**display toggleState Standards**

* 6.2.1.1 - 1. Pure substances can be identified by properties which are independent of the sample of the substance and the properties can be explained by a model of matter that is composed of small particles.
* 6.2.1.2 - 2. Substances can undergo physical changes which do not change the composition or the total mass of the substance in a closed system.
* 6.2.2.2 - 2. Forces have magnitude and direction and govern the motion of objects.

**display toggleMN Benchmarks/Local Standards**

* 6.2.1.1.1 - Explain density, dissolving, compression, diffusion and thermal expansion using the particle model of matter.
* 6.2.1.2.1 - Identify evidence of physical changes, including changing phase or shape, and dissolving in other materials.
* 6.2.1.2.2 - Describe how mass is conserved during a physical change in a closed system.For example: The mass of an ice cube does not change when it melts.
* 6.2.1.2.3 - Use the relationship between heat and the motion and arrangement of particles in solids, liquids and gases to explain melting, freezing, condensation and evaporation.
* 6.2.2.2.4 - Distinguish between mass and weight.

**display toggleEssential Questions**

* + How are the properties of matter related to the state of matter?
  + How do atoms relate to the properties and state of matter?

**Instructional Details**

**display toggleContent**

* + The structure of the atom and the nature of subatomic particles: understand the basic properties of protons, neutrons, and electrons
  + The characteristic properties of substances and the tests that define them.
  + Physical properties and physical changes in solids
  + Physical properties and physical changes in liquids
  + That substances can exist in different states-solids, liquid, and gas- and that substances can change from one state  to another by heating and cooling.
  + What components are related to density and the equation to calculate density.
  + The comparisions between a mixture, solution, and suspension.
  + How spacing of particles affects density
  + Physical changes in terms of mass before and after a change
  + When an object's shape changes, its mass remains constant
  + The mass of an object is the same as the mass of the sum of the pieces of that object
* **Skills**
  + Delta Science - Matter and Change: Activity 4 Atomic Structure
  + calculate the number of protrons, nuetrons, and electrons in an atom, given its atomic number.
  + interpret information on the periodic table.
  + construct model atoms
  + Delta Science - Matter and Change: Activity 1 The Density of Liquids
  + measure the mass and volume of 3 liquids in order to determine their densities
  + relate the density of a liquid to its ability to keep an object afloat
  + observe that density can vary among liquids that appear to be similar
  + Delta Science - Matter and Change: Activity 3 Solutions and Suspensions
  + differentiate between solutions, suspections; heterogeneous and homogeneous mixtures.
  + separate a suspended material from a solution
  + separate a solute from water
  + Delta Science - Activity 2 Pressure and Volume of a Gas
  + explain common phenomena using the particle model of matter (ie. expansion, contraction)

Vocabulary

* + density
  + dissolving
  + compression
  + diffusion
  + thermal expansion
  + particles
  + phase change
  + physical changes: melting, freezing, condensation, evaporation
  + matter
  + density
  + mass (m)
  + volume (vol)
  + metric units (K, H, D, u, d, c, m)
  + evaporation
  + heterogeneous
  + homogeneous
  + solute
  + solution
  + solvent
  + supension
  + atom
  + electron
  + proton
  + neutron
  + nucleus
  + periodic table
  + molecule
  + covalent bond
  + chemical equation
  + diffusion
  + thermal expansion
  + particle
  + physical changes
  + chemical changes
  + solids
  + liquids
  + gases
  + melting
  + freezing
  + condensation
  + evaporation