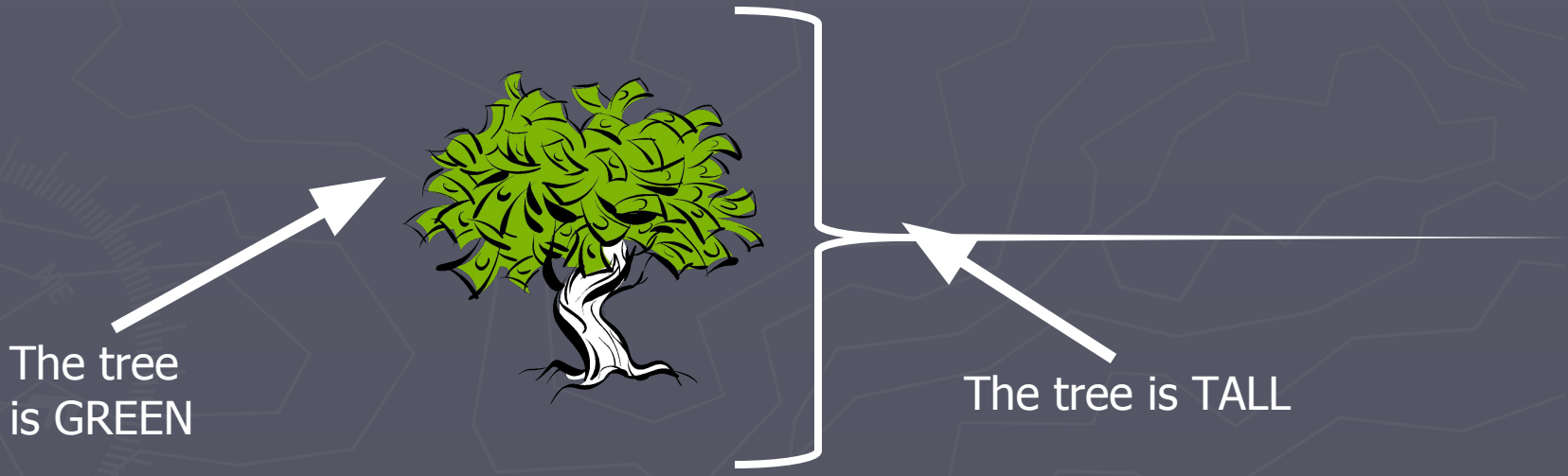
Physical and Chemical Properties and Changes

Property

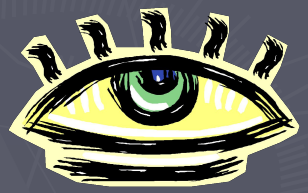
- **Is a description of an object**

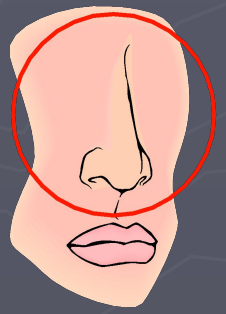
If struck by lighting, the tree could catch FIRE (BURN)



Physical Properties

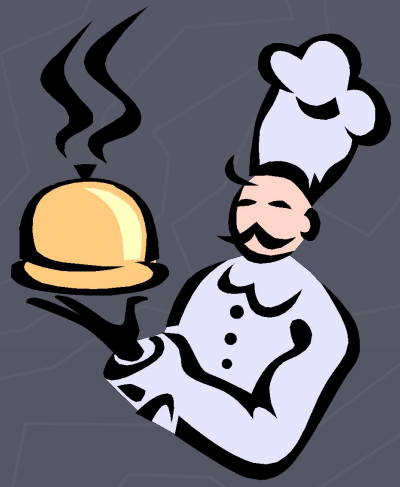
- Are determined by the use of the five senses.
- They are a description of an object.





