Chapter 1 and Chapter 2

Chemistry

Introduction to Chemistry

Chapter 1

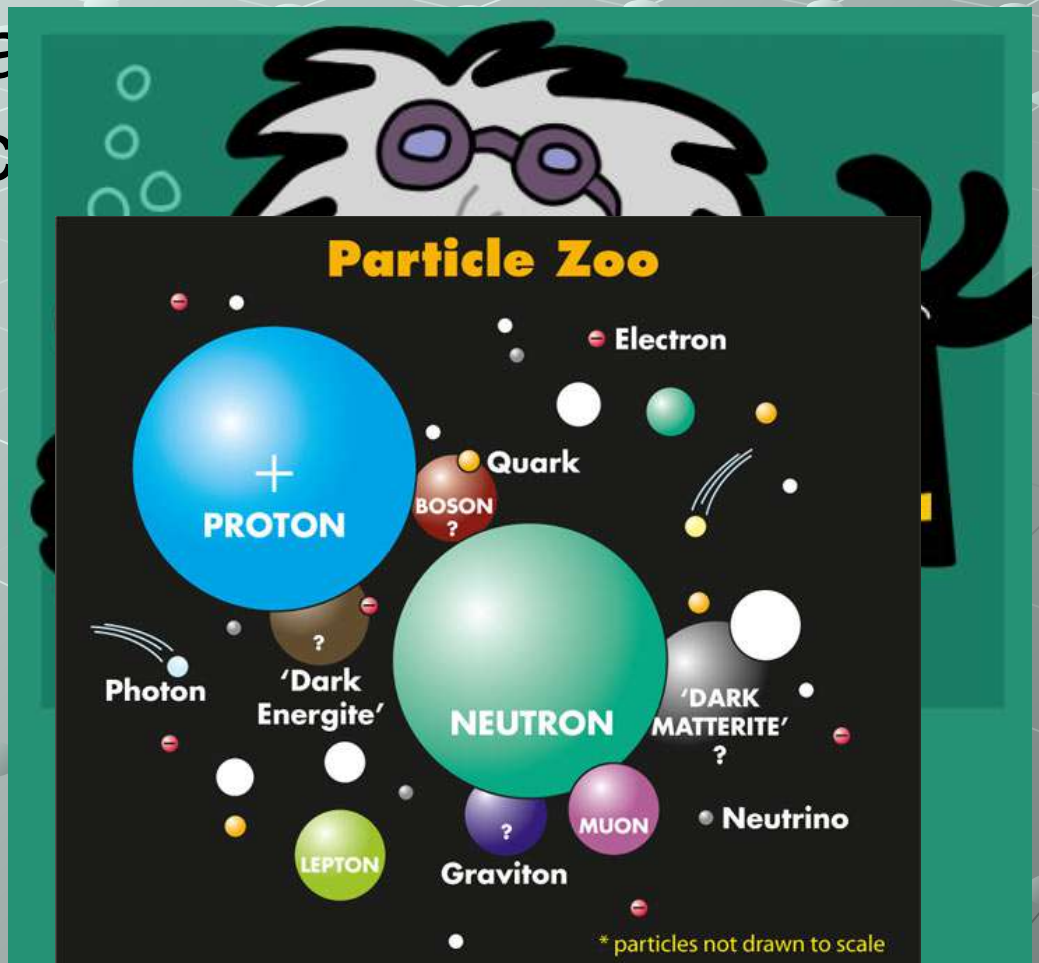
Chemistry

Section 1.1

Chemistry 1.1

Chemistry – the study of matter and the changes that matter undergoes

Matter – a takes up spac



Chemistry 1.1

5 Branches

1. Organic – chemicals that contain carbon
2. Inorganic – chemicals that do carbon
3. Biochem
4. Analytic
5.

Chemistry 1.1

Pure Chemistry – for knowledge sake

Applie cation

Thinking Like a Scientist

Section 1.3

Standard

SCSH8

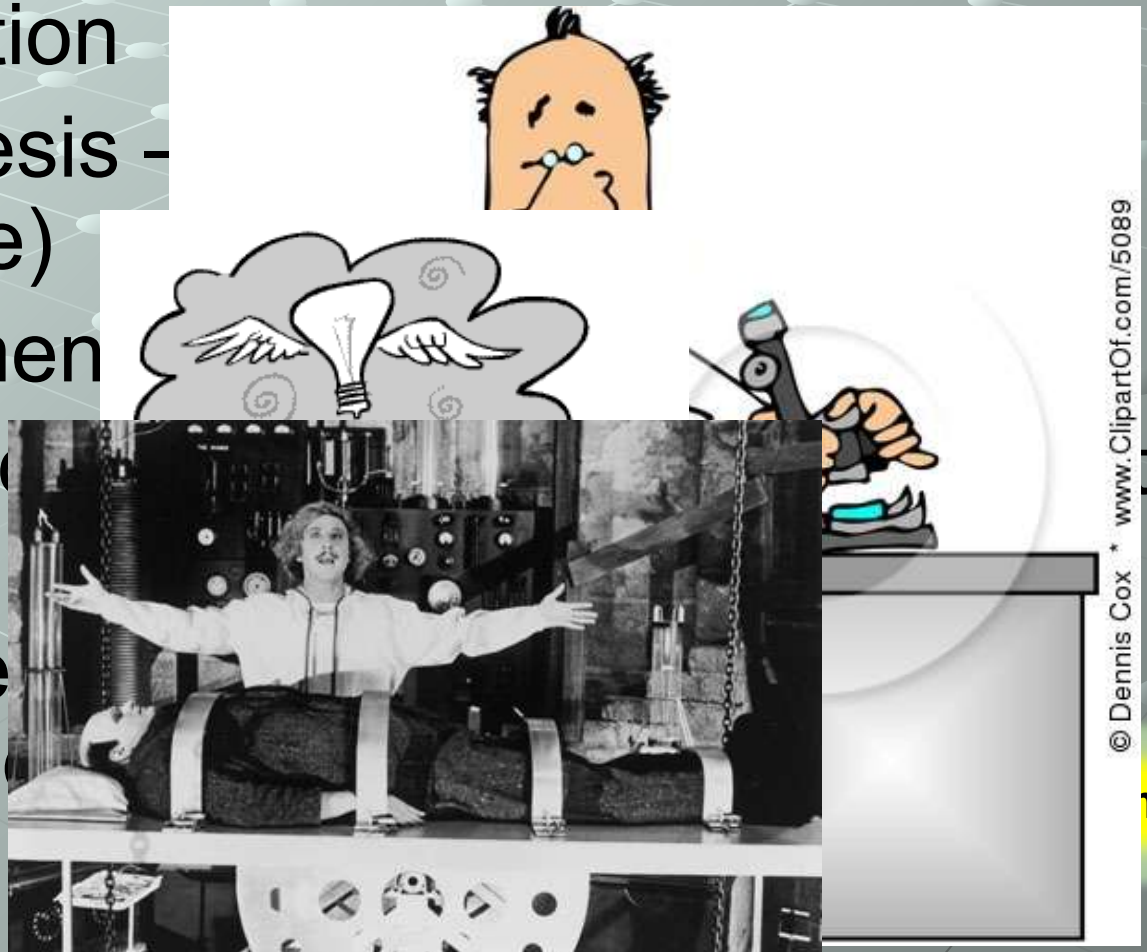
Students will understand important features of the process of scientific inquiry.

