PHYSICAL PROPERTIES
Describe a sunflower

- It’s yellow.
- It’s leaves are green.
- It’s round.
- It’s big.
- It’s soft.

How do you know these are the characteristics of a sunflower?

You can observe them with your senses.
DEFINITION

• You do not need to change the sunflower in any way to observe the properties you use to describe it.
• What you observed are physical properties.
• Physical property = any property that can be observed without changing the identity of a substance.
**EXAMPLES**

Some descriptive physical properties include:

- Color
- Shape
- Size
- Texture
• Intrinsic properties are independent of size.
• Some examples of intrinsic properties are:
  o Density
  o Solubility
  o Phase of matter – depends on temperature and pressure
    • Melting point and Boiling point
• Intrinsic properties can often be used to identify substances.
Which is heavier, a kilogram of feathers, or a kilogram of lead?

It’s a trick question. A kilogram of lead has a smaller volume than a kilogram of feathers, but it has the same mass. They’re equally heavy.

Lead is more dense than feathers.
• Density is the mass per unit volume.
  
  o \[ D = \frac{m}{V} \]
  
  o \[ m = D \times V \]
  
  o \[ V = \frac{m}{D} \]

• What is the density of copper if a 25.0 mL sample of copper has a mass of 224 g?
  
  o \[ D = \frac{m}{V} = \frac{224 \, g}{25.0 \, mL} = 8.96 \, g/mL \]
PHYSICAL PROPERTIES OF ACIDS AND BASES

• Acids
  o taste sour

• Bases
  o taste bitter
  o feel slippery