

Unit 1 Chapter 1 Lesson 2

1. Hypothesis ~ a prediction
2. Variable ~ changeable factors in an experiment
3. Control ~ the sample in an experiment in which the outcome is known or the one with no variable
4. Observation ~ something noticed through the senses
5. Inference ~ an educated guess based on observation

Unit 1 Chapter 1 Lesson 3

1. Units of Length ~ meter

2. Units of Mass ~ gram

(mass is the amount of matter in an object)

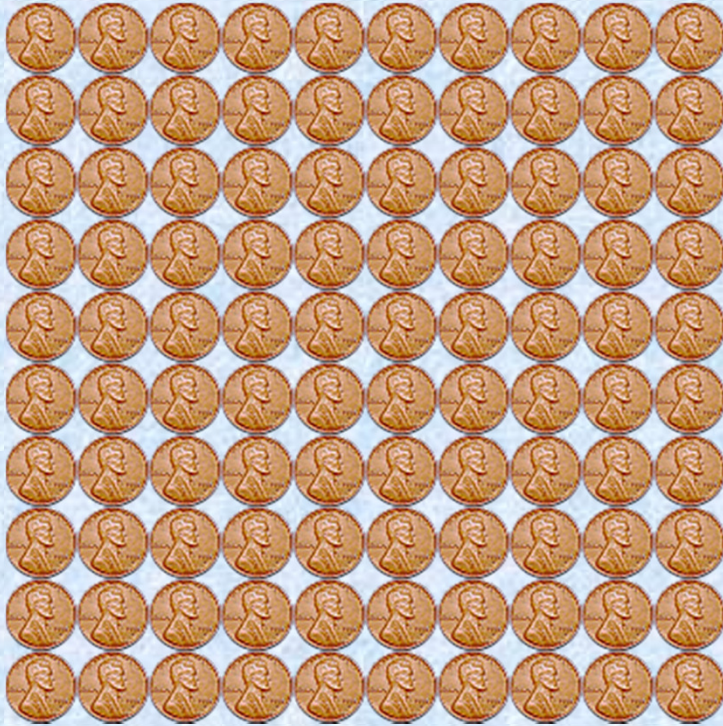
3. Units of Volume ~ liquid = liter

solid = cubic meters

(volume is the amount of space that an object occupies)

4. Units of Temperature ~ Celsius

Unit 1 Chapter 1 Lesson 3



Unit 1 Chapter 1 Lesson 3

Metric System

Kilo- means 1000. Example: It will take 1000 meters to equal 1 kilometer.