Thinking Like A Scientist 1.3

Understand important features of the process of scientific inquiry.

The Scientific Method

1. Observation – use your senses to obtain information
2. Hypothesis - (testable)
3. Experimen
   a. Indepen variable
   b. Depende observe



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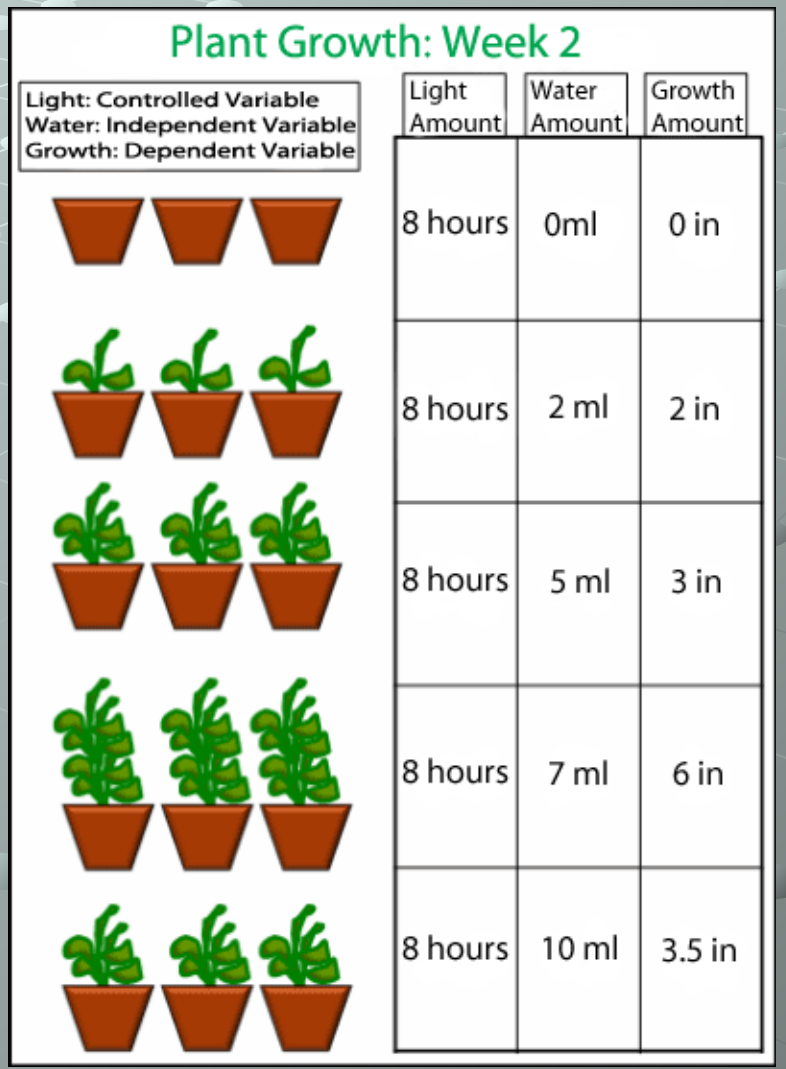
Thinking Like A Scientist 1.3

Understand important features of the process of scientific inquiry.

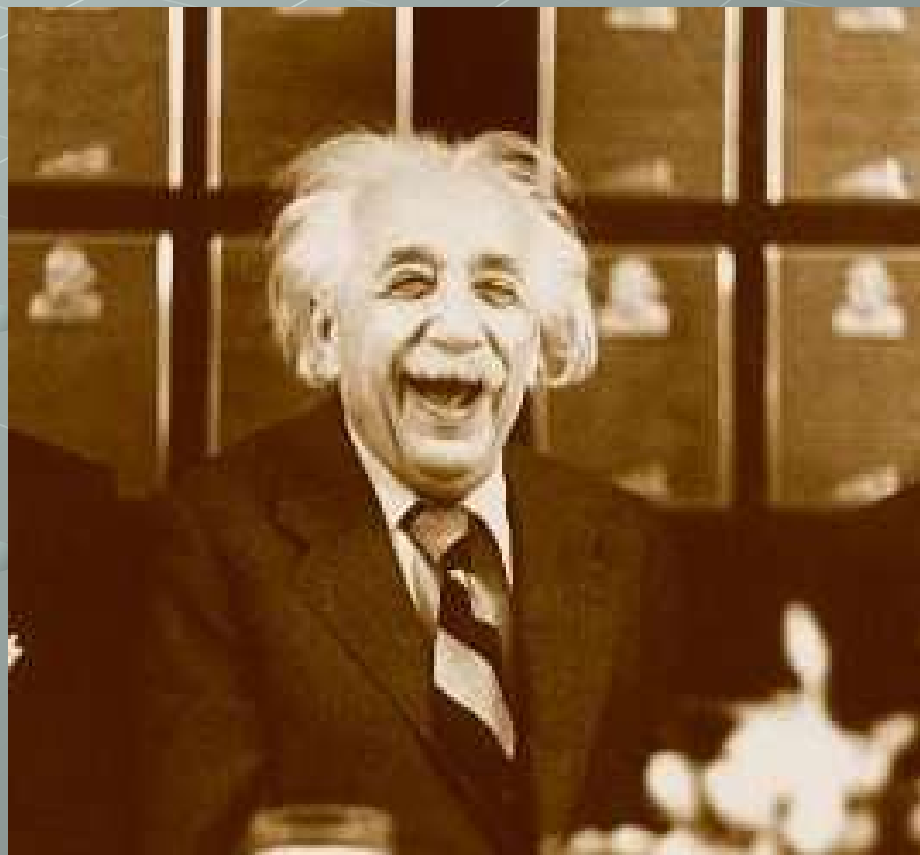
c. Control – independent variable is not manipulated



