



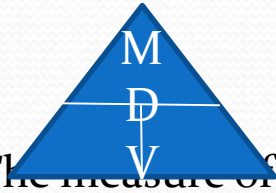
Physical properties of water



UNIQUE PROPERTIES OF WATER

- Density of water-

- Density compares mass and volume of substance
- Density = mass / volume

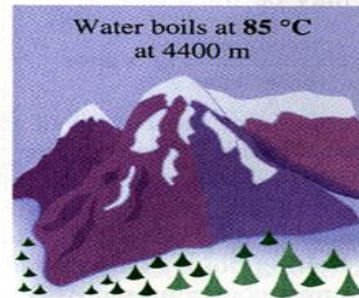
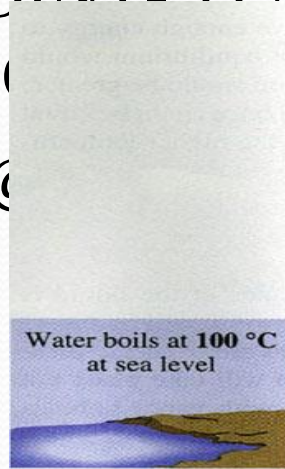


- The measure of how packed in things(ATOMS VS SPACE) are together.
- Comparing densities- if it floats = lower density. If it sinks = higher density
- 1 gram per cm³

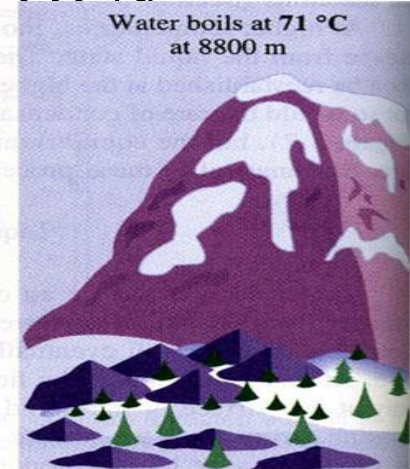


UNIQUE PROPERTIES OF WATER

- BOILING POINT - TEMPERATURE WHEN BOILING (LIQUID)
- Water boils @



Pike's Peak, Colorado



Mount Everest, Tibet

UNIQUE PROPERTIES OF WATER

- Freezing point- temperature when freezing(liquid to a solid)
- $H_2O =$



UNIQUE PROPERTIES OF WATER

- SURFACE TENSION - SKIN ON SURFACE



1 B.4 Molecular view of Water

- View from a powerful microscope
...



- Matter is made up of fundamental pieces called atoms and molecules
- Element – pure substance made up of only **one** kind of particle called an atom
- Atoms – building block of all matter
- Compound – pure substance made up of two or more

10.3 Symbols, Formulas, and Equations

“the language of chemistry”

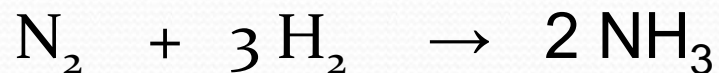
- The Letters in the language of chemistry are **Chemical symbols**
- The words are **chemical formulas**
- Sometimes formulas have numbers in them called **subscripts**



- THE SENTENCES IN CHEMISTRY ARE CALLED CHEMICAL EQUATIONS



Your Turn...p. 30



- Atom inventory - tracking the number of each type of atom



Molecular view of water...



A little bit of chemistry lingo...

Learning the “language” ...

- To understand some of those unique properties of water we need to look at the **atoms** that make up the **molecules**.

So what is...

- An atom...the smallest particle of an **element**

(**Element** - matter that only contains one type of particle)

So what is a...

- A **molecule**...two or more atoms **chemically bonded** together to make a **compound**

(**Chemically bonded** means they cannot be separated by physical means)

(**Compound** – matter that contains more than one type of element)

How to “speak” chemistry...

- The English language has 26 letters...the chemistry language has 109 (and counting) letters

Chemical symbols – are the “letters” of chemistry

TABLE 1.2 Some Common Elements and Their Symbols

Carbon	C	Aluminum	Al	Copper	Cu (from <i>cuprum</i>)
Fluorine	F	Barium	Ba	Iron	Fe (from <i>ferrum</i>)
Hydrogen	H	Calcium	Ca	Lead	Pb (from <i>plumbum</i>)
Iodine	I	Chlorine	Cl	Mercury	Hg (from <i>hydrargyrum</i>)
Nitrogen	N	Helium	He	Potassium	K (from <i>kalium</i>)
Oxygen	O	Magnesium	Mg	Silver	Ag (from <i>argentum</i>)
Phosphorus	P	Platinum	Pt	Sodium	Na (from <i>natrium</i>)
Sulfur	S	Silicon	Si	Tin	Sn (from <i>stannum</i>)

According to some sources there are at least 250,000 English words...currently there are over 12 million known chemical compounds!

- The words of chemistry are called **chemical formulas**
- A **chemical formula** contains the chemical symbols of the two or more elements in a compound. They are given in specific amounts which is shown by using **subscripts**.
- **Subscripts** are the small numbers that are written to the right of the element they go with and slightly below the symbol (**subscripts** go down...just like **submarines**!)

A sentence is defined as a set of words that describes a complete thought...

- In chemistry a “sentence” is a **chemical equation**.
- A **chemical equation** is a shortcut way of telling what happened in a **chemical reaction**.
- A **chemical reaction** are when chemical bonds are broken/made and elements are rearranged to make new substances
- The “stuff” you start a chemical equation with is called the **reactants** and they are written on the left side
- The “stuff” you end up with is called the **products** and they are written on the right side

Chemical equations...

- Chemical Equations include chemical formulas, chemical symbols, other standard symbols...

+ means added to or reacted with

→ means produces or yields

Now it is YOUR TURN...p. 30 - 31

- Turn to page 30 – 31 in your textbook and read the box labeled YOUR TURN...
- Do the 3 questions at the end in your notebook.