# LSS 4: Living systems at all levels of organization demonstrate the complementary nature of structure and function (1).

1 ☆ I can use a microscope to view a:

- ☆ cell
- ☆ tissue
- ☆ organ

2 ☆ I can compare the similarities of a cell, tissue, organ, and organ system, such as each one is made of material that has to work together to perform a specific function.

3 ☆ I can contrast the differences of a cell, tissue, organ, and organ system, such as different body tissues and organs are made of different kinds of cells. Example: muscle cells work together to form muscle tissue.

4 ☆ I know the level of organization within organisms includes cells, tissues, organs, organ systems and whole organisms.

5 ☆ I can identify cells that perform specialized functions in multicellular organisms, such as blood, nerve, skin, and muscle cells.

6 ☆ I can identify a group of specialized cells that form a tissue, such as muscle cells working together forms muscle tissue.

7 ☆ I can identify different tissues that are grouped together to form an organ, such as muscle tissue, connective tissue, and valve tissue helps make up the heart organ.

8 ☆ I can identify different organs that work together to form an organ system, such as the brain and the spinal cord help make up the nervous system.

9 ☆ I know that all of the parts of an organism (cells, tissues, organs, organ systems) function as a whole to perform the tasks necessary for the survival of the organism.

# LSS 4: Living systems at all levels of organization demonstrate the complementary nature of structure and function (2).

10 ☆ I know that organisms have diverse body plans - the blueprint for the way the body of an organism is laid out.

11 ☆ I can identify the two main types of symmetry in organisms:

- ☆ Bilateral Symmetry - When the left side of the organism mirrors its right side. Most animals, including humans, are bilateral.
- ☆ Radial Symmetry - When an organisms identical parts are arranged in a circular fashion around a central axis. It resembles a pie where there is no right or left side. Floating animals, such as jellyfish, have radial symmetry.

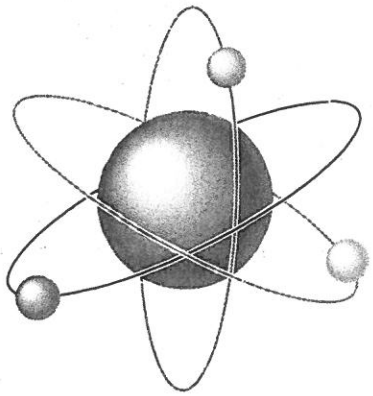
12 ☆ I know that organisms have diverse internal structures, such as gills in fish.

13 ☆ I can use similarities in an organisms body plan, symmetry, external and internal structures (their characteristics) to classify them into the groups Kingdom, Phylum, Class, Order, Family, Genus, and Species.

14 ☆ I can determine the environment that organisms can survive in is based upon its body plans, symmetry and internal structures. Ex.: polar bear in the arctic, fish in the ocean, camel in the desert.

15 ☆ I can investigate the tissues, organs, cell structures, organ systems and symmetry of plants and animals and understand that all living things have certain characteristics in common such as a need for energy, reproduction, getting rid of wastes, etc.

# PSS 1: All matter is made up of small particles called atoms. (1)



1 ☆ I know that each atom:
takes up space
has mass
is in constant motion
all matter is made of atoms
smallest unit of matter

2 ☆ I can define mass as the amount of matter in something.

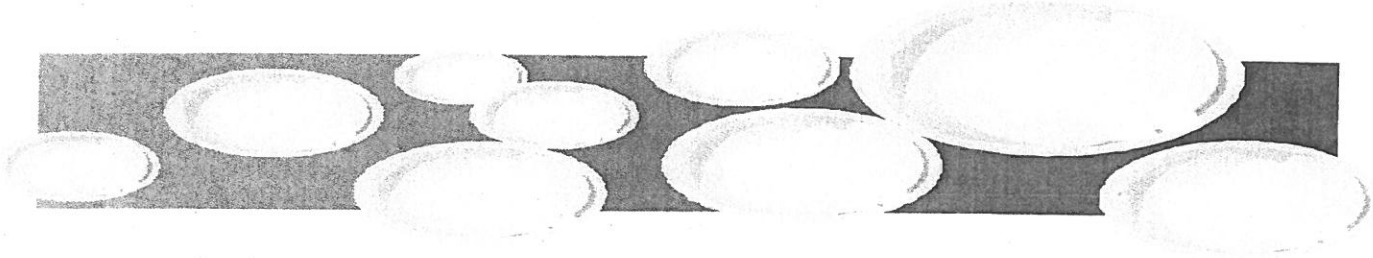
3 ☆ I know that elements are a class of substances composed of a single kind of atom; An element cannot be broken down into simpler substances and has properties that stay the same no matter the amount of the sample..

