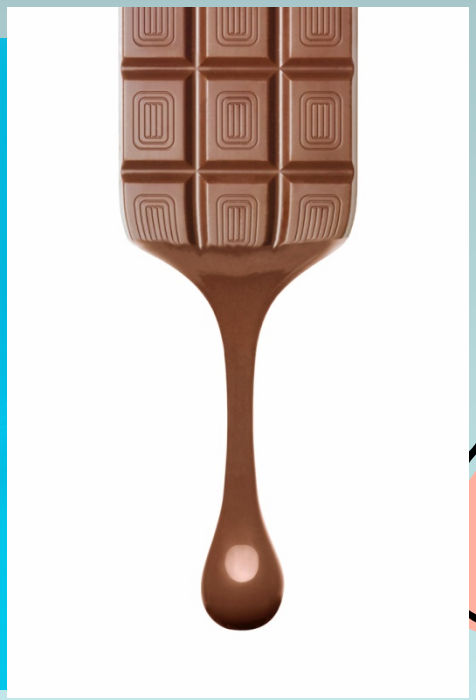
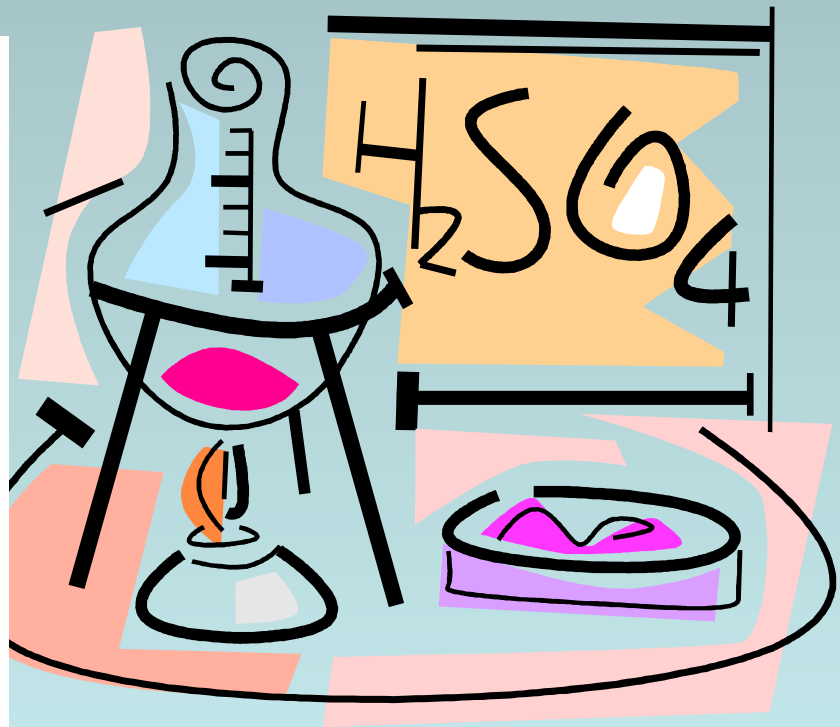
Physical Properties & Characteristic Properties vs Non-Characteristic properties

TB: p. 175, 178-189





Physical Properties

- These can be observed or measured without changing the make-up of the matter of the object
- These properties can be used to describe the object
- Two categories: non-characteristic and characteristic properties

Physical Properties Include:

- Appearance
- Texture
- Color
- Odor
- Melting Point
- Boiling Point
- Density
- Solubility

Non-Characteristic Properties

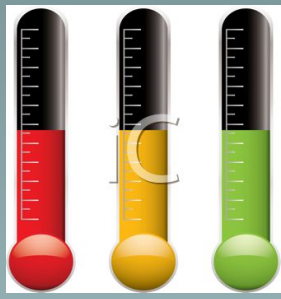
A non-characteristic property is **a physical or chemical property that is not unique to one particular substance.**

Basically: **A NCP can be used to describe many substances**

Non-Characteristic Properties Examples

- **Temperature,**
- **Mass,**
- **Shape,**
- **Colour,**
- **Volume, &**
- **Acidity and alkalinity (pH)**