Starter S-2

Define the terms

1. Hypothesis
2. Chemistry
3. Matter

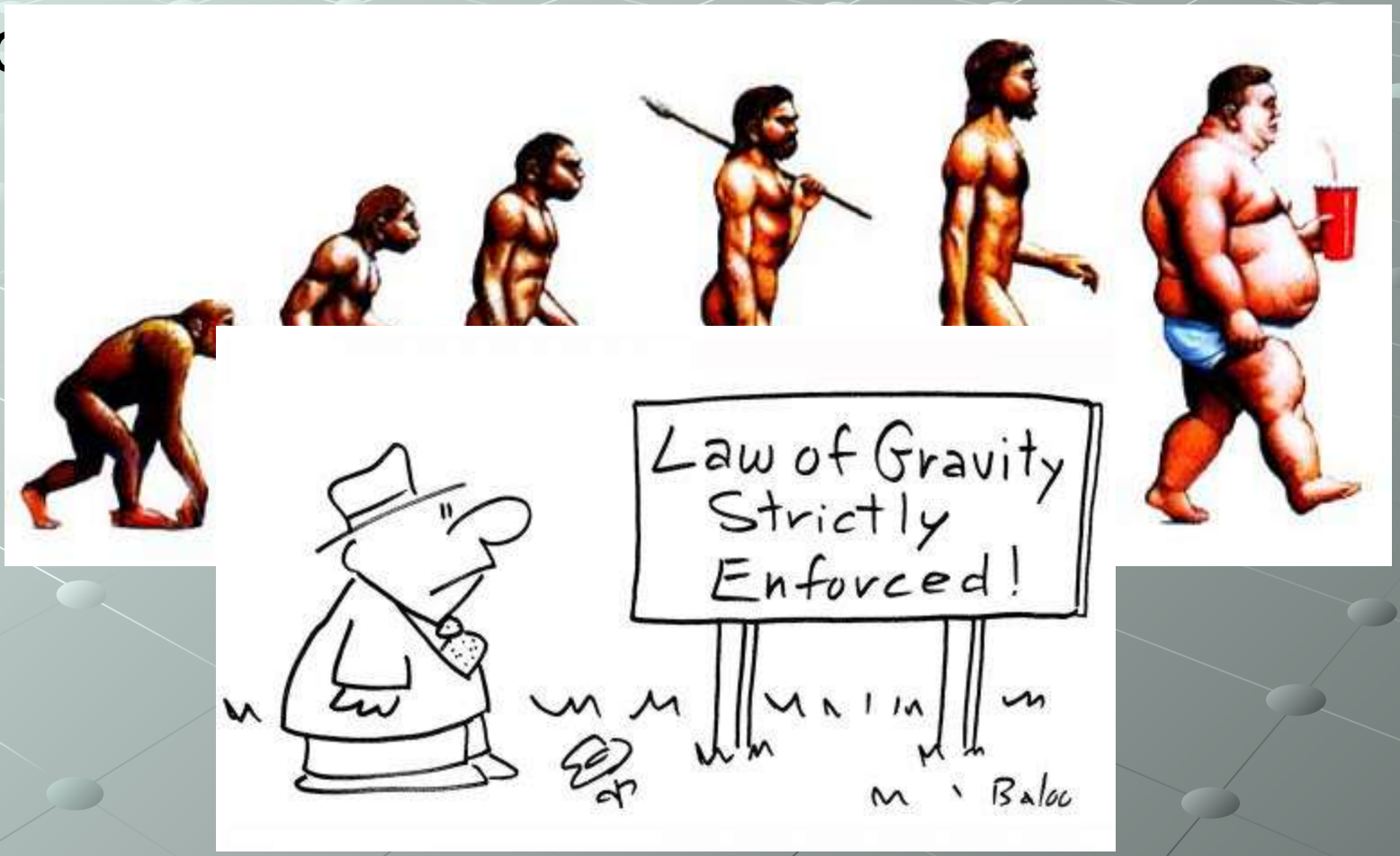


Thinking Like A Scientist 1.3

Understand important features of the process of scientific inquiry.

Theory – well tested explanation, broad set of observations

Sc



Thinking Like A Scientist 1.3

Understand important features of the process of scientific inquiry.

Development of a Simple Theory by the Scientific Method:

Observation: Every swan I've ever seen is white.

