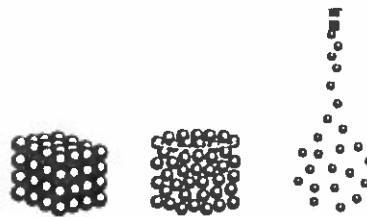


Key Concepts

Force, Motion, Energy, and Matter (SOL 5.4)

Matter

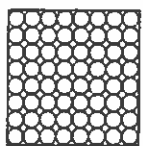
- All matter, regardless of its size, shape, or color, is made of particles (atoms and molecules) that are too small to be seen by the unaided eye.
- There are more than 100 known **elements** that make up all matter. The smallest part of an element is an **atom**.
- When two or more elements combine to form a new substance, it is called a **compound**. There are many different types of compounds because atoms of elements combine in many different ways (and in different whole number ratios) to form different compounds. Examples include water (H_2O) and table salt ($NaCl$). The smallest part of a compound is a **molecule**.
- A **mixture** is a combination of two or more substances that do not lose their identifying characteristics when combined. A **solution** is a mixture in which one substance dissolves in another.
- As its **temperature** increases, many kinds of matter change from a solid to a liquid to a gas. As its temperature decreases, that matter changes from a gas to a liquid to a solid.



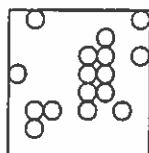
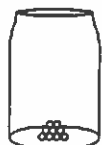
Temperature affects the states of matter

- When the temperature of certain solids is raised, they can change to liquids.
- When the temperature of a liquid is raised, the liquid changes to a gas.
- When the temperature of a liquid is lowered, the liquid changes to a solid.

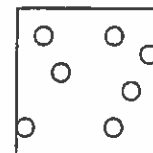
States of Matter



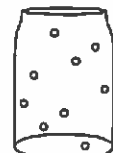
Solid



Liquid

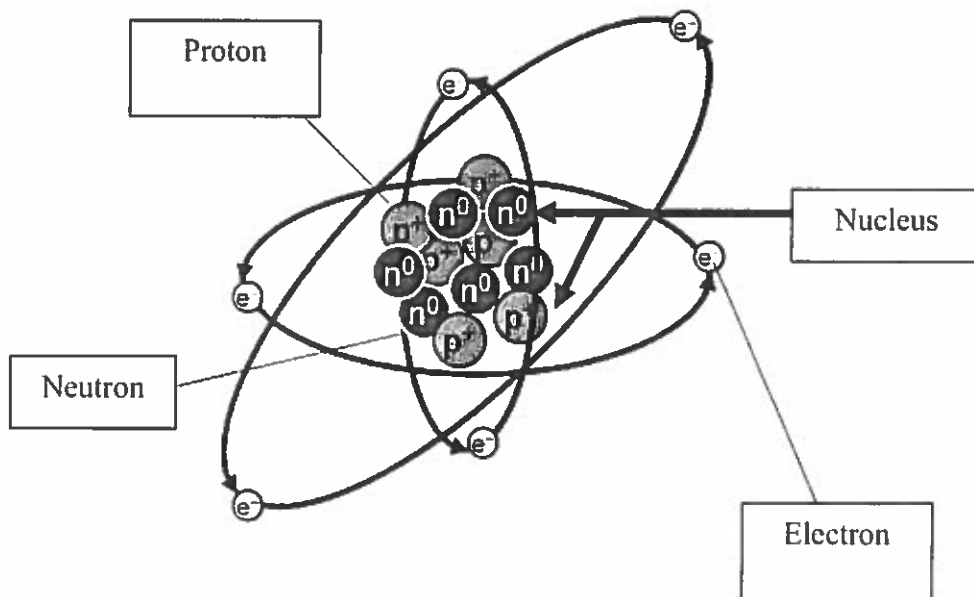


Gas



Characteristics of Gases, Liquids, and Solids		
Gas	Liquid	Solid
Assumes shape of its container	Assumes shape of its container	Retains a fixed shape
Assumes the volume of its container – no definite volume	Has a definite volume	Has a definite volume
Compressible (lots of free space between particles)	Not easily compressible (little free space between particles)	Not easily compressible (little free space between particles)
Flows easily (particles can move past one another)	Flows easily (particles can move/slide past one another)	Does not flow easily (rigid-particles cannot move/slide past one another)

Parts of an Atom



Proton – a positively charged particle found in the nucleus of an atom and represented by a (+)

Electron – a negatively charged particle which orbits the nucleus of an atom, and is represented by a (-)

Neutron – a particle with no charge found in the nucleus of an atom and represented by a (n)

Nucleus - a dense, central core of an atom containing protons and neutrons



Directions: Check the correct box to identify a mixture or a solution.

Example	Mixture	Solution
1. Lemon slices in your tea		
2. Sugar in your tea		
3. Raisins in your cereal		
4. Kool-Aid		
5. Iron filings in sand		
6. Hot cocoa (or chocolate)		



Directions: Use the word bank below to complete the paragraph.

molecule compound elements mixture atom
temperature solution

There are more than 100 _____ that make up all matter.

The smallest part of an element is an _____. When two or more elements combine, they form a new substance called a _____.

The smallest part of a compound is a _____.

A _____ is a combination of two or more substances that do not lose their identifying characteristics. A _____ is a mixture in which one substance dissolves in another. Matter can change from one form to another when _____ is increased or decreased.



Directions: Match the word to its definition.

Proton

a dense central core of an atom containing protons and neutrons

Electron

a particle with no charge found in the nucleus of an atom

Neutron

a positively charged particle found in the nucleus of an atom

Nucleus

a negatively charged particle which orbits the nucleus of an atom