Hecto- means 100

Deka- means 10

grams
liters
meters

Base Unit

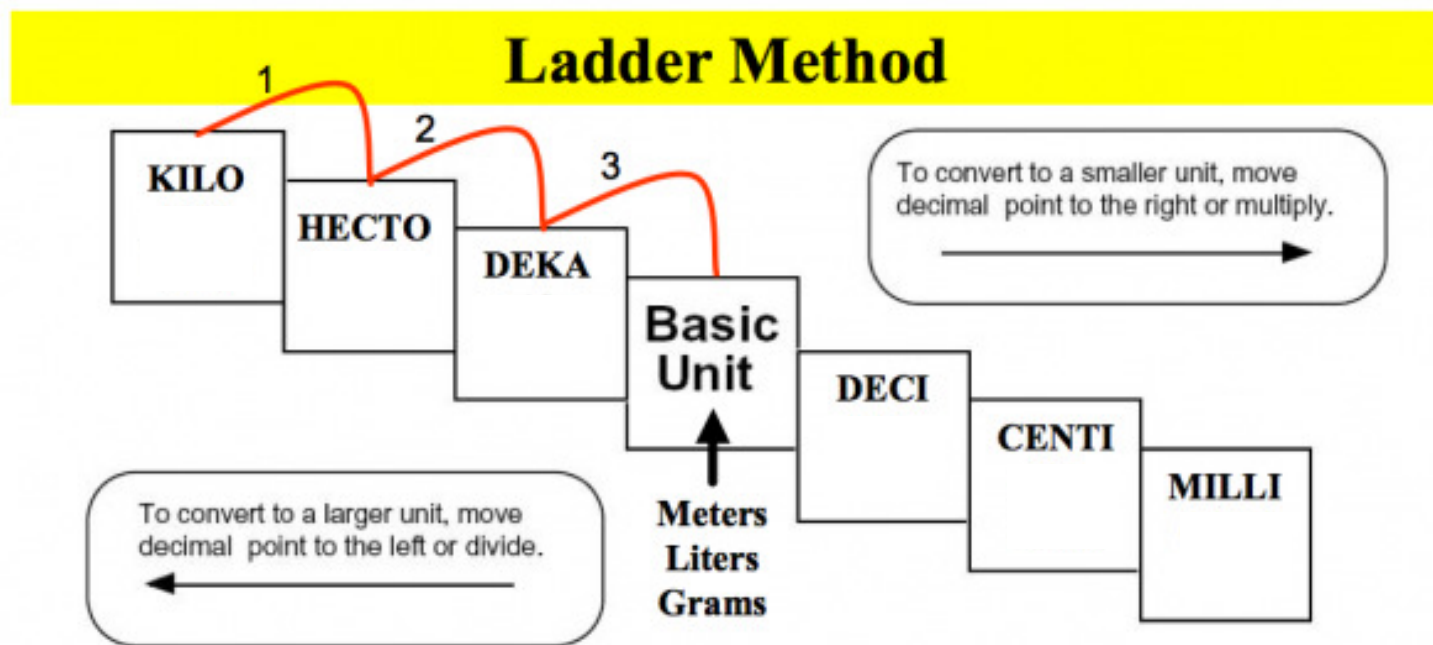
Deci- means 0.1

Centi- means 0.01

Milli- means 0.001

Unit 1 Chapter 1 Lesson 3

Metric System



How do you use the “ladder” method?

- 1st – Determine your starting point.
- 2nd – Count the “jumps” to your ending point.
- 3rd – Move the decimal the same number of jumps in the same direction.

$$4 \text{ km} = \underline{\quad\quad\quad} \text{ m}$$

Starting Point Ending Point

How many jumps does it take?

$$4.\overset{\cdot}{\underset{1}{\text{---}}}\overset{\cdot}{\underset{2}{\text{---}}}\overset{\cdot}{\underset{3}{\text{---}}}\overset{\cdot}{\text{---}} = 4000 \text{ m}$$

Unit 1 Chapter 1 Lesson 2

Inference vs Observation

OBSERVATION

- An observation is a statement describing a fact.
- When you observe you become aware of something using one of your senses. If you see, smell, taste, or hear something you are observing it. You simply describe something as it appears.
- Sometimes scientists must make very careful observations. Often, their senses are not good enough. Some things can't be observed using human sense. (Examples: radiation, sound waves, and atoms)

INFERENCE

- An inference is a statement based on an interpretation of the facts.
- When you infer you make a mental judgment based on observations.
- Inferences can't be directly observed. They require thought. Example: You get up in the morning, look at the sky and observe dark clouds. The air is cool, humid, and you observe puddles on the ground. You might infer that it had rained recently. NOTE: You did not see it rain. You decided that it rained based upon your observations.

Kilo-

Hecto-

Deka-

Base Unit

grams
liters
meters

Deci-

Centi-

Milli-

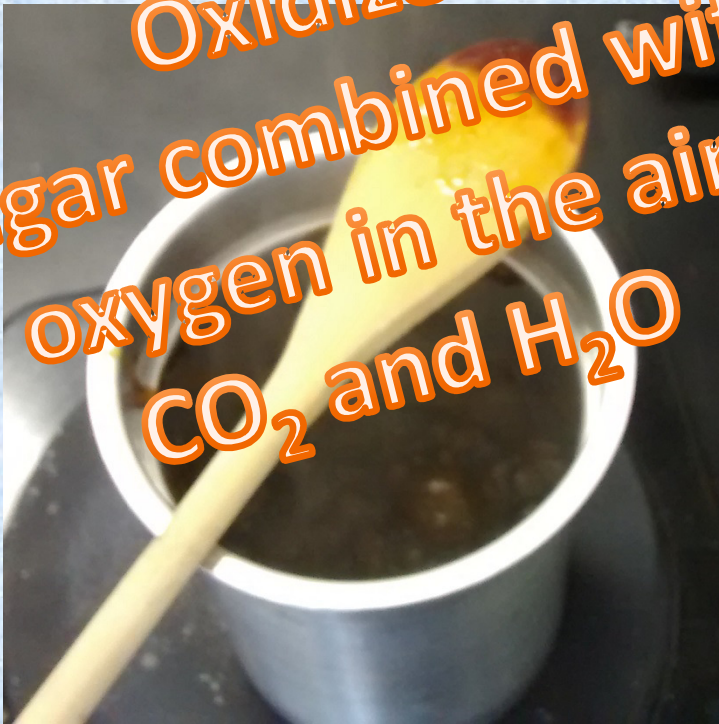
Unit 1 Chapter 2 Lesson 1

1. Matter ~ a.k.a. substance ~ anything that has mass and takes up space
2. Pure Substance ~ a substance that has a constant composition and definite qualities (a pure substance is an element or a compound)
3. Element ~ a pure substance that cannot be broken down into simpler substances by physical or chemical means (found on the periodic table)
4. Atom ~ the smallest particle of all matter; the building block of matter; the smallest particle into which an element can be divided and still be the same substance
5. Compound ~ a pure substance consisting of atoms of two or more elements that are chemically combined; can be broken down through chemical processes
6. Molecule ~ a particle consisting of two or more atoms bonded together