Hypoth

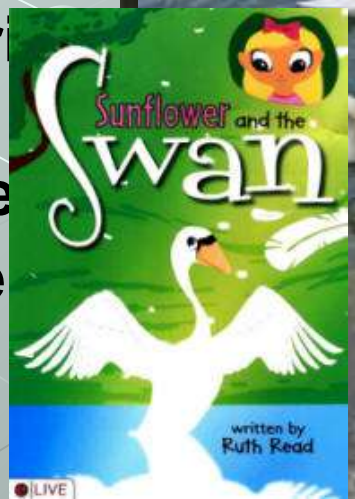
Test: A ent
wh te
swa

Publica
are

Veri

The

Pre



Thinking Like A Scientist 1.3

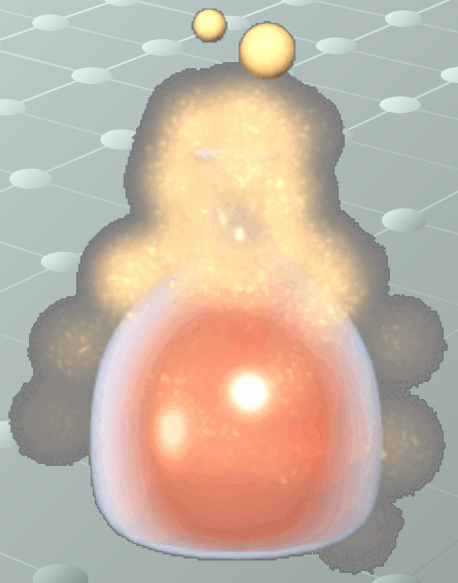
Understand important features of the process of scientific inquiry.

Note, however, that although t
is useful, the theory does n
prove that the next swan I
white.

Thus it is said to be falsifiable

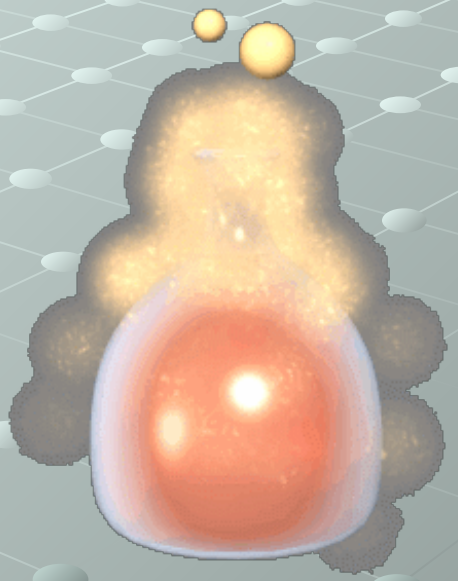
If anyone ever saw a black swan, the theory would have to be tweaked or thrown out.

(And yes, there are really l
example was just to illu



Matter and Change

Chapter 2



Properties of Matter

Section 2.1

Standard

SC1

Students will analyze the nature of matter and its classifications.

Properties of Matter 2.1

Analyze the nature of matter and its classifications.

Extensive Properties – depends on the amount of matter in a sample

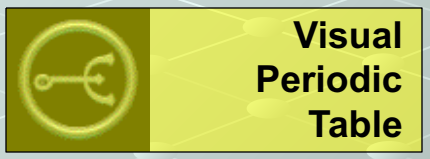
*ma r

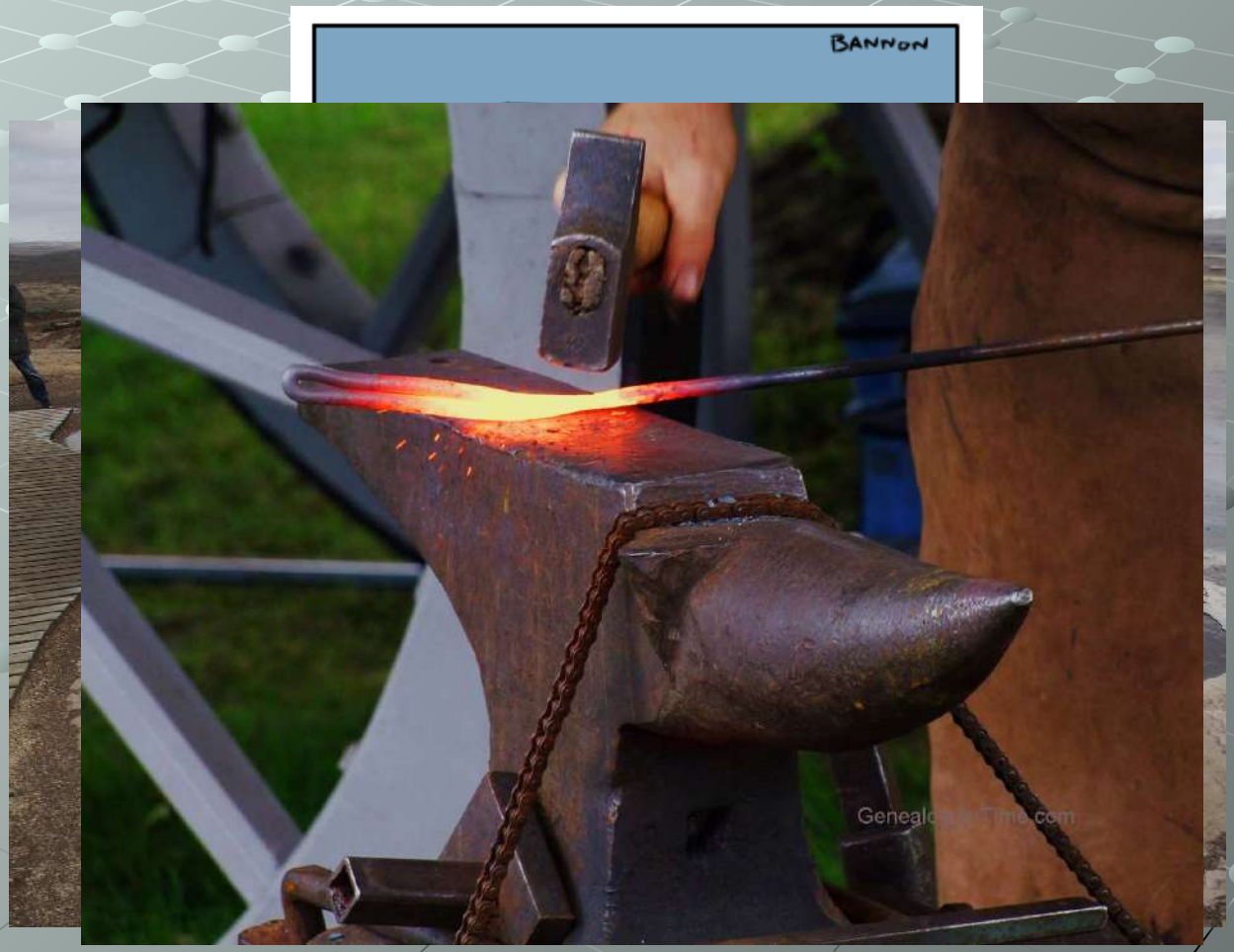
Inte

Properties of Matter 2.1

Analyze the nature of matter and its classifications.