Examples of Physical Properties

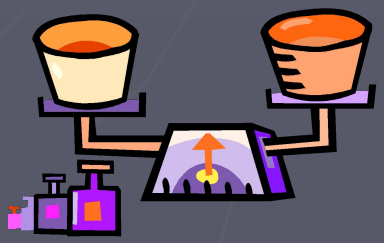
- Color
- Smell
- Taste
- Hardness
- State of Matter
- Boiling, Freezing, or Melting Point



Examples of Physical Properties

Density

Mass



Volume

Malleability (the ability to be molded)

Solubility (the ability to be dissolved)

Chemical Properties

- Are determined by a substance's ability to react with other substances.

Examples of Chemical Properties

- The ability to react with **air**
  - **rust**
  - **tarnish**
  - **corrode**
  - **rot**
- The ability to react with **water/acids**
- The ability to catch fire (**flammability**)

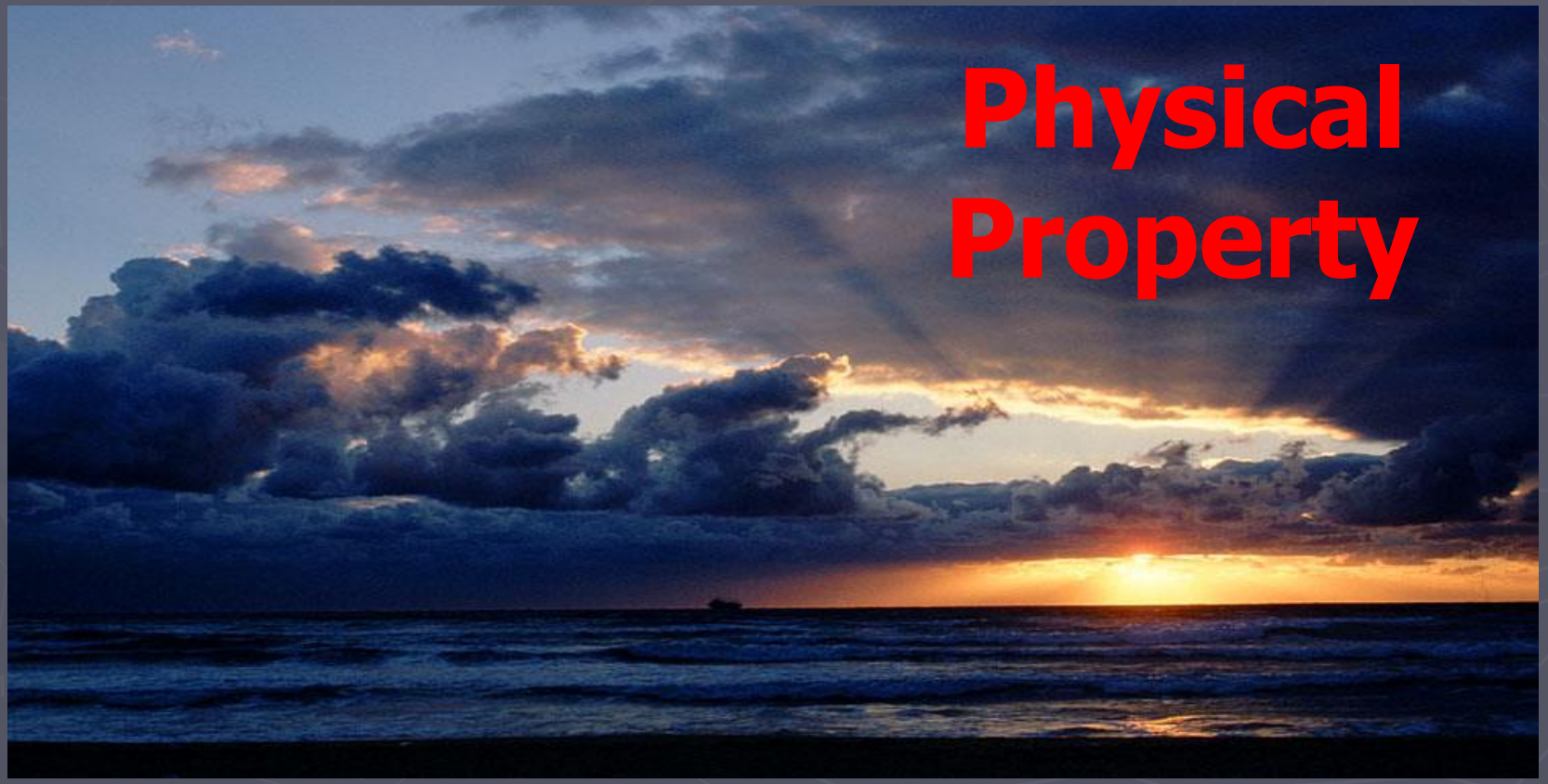
Physical or Chemical Property?