Chemical Break Down
causes color change



Oxidized
Sugar combined with
oxygen in the air
 CO_2 and H_2O



Caramelized
Solid melted into
a liquid

Unit 1 Chapter 2 Lesson 1

Answer with your group using complete sentences and examples. You will turn this in.

What is the difference between...

- 1) ...an element and a compound?
- 2) ...an atom and an element?
- 3) ...a molecule and a compound?

Unit 1 Chapter 2 Lesson 2

1. Mixture ~ a combination of two or more substances that are not chemically combined
2. Heterogeneous Mixture ~ combination of substances where particles are not uniformly distributed and are large enough to be seen; one sample is not like every other sample
3. Homogeneous Mixture ~ combination of substances where the properties and appearance are the same throughout; all samples are the same

Unit 1 Chapter 2 Lesson 3

1. Suspension ~ a mixture where the particles of the substances are mixed throughout but are large enough that they will settle; particles are large enough to block light; can be separated with a filter; usually heterogeneous
2. Colloid ~ a mixture where the particles of a substance are mixed throughout and are not large enough to settle; particles cannot be seen with a microscope; particles scatter light
3. Solution ~ a mixture where the particles of a substance are mixed and evenly distributed; appear to be one substance; includes a solute and a solvent.

Matter Map

Matter

Pure Substance

Mixture

Elements

Compounds

Homogeneous

Heterogeneous

Ions

Molecules

Solution

Suspension

Atoms

Molecules

Solute

Solvent

Unit 1 Chapter 4 Lesson 2

1. Atom ~ the smallest particle into which an element can be divided and still be the same substance; all atoms of one kind of element have the same number of protons
2. Electron ~ the negatively charged particles surrounding the nucleus of an atom (in electron clouds; the electron cloud's size determines the atom's size)
3. Proton ~ the positively charged particles in the nucleus of an atom; atomic number tells you the number of protons; mass number is the sum of protons and neutrons
4. Neutron ~ the particle with no charge found inside the nucleus of an atom; mass number is the sum of protons and neutrons
5. Nucleus ~ the center of the atom which is the home of the protons and neutrons
6. Isotopes ~ atoms of the same element that have the same number of protons but different numbers of neutrons

Unit 1 Chapter 4 Lesson 2

1. Family ~ vertical column of elements; a.k.a. group; elements in the same families share similar properties because they have the same number of valence electrons (electrons in the outermost level)
2. Period ~ horizontal row of elements; elements in the same period have the same number of energy levels
3. Metals ~ left side of periodic table; largest group; properties include shiny and good conductors
4. Nonmetals ~ right side of periodic table; properties include dull, brittle, and poor conductors
5. Metalloids ~ along the zig-zag line; a.k.a. semiconductors; have properties of both metals and nonmetals

Unit 1 Chapter 3 Lesson 1

1. Physical property ~ characteristics of a substance that can be observed without changing the substance
2. Noncharacteristic property ~ characteristics that cannot be used to identify a substance
3. Characteristic property ~ properties that are unique to a particular substance and can be used to identify it
4. Mass ~ the amount of matter in an object
5. Weight ~ the measure of the amount of gravity
6. Volume ~ the amount of space an object takes up
7. Density ~ the mass per unit of volume of a substance; how much stuff is packed into a certain space; $D = m / V$

MISCIBLE

Can be mixed.

IMMISCIBLE

Cannot be mixed.