Physical Property – quality or condition that can be observed without changing the substance





State

Color

Melting Point

Boiling Point

Malleability

Properties o

Analyze the nature of matt

States of Matter

Solid – definite shape a

particles locked in posi

Liquid – tak

volume

particles clo ot locked

Gas – takes e of container

particles

ID

States of Matter

Starter S-3

Which of the following are Physical Properties?

Name: Manganese

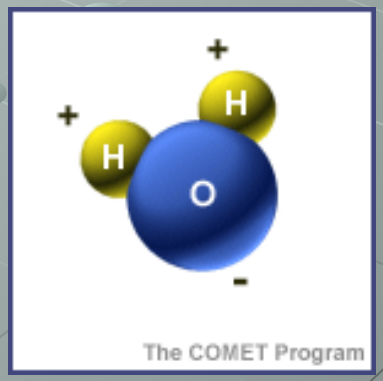
Symbol: Mn
Atomic Number: 25
Atomic Mass: 54.93805 amu
Melting Point: 1245.0 °C (1518.15 K, 2273.0 °F)
Boiling Point: 1962.0 °C (2235.15 K, 3563.6 °F)
Number of Protons/Electrons: 25
Number of Neutrons: 30
Crystal Structure: Cubic
Density @ 293 K: 7.43 g/cm3
Color: silverish/grayish

Properties of Matter 2.1

Analyze the nature of matter and its classifications.

Physical Change – some properties change, but composition does not change

In our example the molecule, H_2O, always stayed the same.



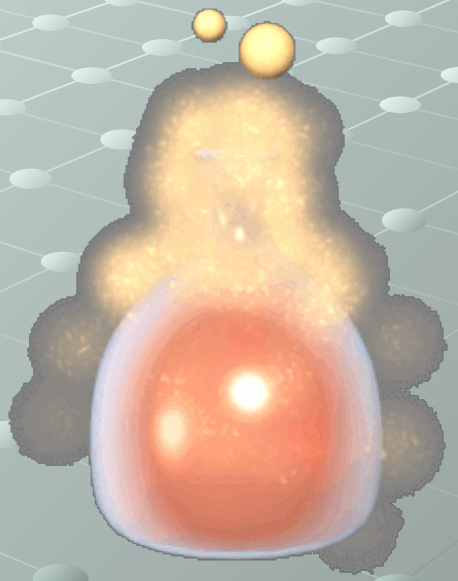
Chemical Properties

Properties which describe the behavior of matter when it is in the presence of another substance. Ex. Flammability, reactivity, stability

Chemical Changes

Changes that involve a change in the components of the substance; changes into a different substance through chemical reactions. Ex. Silver tarnishes, iron rusts, combustion

- Signs of a chemical reaction:
  - Color change
  - Bubbles form
  - Heat given off or taken in
  - Precipitate forms (insoluble substance formed from a solution)



