Chapter 2 Matter Notes

Name: _____

What is matter?

Chemical changes in matter are essential to all life processes.

What are elements?

What are examples of elements?

ATOMS

Definition of an atom:

Structure of an atom

INSIDE the nucleus:

Protons:

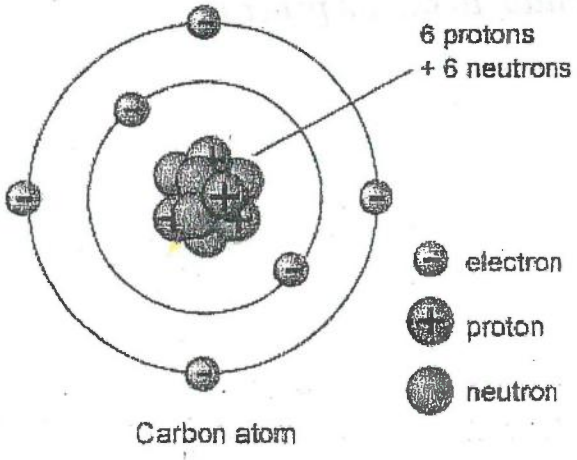
The atomic number of an element is always the same as the number of protons that it has.

Neutrons:

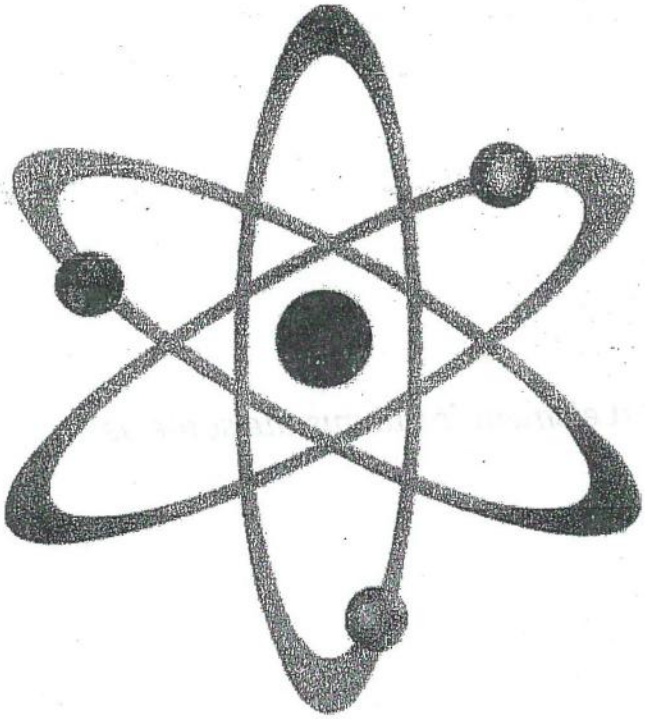
OUTSIDE the nucleus:

Electrons:

Electrons rotate around the nucleus on different
_____ *or* _____.
The first shell holds _____ *electrons.*
The outer shell holds _____ *electrons.*



Carbon atom



ATOMS continued (VERY IMPORTANT!)

All atoms want to be happy (stable).

In order to be happy, they need _____.

What will the atom do in order to fill its outer shell with electrons and feel happy?

Example:

1. *Look back at the picture of the carbon atom.*

How many electrons are in the OUTER shell? _____
So how many electrons does carbon need to be happy? _____
How many bonds then can this carbon form with other atoms? ____

2. *Nitrogen*

How many electrons are in the OUTER shell? _____
So how many electrons does carbon need to be happy? _____
How many bonds then can this carbon form with other atoms? ____

3. *Oxygen*

How many electrons are in the OUTER shell? _____
So how many electrons does carbon need to be happy? _____
How many bonds then can this carbon form with other atoms? ____

COMPOUNDS

Definition:

Example: H2O

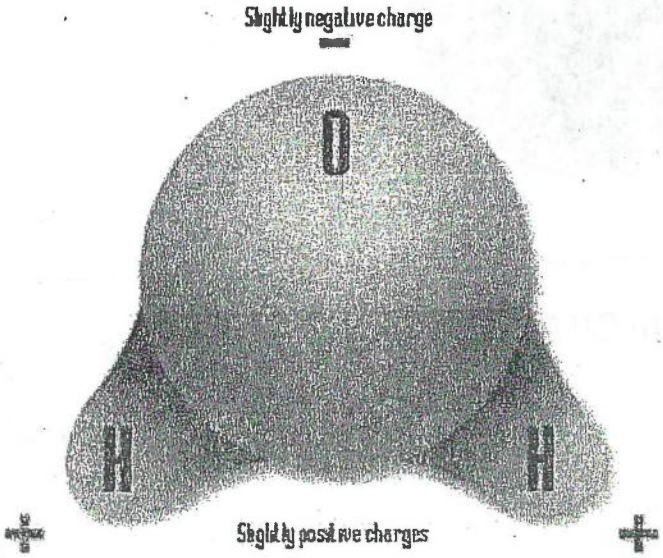


Figure 1: Structure of polar covalent water molecules. Polarity of the water molecule is a result of the asymmetrical arrangement of the atoms within it.

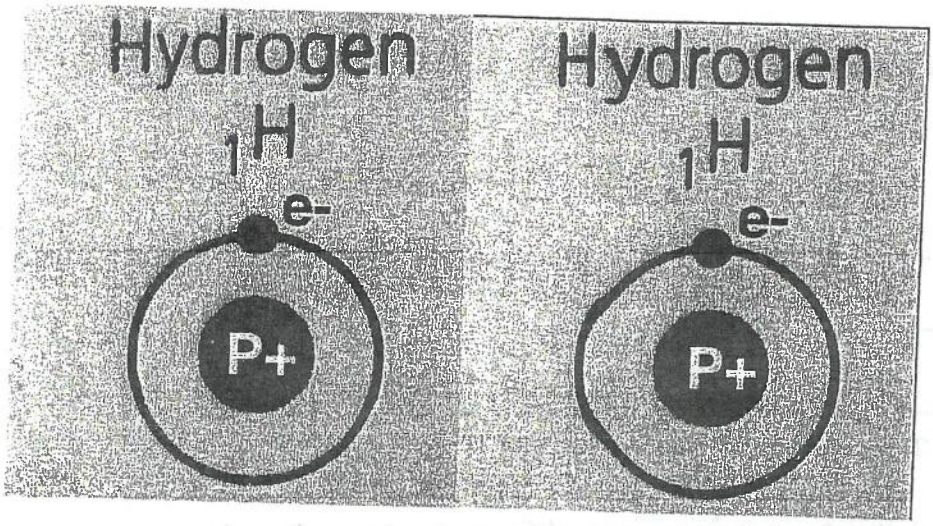
In order to form the compound, the atoms form _____ that join the atoms and cause the atoms to become stable.

