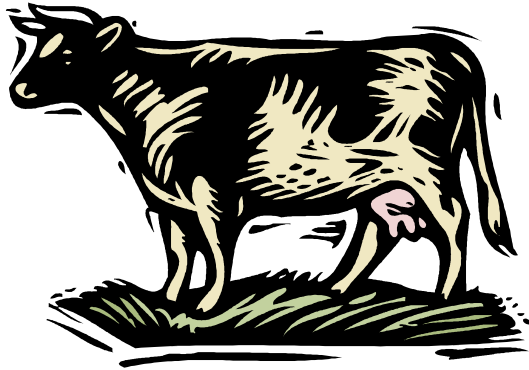


6th Grade Science
Chapter 13
Properties of Matter

matter



- Anything that has mass and takes up space is matter



volume

- The amount of space an object takes up
- Another word for volume is capacity

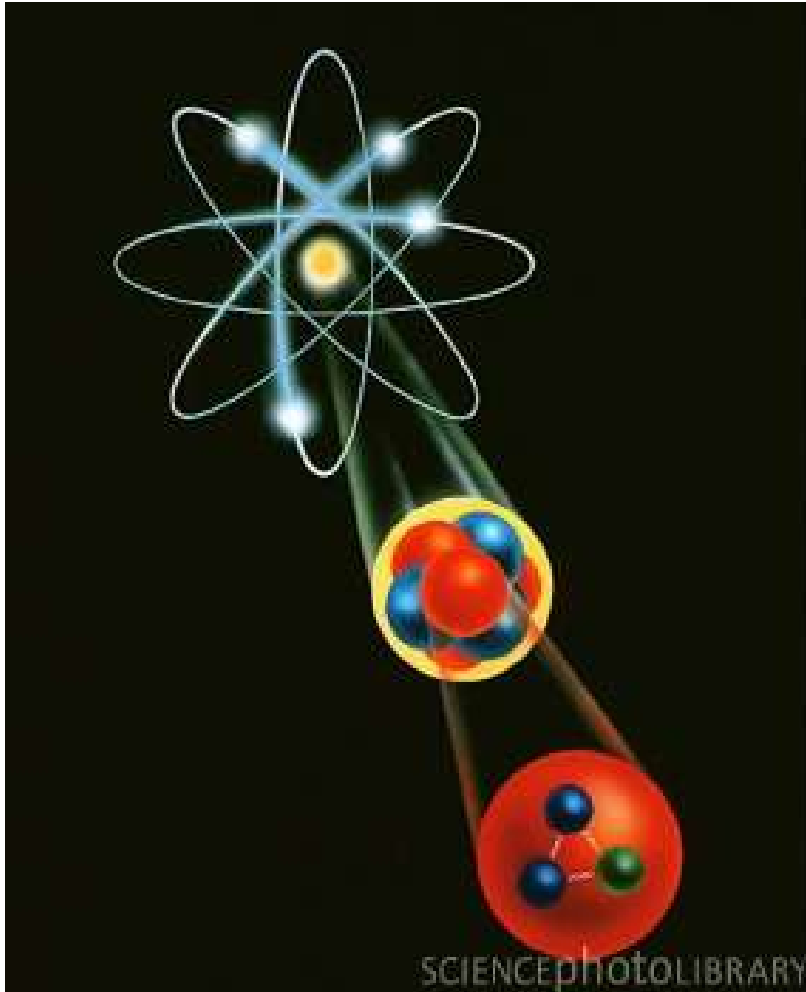


What are two properties of matter?

What are two properties of matter?

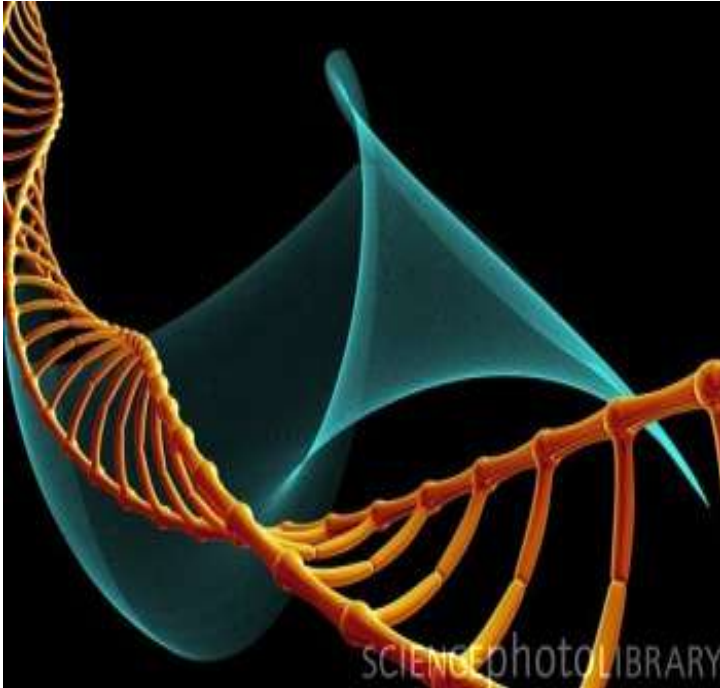
- All matter has **mass** and takes up space (**volume**).