Mixtures

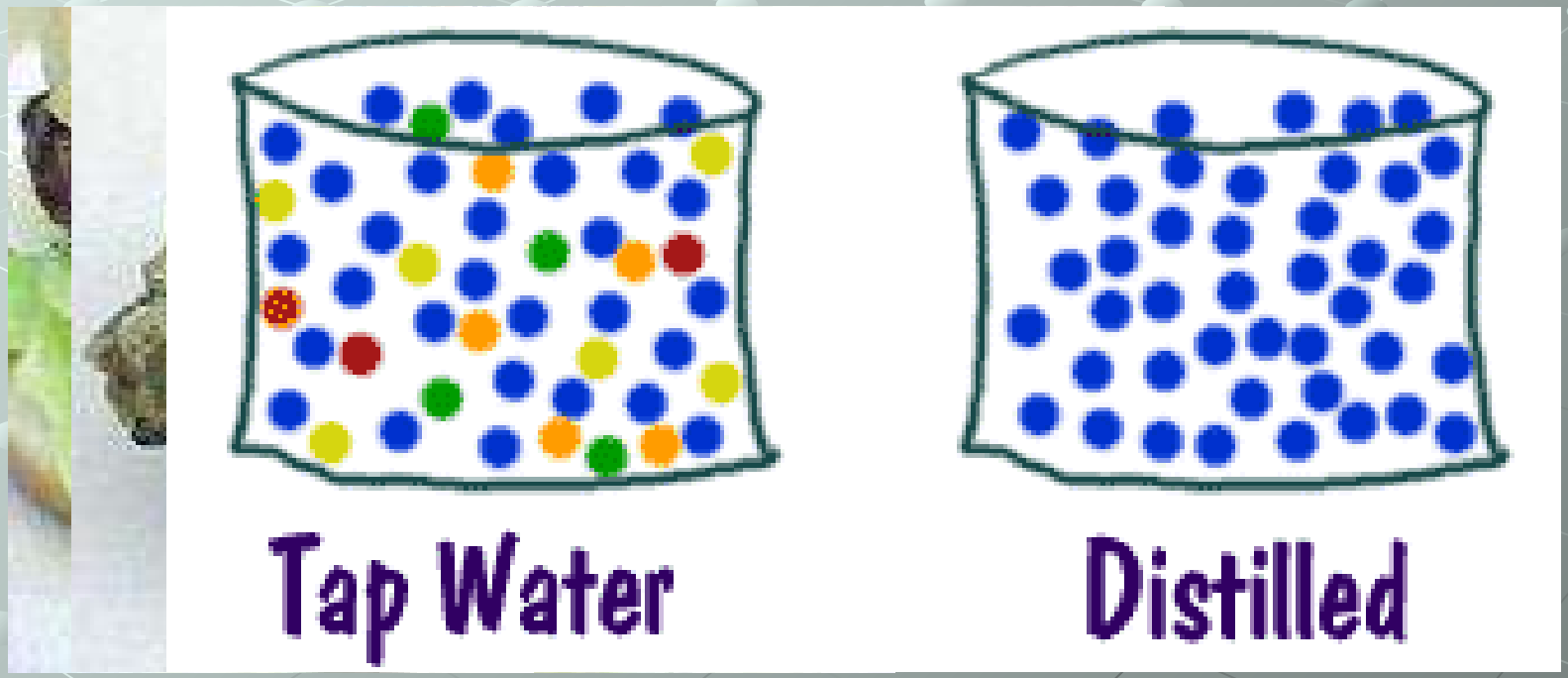
Section 2.2

Mixtures 2.2

Analyze the nature of matter and its classifications.

Mixture – physical blend of two or more compounds

Some are hard to see



Mixtures 2.2

Analyze the nature of matter and its classifications.

Homogeneous Mixture – uniform throughout

Solution – homogeneous mixture

Dissolving

Starter S-4

Write down 10 observations about the object in the front of the room.

List 3 physical changes that could be done to the object.

Mixtu

Analyze the nature of ma

Mixtures can be separ
reactions based or
properties of the m

Magnets – erial

Chrom substances
of c

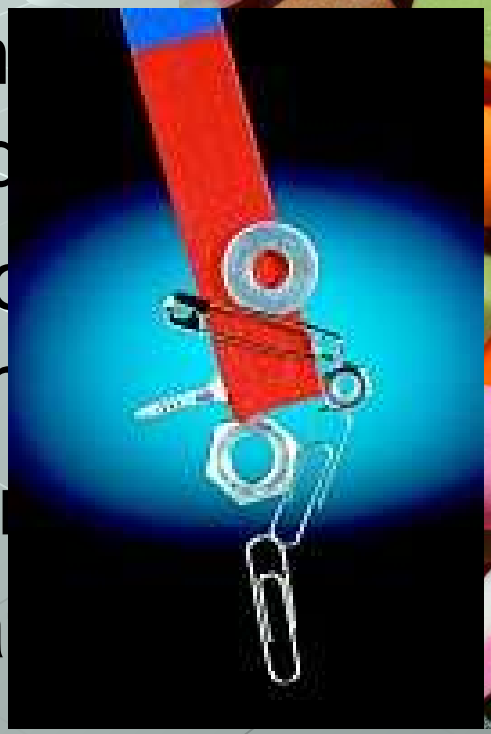
Chromatography

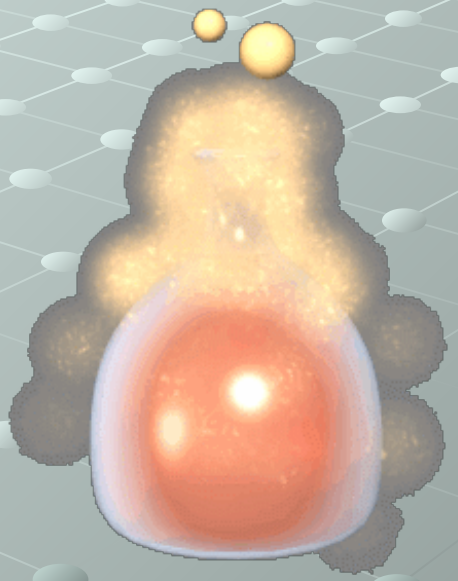
Filtratio substance
fror

Evapor a liquid

Distilla

Distillation





Elements and Compounds

Section 2.3

Elements and Compounds 2.3

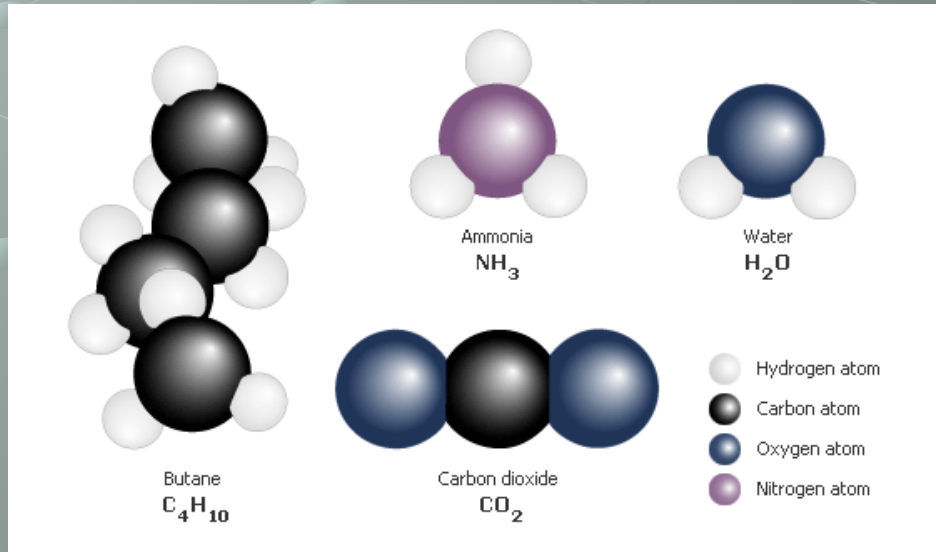
Analyze the nature of matter and its classifications.