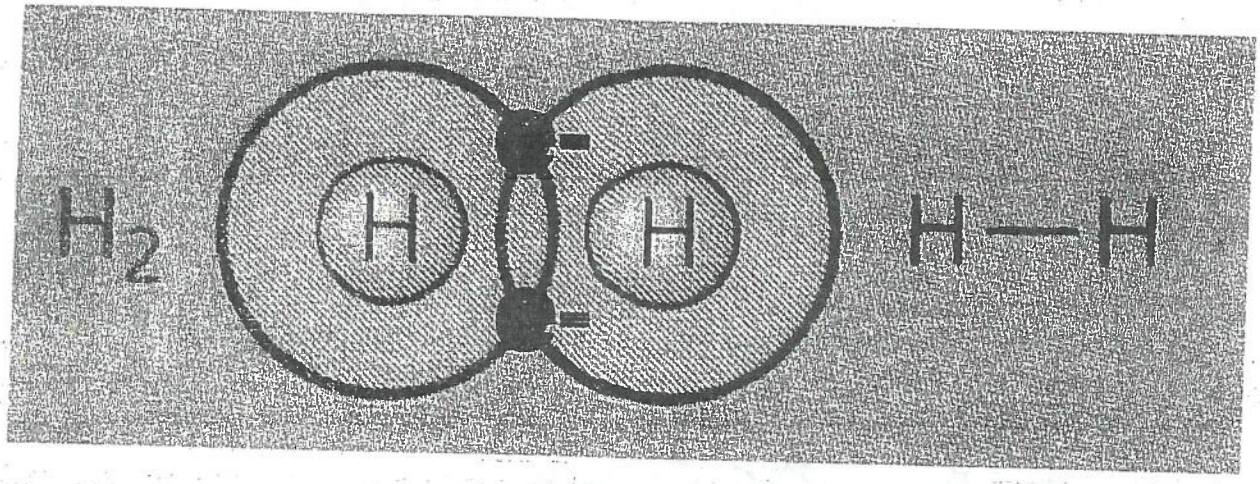
TYPES OF CHEMICAL BONDS

1. *COVALENT BONDS:*

Covalent bonds help atoms become stable and happy and form a _____ when in their simplest state.

Example: 2 H atoms form a hydrogen gas molecule.





Explanation:

Draw the the oxygen atom and the 2 hydrogen atoms with how they bond to each other and form this compound:

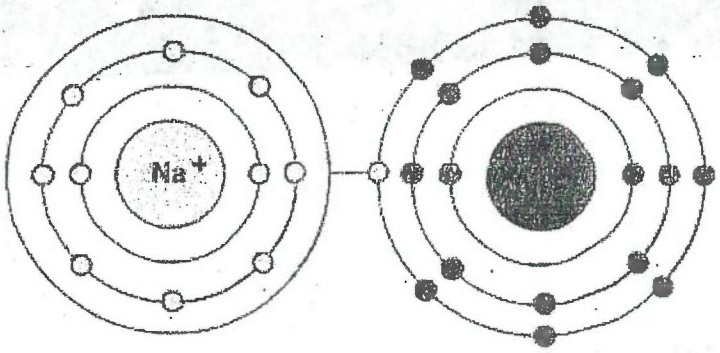
IONIC BONDS

Definition:

Example: NaCl

Na (sodium) has 11 protons and 11 eletrons
Cl (chlorine) has 17 protons and 17 electrons

What do they do to become NaCL and form an ionic bond?



Ions:

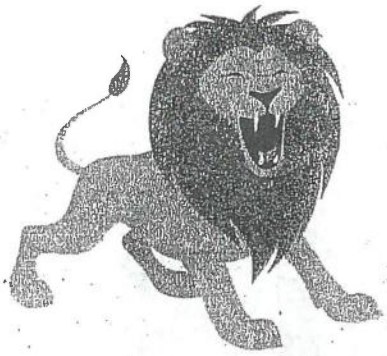
What happens when you put a positively charged atom and a negatively charged atom together?

REDOX REACTIONS
Reduction Oxidation Reactions

Defintion:

Reduction Reaction: Gain electrons
Oxidation Reaction: Lose electrons

How can you remember this?