MISCONCEPTION ALERT

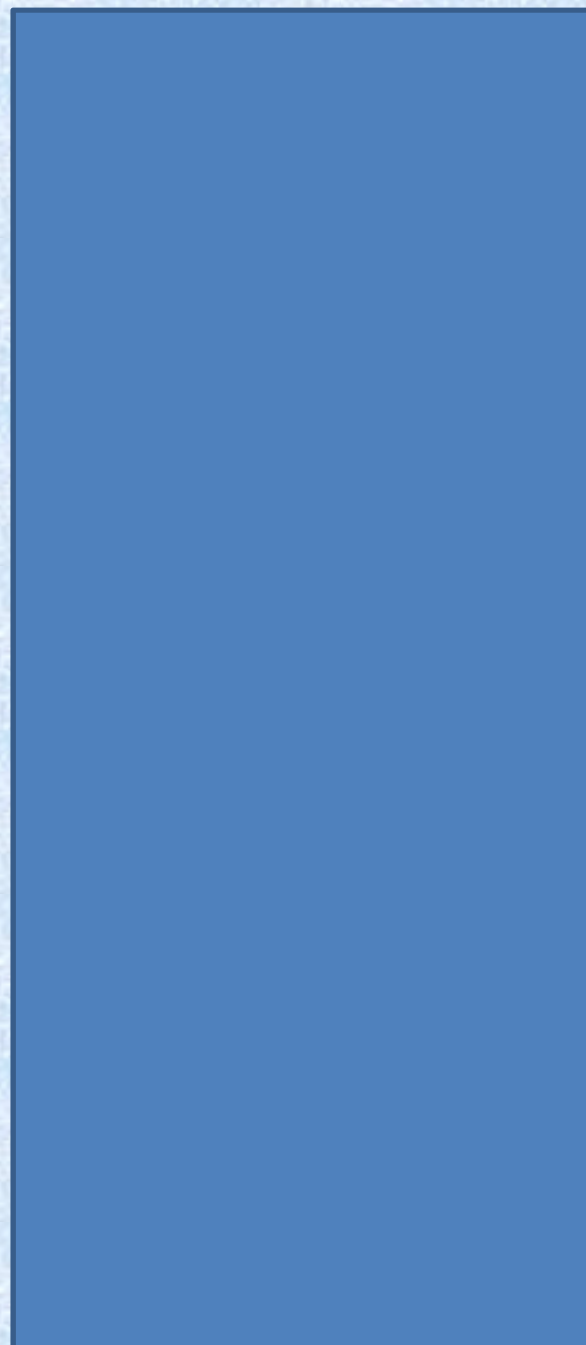
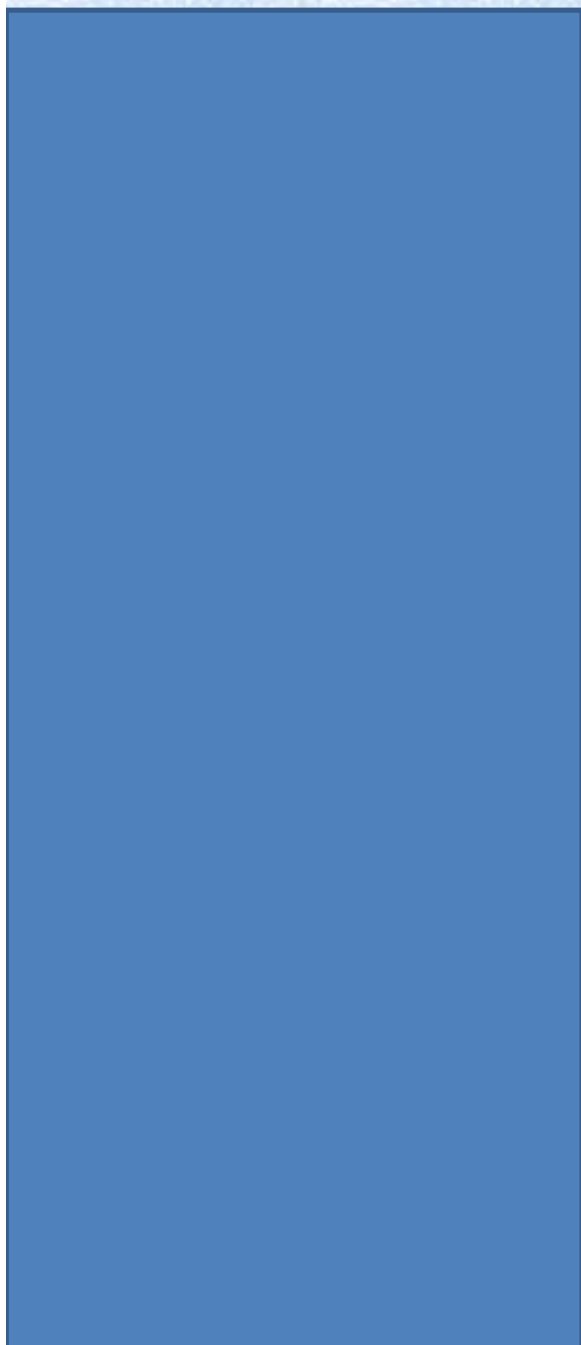
Miscible or Immiscible?