Substance – matter that is uniform and definite composition

Element – simplest form of matter that has unique set of properties

Periodic Table

Compound – two or more elements chemically combined

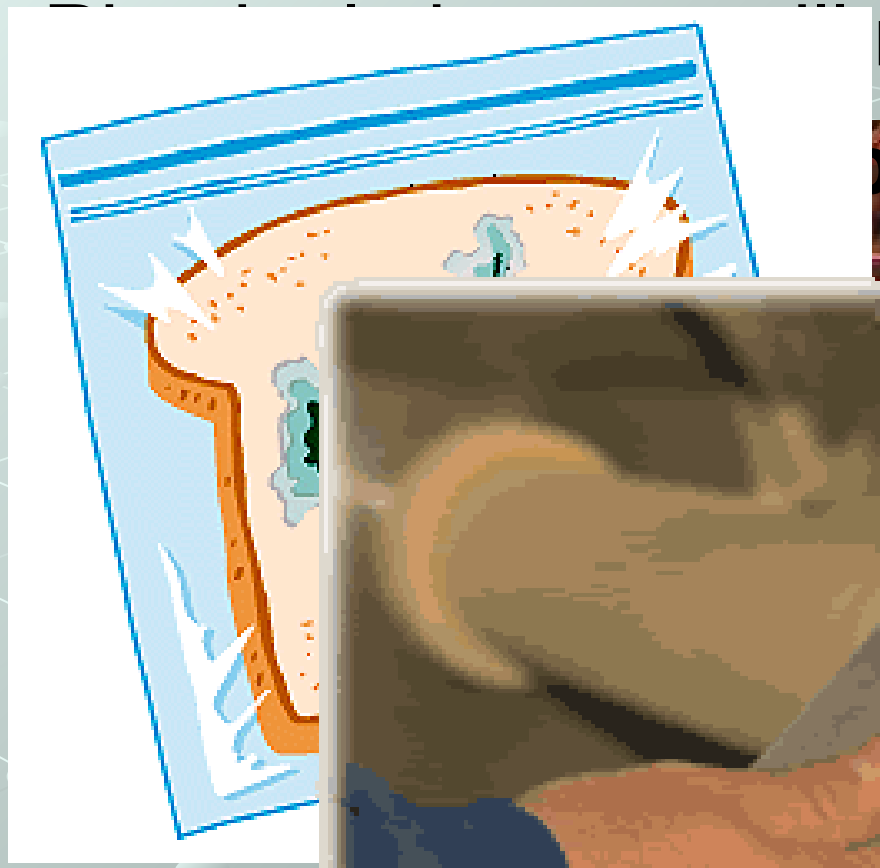


Elements and Compounds 2.3

Analyze the nature of matter and its classifications.

not break down

sorbed or Released



Odor Change

Elements and Compounds 2.3

Analyze the nature of matter and its classifications.

Formatic

Not Easily Reversed

Starter S-5

Choose if the following are physical or chemical changes. How do you know?







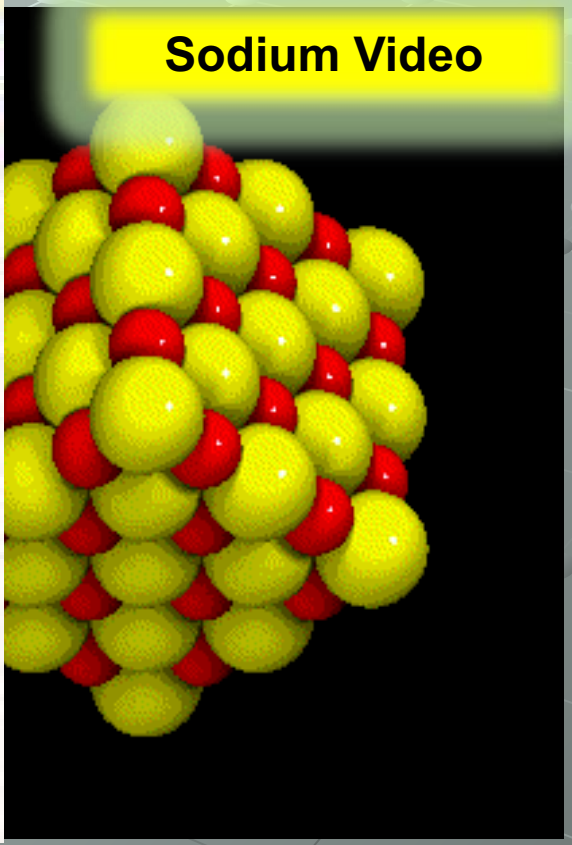

Elements and Compounds 2.3

Analyze the nature of matter and its classifications.

NaCl sodium chloride, table salt

Na sodium

Compounds have very different properties than the elements they are made of.



Elements and Compounds 2.3

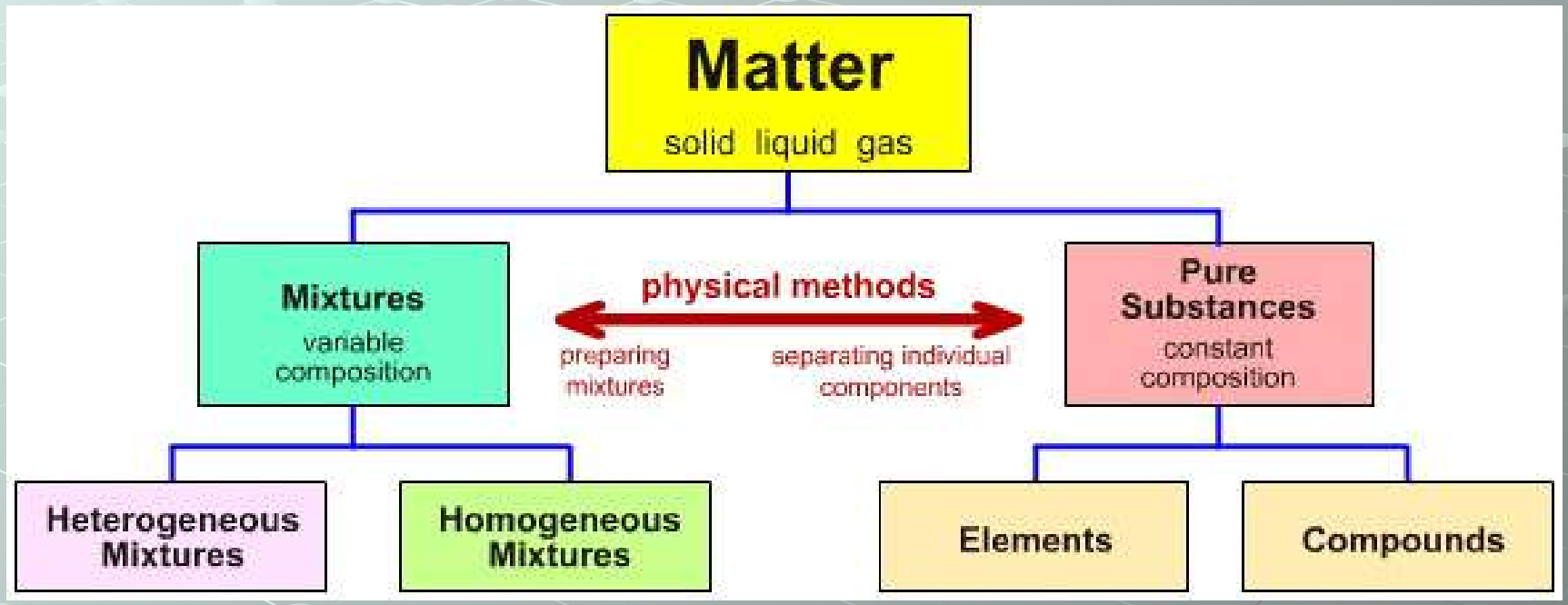
Analyze the nature of matter and its classifications.