4 ☆ I know that there are around 90 different NATURALLY occuring elements and all substances are composed of one or more elements.

5 ☆ I know that molecules are the combination of two or more atoms that are joined together chemically. Ex.: a molecule of elemental hydrogen is made up of two atoms of hydrogen joined together chemically.

6 ☆ I know that compounds are composed of two or more different elements. Ex.: water is a compound made up of molecules containing two atoms of hydrogen joined with one atom of oxygen.

7 ☆ I know that each compound has its own unique, unchanging composition of type and number of elements and atoms and also properties that stay the same no matter the amount of the sample.



# PSS 1: All matter is made up of small particles called atoms. (2)

8 ☆ I can classify matter as an element, compound or mixture by determining how the matter formed, decomposed or how it can be seperated.

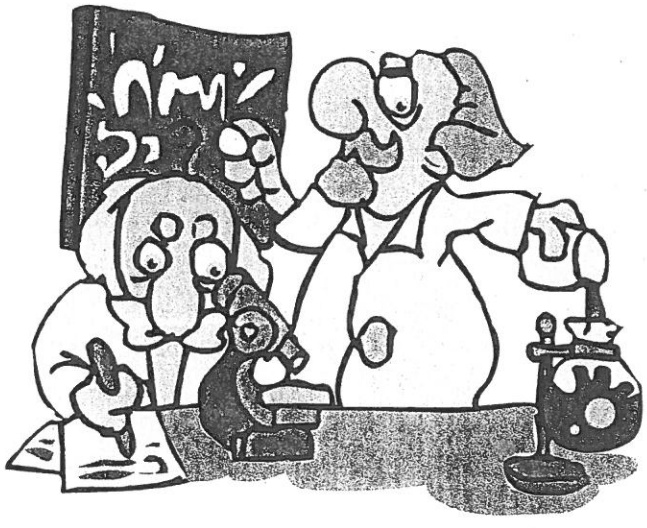
9 ☆ I know matter has properties of mass and volume.
Mass measures the amount of matter in an object (block) or substance (water)
Volume measures the three-dimensiopnal space that matter occupies.

10 ☆ I know that equal volumes of different substances usually has different masses.
Galena has a lot of mass in a relatively small space.
Styrofoam and air has a small mass in a relatively large amount of space.

11 ☆ I can compare substances according to their densities ( the amount of mass the substance has divided by it's volume...D = M / V )

12 ☆ I can use the density of a material to identify it because density generally remains constant while the mass and volume can change, no matter how much of the material is present.

13 ☆ I can determine which material has the greater density by constructing and interpreting mass vs. volume graphs.



## PSS 2: Changes of state are explained by a model of matter composed of atoms and/or molecules that are in motion (1).

1 ☆ I know thermal energy is a measure of the total amount of motion of the atoms and molecules in a substance (this random motion of atoms and molecules is kinetic energy).

2 ☆ I know when thermal energy increases, the total kinetic energy of the particles in the system increases. The higher the temperature of a substance, the greater the kinetic energy and motion of its particles.

3 ☆ I know the thermal energy of a substance depends upon the mass of the subsrance, the nature of the material making up the substance and the average kinetic energy of the particles of the substance.

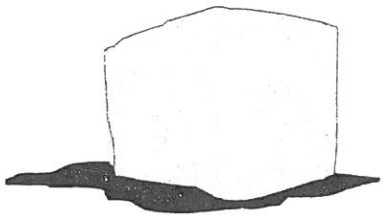
4 ☆ I can demonstrate the differences in the motion of, spacing of and attractions between the particles in a solid, liquid and gas.

☆ A solid's particles are close together and held more rigidly in a space due to the strong attractions between the particles. However, the particles can still vibrate back and forth within that space.

☆ A liquid's particles will be slightly farther apart and move with more speed than in a solid. The particles can move from one side of the sample to the other as the attraction between the particles is less than in a solid.

☆ A gas's particles are much farther apart and move with greater speed than in a solid or a liquid. The attraction between the particles is usually the weakest in gases.

5 ☆ I know that gases are more easily compressed into a smaller volume by pushing the particles closer together because gases have a large amount of space between the particles.



## PSS 2: Changes of state are explained by a model of matter composed of atoms and/or molecules that are in motion (2).


6 ☆ I know that when substances undergo changes of state, neither the atoms nor the molecules themselves are changed in structure. Ex.: The atoms of hydrogen and oxygen in water molecule (H O) will not change into something else when it goes from ice to water to steam. It remains H O.

7 ☆ I know mass is conserved when substances undergo changes of state. I know during changes of state, the particles (atoms and molecules) are not created or destroyed...they simply change their motion and the space them.

8 ☆ I can conduct an experiment to demonstrate the phase changes.

9 ☆ I know the particles of a substance must collide to rearrange and form a new substance.