- Ability of gun powder and fire to explode.

Chemical Property

Physical or Chemical Property?

- The color of a sunset.



Physical or Chemical Property?

- The ability of a nail to rust.

Chemical Property

Physical or Chemical Property?

- The shape of a leaf.

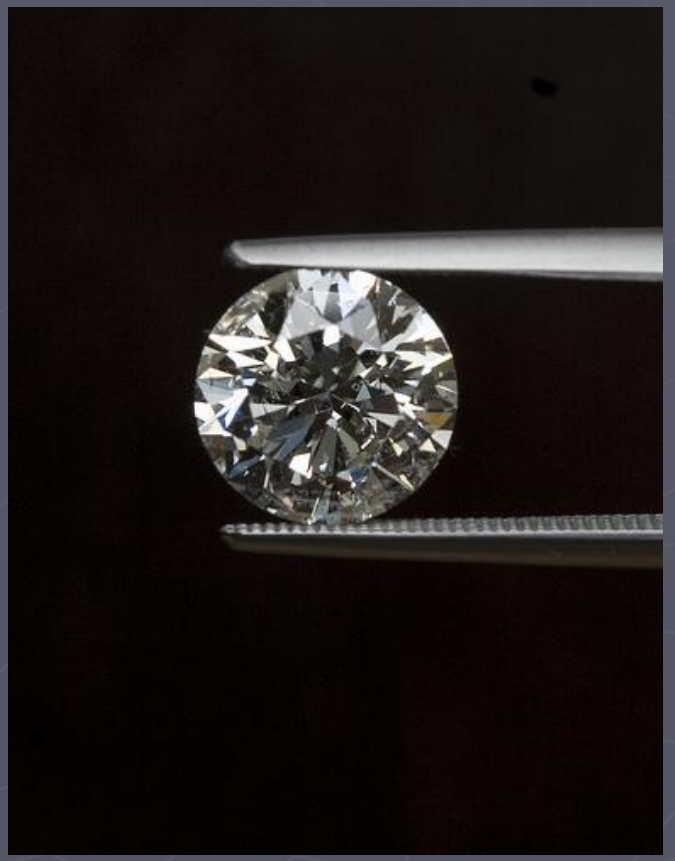
Physical or Chemical Property?

- The ability of wood to burn.

Chemical Property

Physical or Chemical Property?

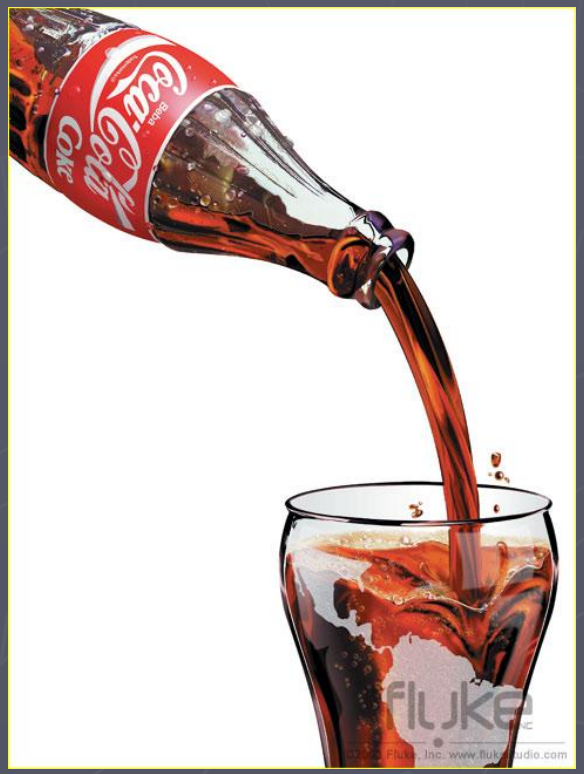
- The hardness of a diamond.