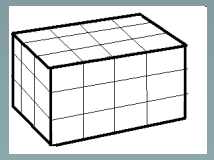
Temperature



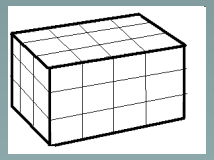
- In science, temperature is measured in degrees Celsius (ºC) or sometimes in Kelvin (K)
- To measure temperature we use a thermometer

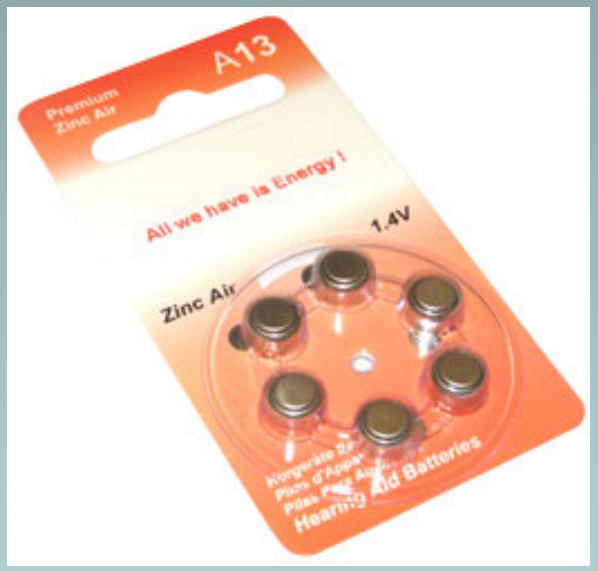
Mass

Shape and Color



Volume





Zn Zinc

Atomic Number: 30

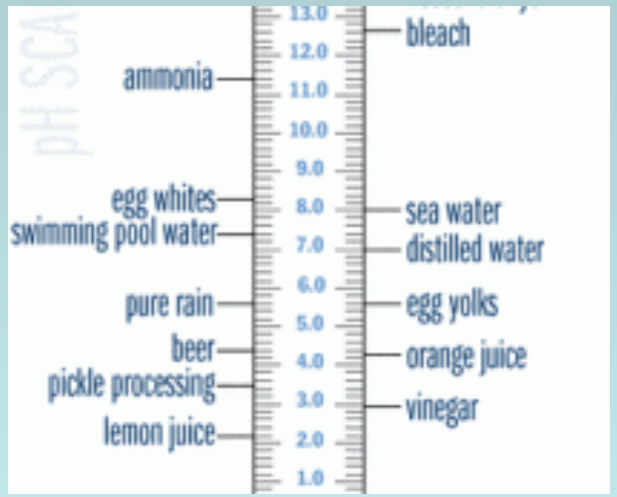
Atomic Mass: 65.39

Li Lithium

Atomic Number: 3

Atomic Mass: 6.939

Acidity and Alkalinity



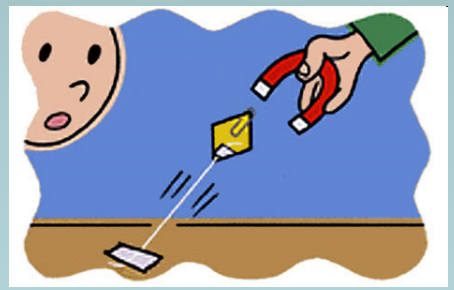
Characteristic Properties

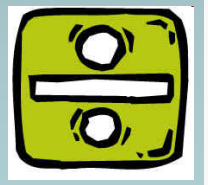
A characteristic property is **a physical or chemical property that is unique to a particular substance.**

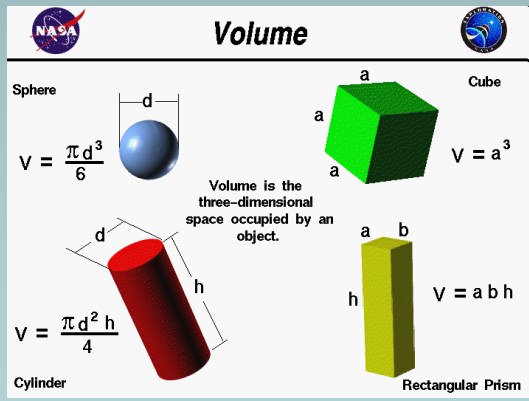
Basically: **A CP can be used to identify a substance.**

Characteristic Properties Examples

Density: The amount of matter in an object, **which is calculated by dividing the mass by the volume**







Magnetism: **The force of attraction between a magnet and a magnetic object**

Characteristic Properties Examples (cont.)