Factors unrelated to density determine whether liquids are miscible or will dissolve in each other. Liquids of different densities may be miscible, which means that liquid layers will not form. For example, ethyl alcohol and water have different densities, but they dissolve in each other. Conversely, liquids of identical density may be immiscible, so liquid layers will form. However, because the density of one substance is usually different from that of another, layering liquids is a useful way to compare the relative densities of immiscible liquids.

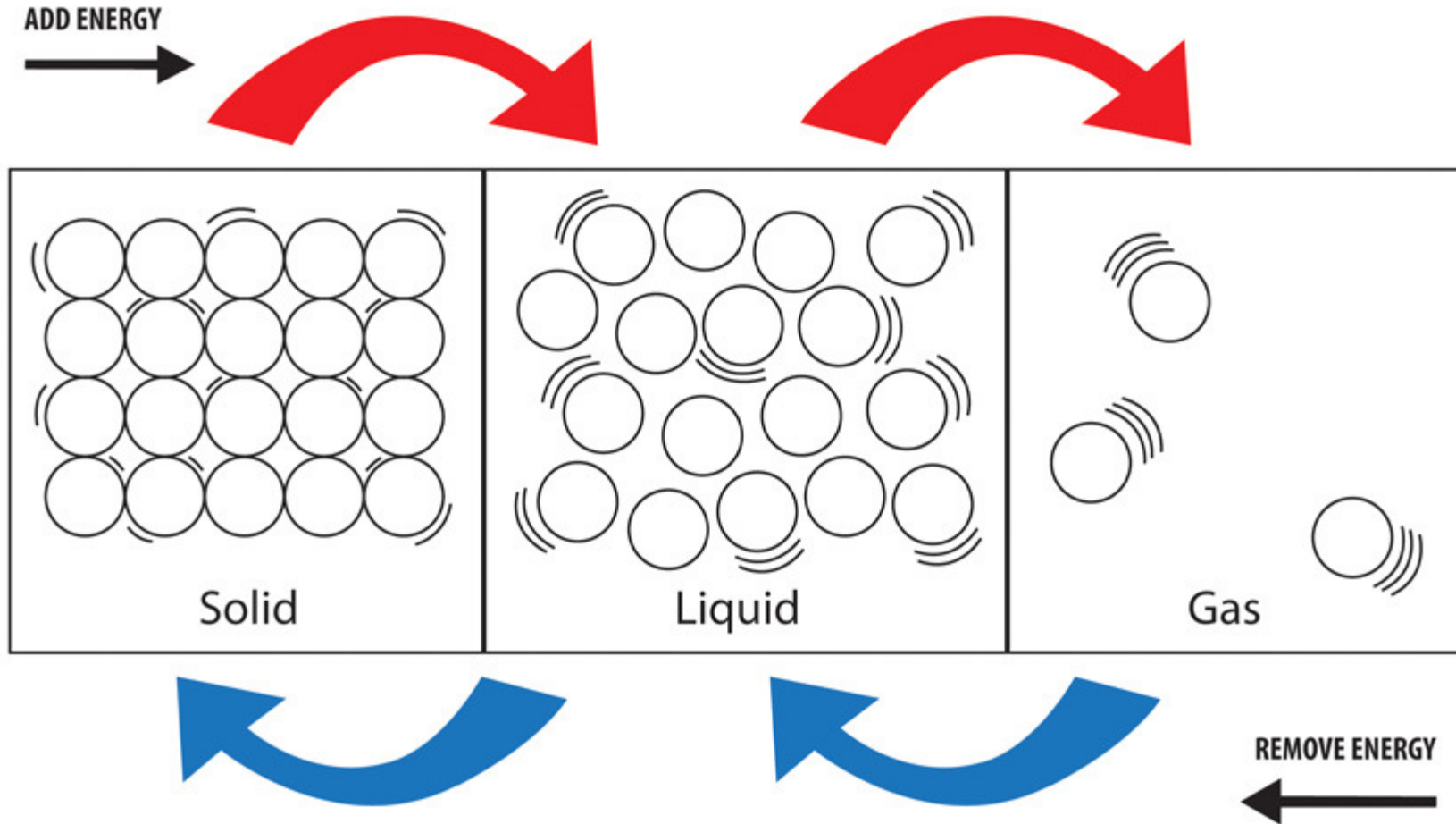
SOLIDS

LIQUIDS

GASES



Unit 1 Chapter 3 Lessons 3, 4, & 5



Unit 1 Chapter 3 Lesson 7

1. Chemical Change ~ when one substance changes into an entirely new substance with new properties.

Examples:

Oxidation ~ substance combines with oxygen
a.k.a. Corrosion and Rusting

Combustion ~ burning of a substance