Physical Property

Physical or Chemical Property?

- The volume of your coke.



Physical Property

Physical or Chemical Property?

- The mass of two camels.

Physical Property

Physical Changes

- a change that occurs **without** changing the **identity** of the substance.
- **No** new substances are formed.

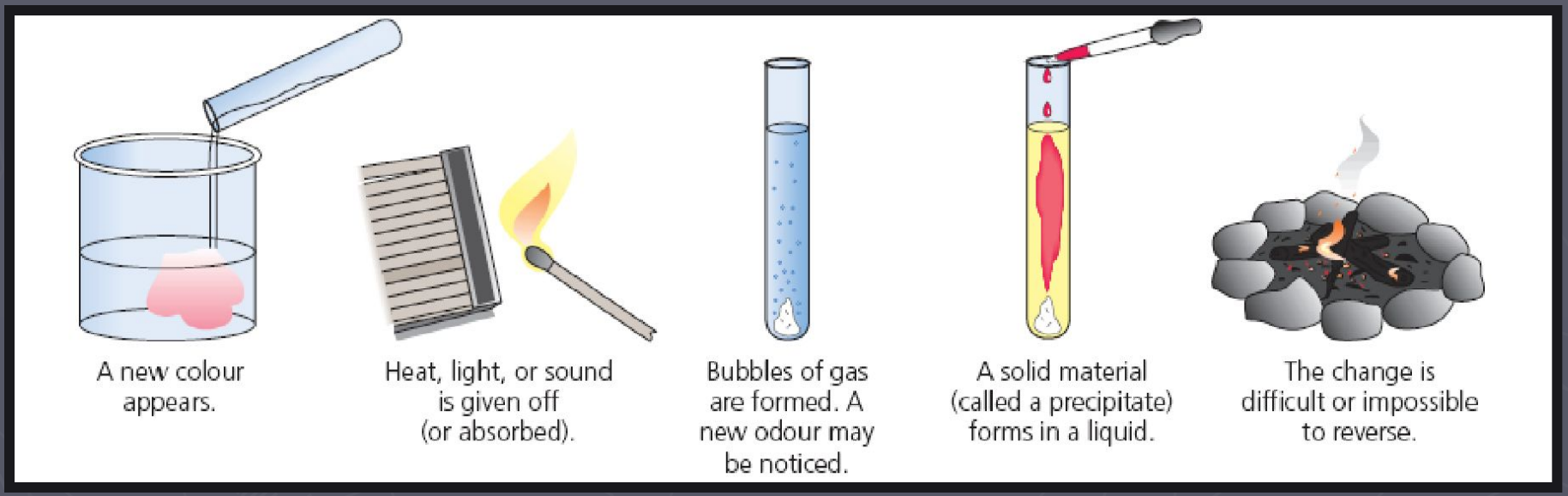
Examples of Physical Changes

- Change in size, shape, or color
- Pencil shavings
- Torn Paper
- Crushed ice
- Sugar dissolved in water
- Painting a wall

Chemical Changes

- a change that occurs that causes the identity of a substance to change; something new is formed.
- New substances with new properties are formed

Evidence of Chemical Change



- New ___color___ appears
- Bubbbles or ___fizzing___
- Precipitate forms (___solid___ material)
- ___Heat___ is produced
- ___Light___ is produced
- ___Sound___ is given off
- Difficult or impossible to ___reverse___