Solubility: **A measure of how well a substance can dissolve in another substance.**

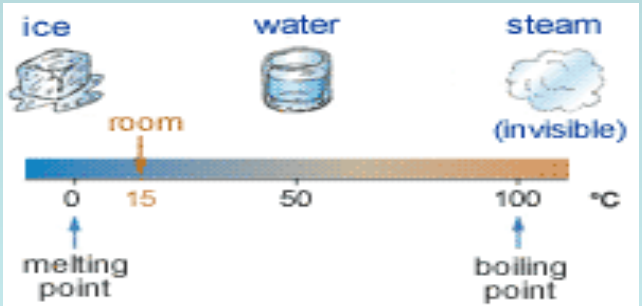
- The **Solute**: **the substance that is dissolved**
- The **Solvent**: **the substance that the solute dissolves**

- The **Solution**: **the result of mixing a solute and a solvent**

Characteristic Properties Examples (cont.)

Melting Point: **The temperature at which a substance changes from a solid to a liquid**

Boiling Point: **The temperature at which a substance changes from a liquid to gas**



Examples

- Freezing point of Water: 0ºC
  - Liquid water will freeze to solid ice at 0ºC
- Melting Point of Ice: 0ºC
  - Solid ice will melt to liquid water at 0ºC
- Boiling Point of Ice: 100ºC
  - Liquid water will change into a gas at 100ºC

Example: The English Oak

Characteristic Property

- Density = 720 kg/m^3

Non-Characteristic Property

- Light yellow to Medium brown in colour

Non-Characteristic Property

- 25-30 m tall

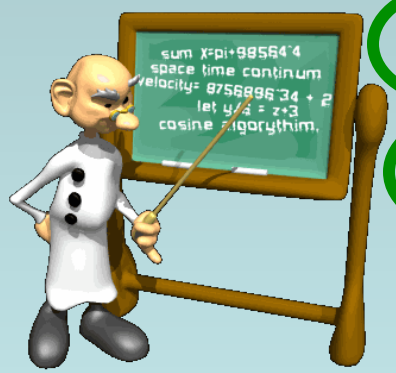
Example # 1

Below is the properties of unknown substances. Which of the following is a characteristic property?

1. Mass of 346 grams
2. Red and circular in shape
3. Temperature of 25^0C
4. Boiling Point of 204^oC

Example # 2

Identify all of the non-charactertistic properties listed below



1. Volume of 200 ml
2. Square shaped
3. Temperature of 45^0C
4. Freezing Point of 204^oC
5. Density of 24 g/ml

Example # 3

Exam like question!!!

Julie has a unknown substance in a beaker. Its properties are described in the chart to the right.

Mass	103.5 g
Color	yellow
Magnetic	No
Volume	50 ml

Using the substance chart below, identify which substance Julie has in the beaker.

	Density	Color	Magnetic
Iron	7.86 g/ml	Yellow-Grey	Yes
Water	1 g/ml	Colorless	No
Nitrogen	0.00125 g/ml	Yellow	
Sulphur	2.07 g/ml	Yellow	

Sulphur

Remember!

Characteristic Properties	Non-Characteristic Properties
CO_2 - Turns limewater cloudy	- Color - Shape - Texture - Size - Mass - Temperature - Odor - Weight - Volume
O_2 - Ignites glowing splint	
H_2 - Pops in presence of flame	
Density, DENSITY = m/V	
Melting Point	
Freezing Point	
Boiling Point	