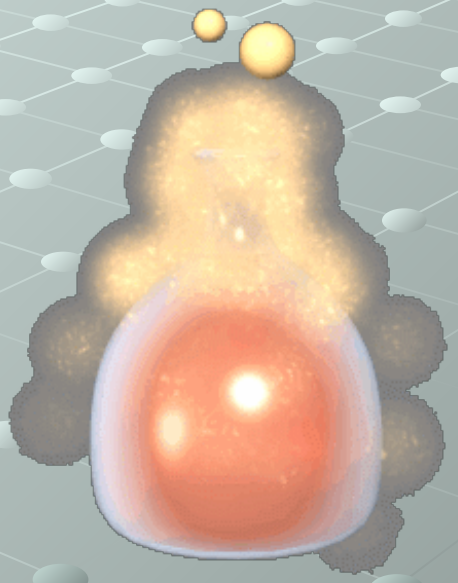
Cl - Chlorine

Chlorine & Sodium Reaction

Elements and Compounds 2.3

Flow Chart of Matter





Chemical Reactions

Section 2.4

Chemical Reactions 2.4

Words like the following usually mean a chemical change has take place

- Burn
- Rot
- Rust
- Decompose
- Ferment
- Explode
- Corrode

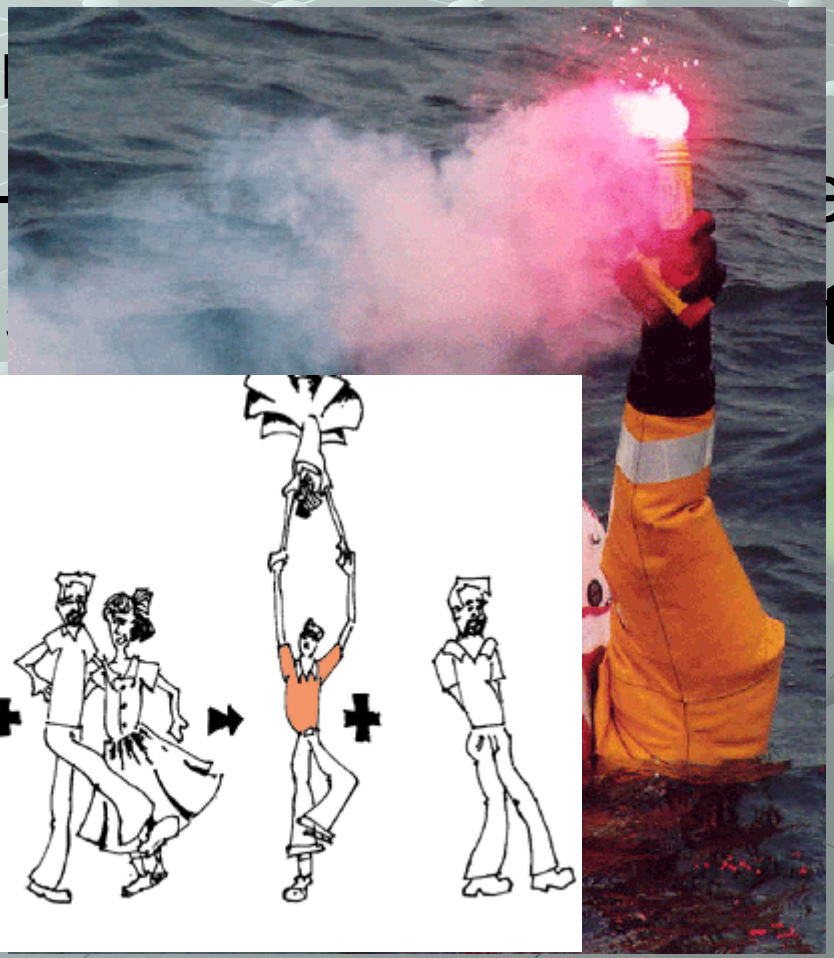
Chemical Reactions 2.4

Chemical Property – the ability to undergo a specific chemical change

Composition

Reactants – eaction

Products – tion



Reaction

Starter S-6

Determine if the following are matter, mixtures, substances, homogeneous, heterogenous, elements, compounds (choose 3 for each)

Copper

Baking Soda

Pizza

2% Hydrogen Peroxide

Chemical Reactions 2.4

Analyze the nature of matter and its classifications.

The Law of conservation of mass – mass is neither created or destroyed in a chemical reaction

It can be crea d in nuclear reactions

Bomb

Starter S-9

Classify the following.

Starter S-10

Test

Yipee!

Yahoo!

Yah!