atom



- The smallest particle that can still be identified as the matter it came from is an atom

molecule

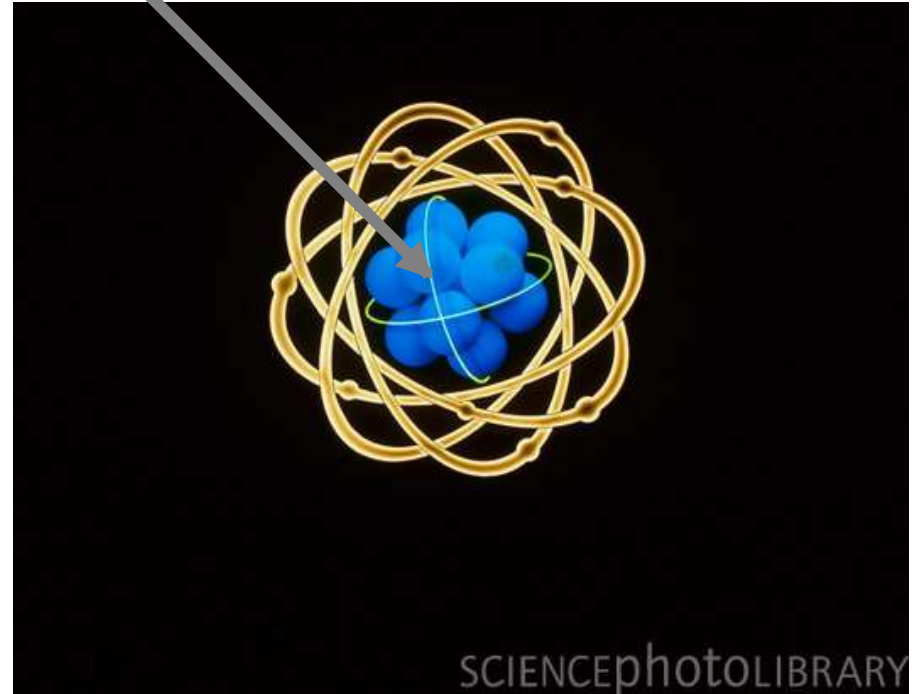


This is a DNA molecule

- A molecule is made up to two or more atoms joined together.
- Water is a molecule made of two hydrogen atoms and one oxygen atom.

nucleus

- The dense area in the center of an atom.
- Inside the nucleus of every atom are smaller particles called protons, electrons, and neutrons.



What is an atom and what are its parts?

What is an atom and what are its parts?

An atom is the smallest particle of matter that still behaves like the matter it came from.

An atom is made of protons, neutrons, and electrons.

element

- Matter that is made of only one kind of atom is an element.
- Carbon, hydrogen, and oxygen are all elements.
- The picture is of the element zinc in hydrogen chloride.



Zinc + HCL

How are the elements arranged in the periodic table?

- Elements are arranged in order by their atomic number
- The atomic number is the number of protons in the nucleus

Solid

Liquid

Gas

States of Matter Demonstration

- http://www.harcourtschool.com/activity/states_of_matter/index.html
- http://www.chem4kids.com/files/matter_states.html
- http://www.chem4kids.com/files/matter_changes.html

Solid	Liquid	Gas
Has definite shape		
Particles are close together and slow moving		
Has volume		

Solid	Liquid	Gas
Has a definite shape	Takes on shape of container	
Particles are close together and slow moving	Particles are farther apart and faster-moving	
Has volume	Has volume	

Solid	Liquid	Gas
Has a definite shape	Takes on shape of container	Does not have definite shape
Particles are close together and move slowly	Particles are farther apart and faster moving	Particles are farthest apart and move rapidly
Has volume	Has volume	Expands to take up whatever space is available

How are particles arranged in solids, liquids, and gases?

How are particles arranged in solids, liquids, and gases?

- The particles of solids are close together and slow-moving.
- The particles of liquids are farther apart and faster-moving than solids.
- The particles of gases are farthest apart and move most rapidly.

Draw a model representing how particles are arranged in solids, liquids, and gases.

- Check pg. 372 in your text for examples.