10 ☆ I know the higher the temperature, the greater the motion of the particles and the more likely they are to collide and form a new substance.

11 ☆ I know that liquid or gas particles are more likely to collide and form a new substance than the particles held together more rigidly in a solid.

# PSS 3: There are two categories of energy: kinetic and potential

1 ☆ I know that objects and substances in motion have kinetic energy.

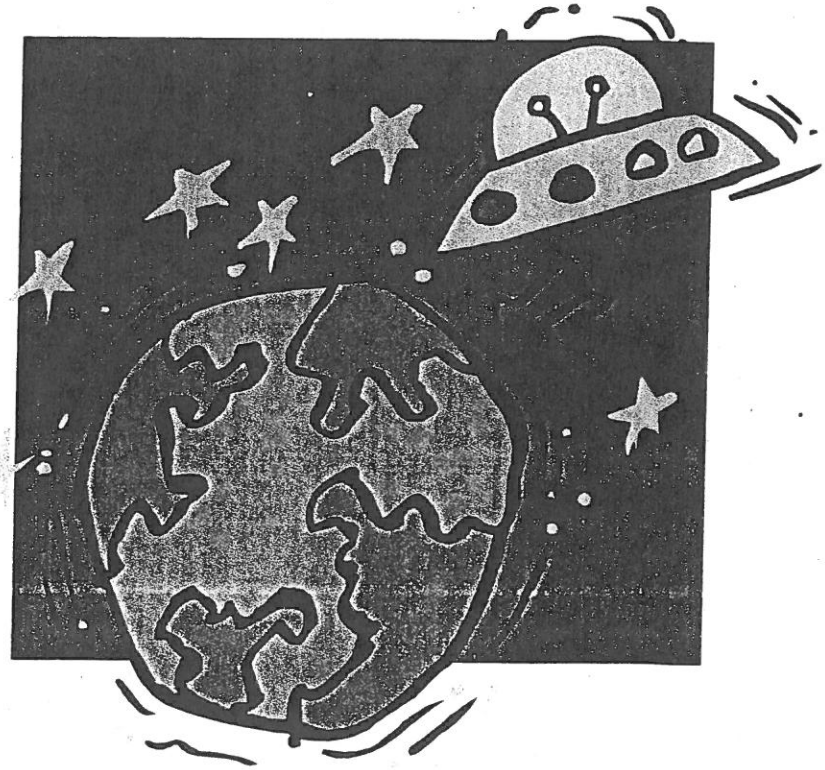
2 ☆ I know the kinetic energy of an object changes when its speed changes.

3 ☆ I can determine that objects or substances can have potential energy as a result of their position.

4 ☆ I know gravitational potential energy is associated with the height of an object above a reference position.

5 ☆ I know that the gravitational potential energy of an object changes as its height above the reference point changes.

6 ☆ I can identify and describe several different forms of energy, such as:
Electrical energy: movement of electricity through wires of an electrical devive.
Sound energy: the back and forth movem,ent of the particles of the medium through which it travels.



# PSS 4: An object's motion cab be described by it's speed and the direction in which it is moving (1).

1 ☆ I know that an object's position and speed can be measured and graphed as a function of time.

2 ☆ I know that distance is always measured from some reference point, or an object that is not moving in relation to the moving object.

3 ☆ I can plot distance (vertically) and time (horizontally) on a graph to compare and analyze motion.

4 ☆ I can determine that fast motion is represented by steep lines.

5 ☆ I can determine that slow motion is represented by gradual lines.

6 ☆ I can determine that no motion at all is represeneted by a horizontal line.

7 ☆ I can dedtermine the relative speeds and positions of different objects by comparing their position vs. time graphs.

8 ☆ I can plot the speed (vertical axis) and time (horizontal axis) on a graph to compare and analyze the speed of an object.

9 ☆ I can analyze speed vs time graphs to determine the speed of an object at any given time.

10 ☆ I can analyze speed vs time graphs to determine the time at which an object has a particular speed.

11 ☆ I can determine that no motion would be shown with a straight horizontal line on the horizontal axis.

12 ☆ I can determine that constant speed would be shown as a straight line above or below the horizontal axis.

# PSS 4: An object's motion cab be described by it's speed and the direction in which it is moving (2).

13 ☆ I can determine that the faster the motion, the farther away the line will be from the horizontal axis.

14 ☆ I can determine that speeding up would be shown with a line moving away from the horizontal axis.

15 ☆ I can determine that slowing down would be shown with a line moving toward the horizontal axis.

16 ☆ I know that if a force on an object acts toward a single center, the object's path may curve into a orbit around the center. Ex.: A ball attached to the end of a string will travel in a circular path when whirled because the string continually pulls the ball toward the center.