LEO ---- GER

WATER

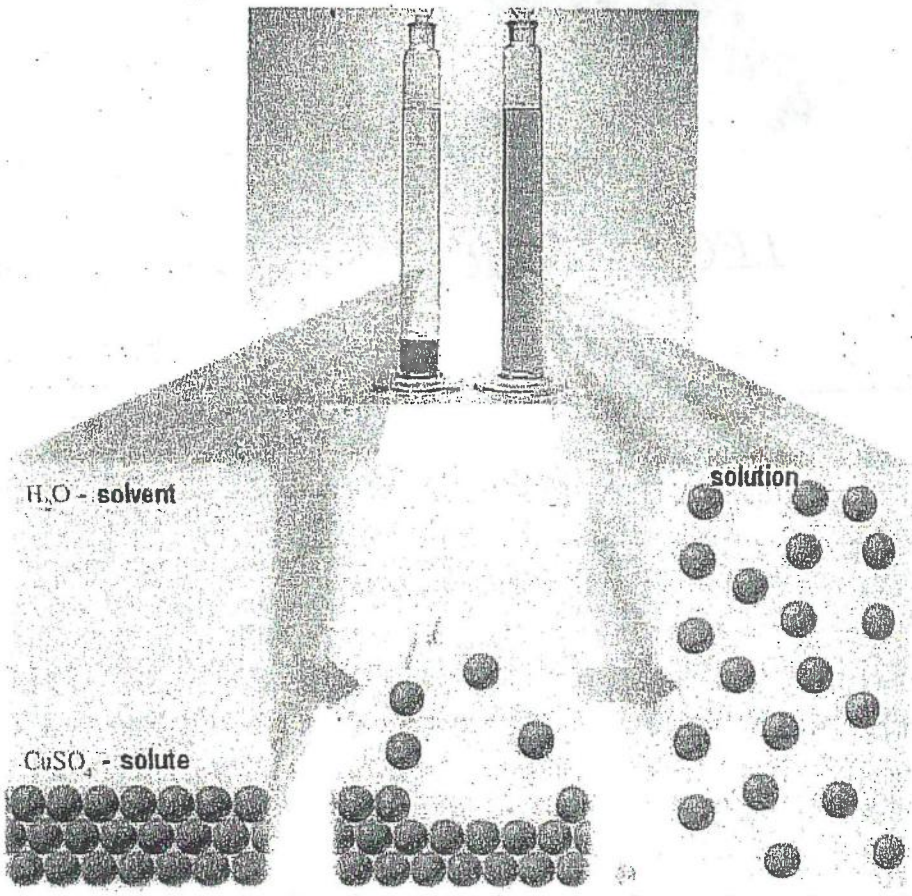
Where is water found?

Solutions

Definition:

Solvent:

Solute:



An aqueous solution is any solution where the solvent is water.

Concentration

Defintion:

The more solute you have in a solution, the greater the concentration of that solute.

Which solution has a greater concentration of salt?

5% salt with 95% water

20% salt with 80% water

Saturation:

Definition:

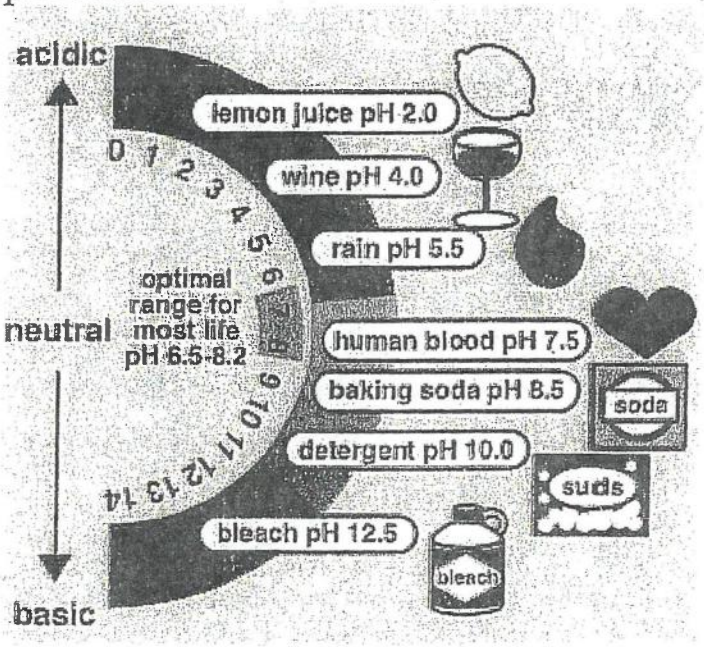
Blood is an example of a solution

Solvent in blood:

Solutes in blood:

1.
2.
3.

pH Scale



What happens when a water molecule splits apart?

ACIDS:

BASES:

How do you measure the pH of a substance?

0	7	14
Acid	*Neutral*	*Base*
More _____ *Ions*	*Same ions*	*More* _____ *Ions*

Buffer
Definition:

Why is pH important?

pH of everyday things:

Acids:

Bases:

Neutral: