

8 Science

Chapter One

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Chapter One Section One

p.5

- Matter—has mass and volume
- Chemistry—study of matter and how it changes
- Substance—single kind of matter

p.6

- Physical Property—a characteristic of a substance that can be observed without changing it
- Chemical Property—characteristic of a substance that describes its ability to change into different substances

8 Science

Chapter One Section Two

Atoms & Molecules

- atom smallest particle of matter
 which maintains all the
 properties of the substance
- molecule two or more atoms
 chemically joined together
 to form a new substance

p. 34, and not in book

- **Mixture**

(Homogeneous=
Cold Stone)

(Heterogeneous
=
Baskin-Robbins)

- **Compound**

- **Pure
Substance**

- **Element**

Combination of two or
more types of molecules:
each kind of molecule
keeps its own identity

molecules made of two or
more different kinds of
elements joined together

only one kind of molecule

only one kind of an atom

Compound, Element, Pure Substance, Mixture?

- Salt Compound, PS
- Gold Filings Element, PS
- Water Compound, PS
- Udon Noodles Mixture
- Sausage Mixture
- Cinnamon Sugar Mixture
- Oxygen Element, PS
- Sugar Compound, PS
- Coffee Mixture

8 Science

Chapter One Section Three

Chemical Equation

- Chemical equation—a way to show a chemical reaction
- $\text{H}_2\text{O} \longrightarrow \text{H} \quad \text{H} \quad \text{O}$
- $\text{Na} + \text{Cl} \longrightarrow \text{NaCl}$

DENSITY

- ✿ density = mass / volume
- ✿ or, to use the definitions from the previous slide, “Density is the amount of stuff divided by the space it takes up”.

VOLUME, MASS, WEIGHT

- ✿ volume = space it takes up
- ✿ mass = how much stuff is in it
- ✿ weight = the pull of gravity on an object

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8 Science

Chapter One Section Four



- Physical Change—any change that alters the form or appearance of a substance but does not change it into another substance

Physical Changes

- Common Types: Smashing, Distilling, Distributing, Sorting, Mixing, Blending, Ripping, Phase Changes
- Stirring, Magnetizing, Straining

Chemical Change

- Chemical change—the atoms rearrange to form new substances



Chemical Changes:

- Common Types: Acidation Cooking, Oxidating, Rusting, Tarnishing, Photosynthesizing
- Common Indications: Changes of odor, color, temperature, energy; give off light, heat, or sound; formation of bubbles (gases), precipitates; decomposition of rotting matter

Laws of Conservation

- Energy—energy can neither be created nor destroyed, but can and often does change forms
- Momentum—the momentum in a system can not be created or destroyed (but on earth is commonly reduced due to friction and gravity, which are part of the momentum)
- Mass—matter cannot be created or destroyed in a chemical reaction, so products must match reactants

- Temperature—a measure of how hot or cold something is;
- Thermal energy—total energy of the motion of all the particles

Endo vs. Exo



Endo vs. Exo

- endothermic reactions
—suck in energy to break the bonds of the reactants (get colder)
- exothermic reactions
—release energy (get hotter)



- chemical energy—the energy stored in the chemical bonds between atoms—food, fuel, cells

Labs from Chapter 1

- elephant toothpaste—What happened and why is it in this chapter?
- Color straws—What happened and why is it in this chapter?
- Properties of classroom objects—What happened and why is it in this chapter?

- chemical energy—the energy stored in the chemical bonds between atoms—food, fuel, cells