Reactions with Acid

- Vinegar + baking soda = release of Carbon Dioxide Gas

Reactions with Oxygen

- **OXIDATION**
- **Iron + Oxygen = rust**

Reactions with Electricity

- **Silver Plating**

Reactions between Substances

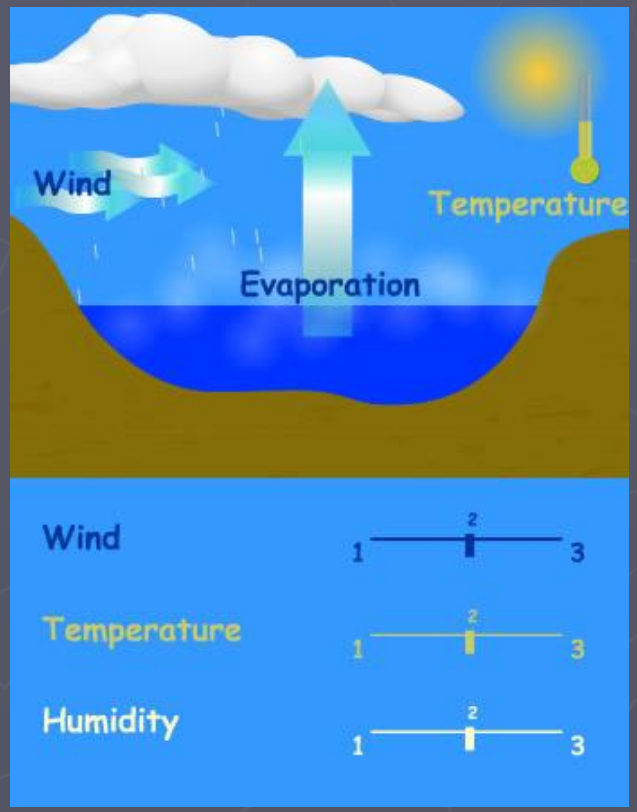
- Sodium + chloride = salt
- Silver + sulfer in the air = tarnish

Other Examples

- Wood burning
- Metal rusting
- Food digesting
- Gasoline burning
- Cake baking

Physical or Chemical Change?

- **Water evaporates from the ocean.**



Physical or Chemical Change?

- The yolk of an egg, which contains sulfur, causes tarnish to form on silver.

Physical or Chemical Change?

- The ice on a lake melts to become water in the lake.

Physical or Chemical Change?

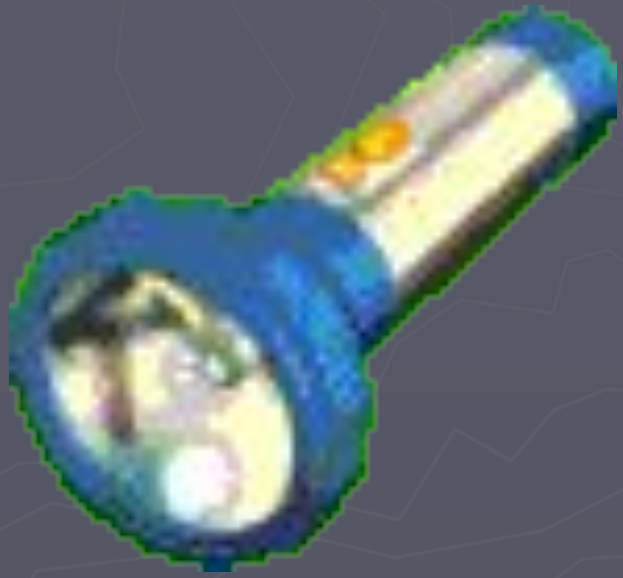
- Charcoal in a fire turns to ash after several hours.

Physical or Chemical Change?

- A pencil is sharpened in a pencil sharpener, leaving behind shavings.

Physical or Chemical Change?

- A battery makes electricity to turn on a flashlight.



Physical or Chemical Change?

- A bicycle rusts when left in the rain.

Physical or Chemical Change?

- A shirt is accidentally torn in the washing machine.

Physical or Chemical Change?

- A log is split in two by an axe.

Your Turn!