6th Grade Science
Chapter 13
Properties of Matter
Changing States of Matter

Physical change-a change in state

- The substance is still the same substance
- Form changes but chemical makeup doesn't



bxp60105 www.fotosearch.com

Ice changes to water—water changes to ice, frozen water is still water



076329 www.fotosearch.com



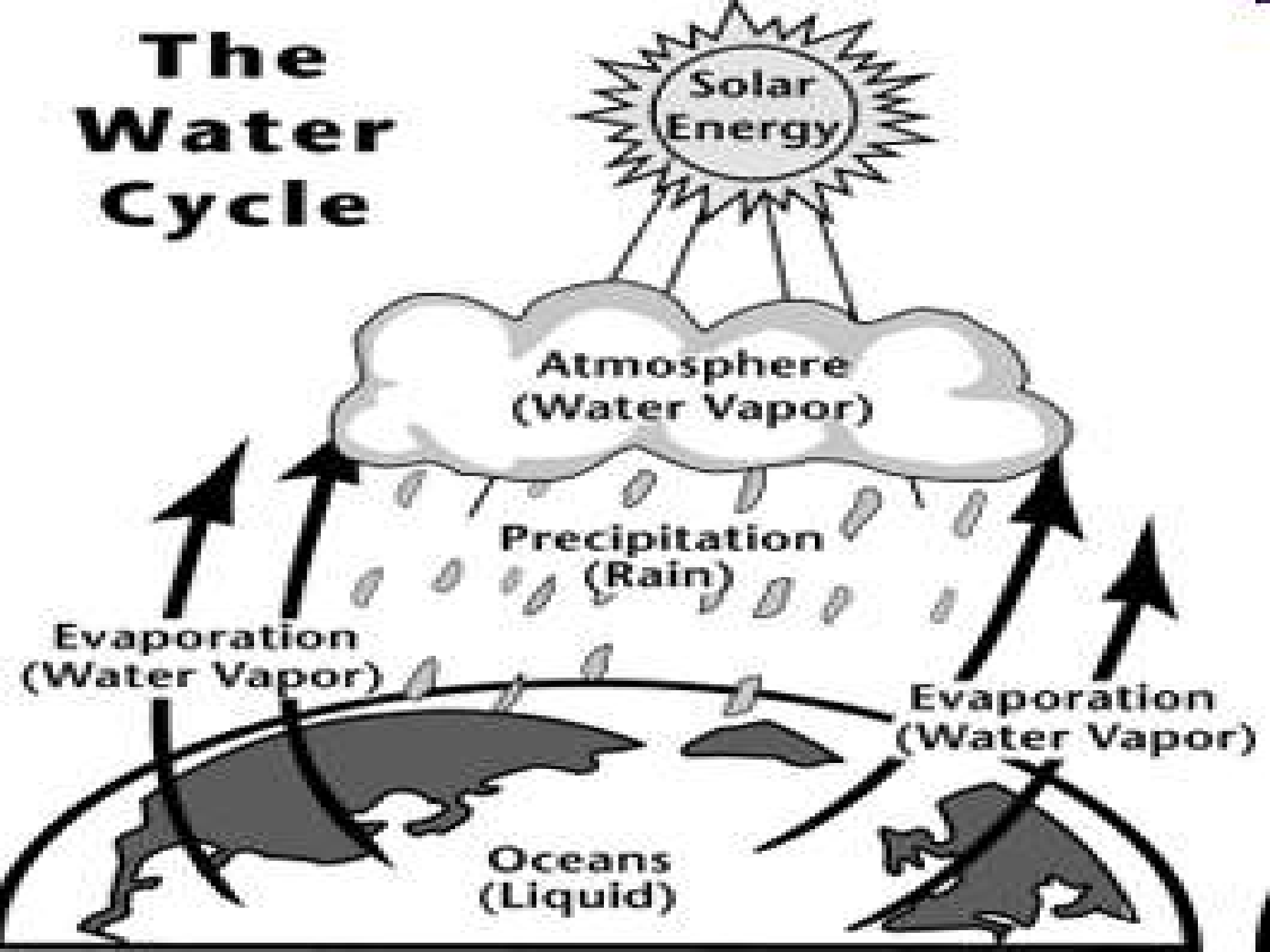
Water changes to steam, a gas, when it is heated to its boiling point, water vapor condenses to form a liquid



Changing States of Matter-Water

- Water freezes at 0 degrees Celsius, 32 degrees Fahrenheit
- Water boils at 100 degrees Celsius, 212 degrees Fahrenheit

The Water Cycle



Physical Properties—describe matter

- Melting and boiling point are physical properties
- State of matter is also a physical property (solid, liquid, gas)
- **Density** is a physical property
- Density is a measure of how closely packed an object's atoms are

Other Physical Changes

- Breaking
- Crushing
- Cutting
- Bending
- Melting
- Freezing
- Boiling
- Can happen naturally
- People can cause changes
 - Water evaporating
 - Rain falling
 - People cause change
 - Recycling paper
 - Recycling metal

Chemical Properties and Changes

- Chemical changes change the chemical nature and properties of substances to form new substances
 - A match burns
 - Rusting
 - Color Change, bubbling, temperature change
 - Toasting marshmallows
 - Melt it—physical change
 - Burn it—chemical change



Combustibility—a measure of how easily a substance will burn, or combine rapidly with oxygen

- Corrosion of metal—when iron combines with oxygen in the air, rust forms
- Gas bubbles—hydrogen peroxide on a cut
- A change in color—fireworks

Conservation of Matter

- Chemical changes don't make new matter
- *The total mass of the products that form equals the total mass of the substances that react.*