

Warm-up (8/27-8/28)

****If you did not take the test on Friday,
come see me right now!****

- 1. List at least 5 elements found on the periodic table.**
- 2. What are the 3 particles that make up an atom?**
- 3. What is the total number of atoms found in 1 glucose molecule: C₆H₁₂O₆**

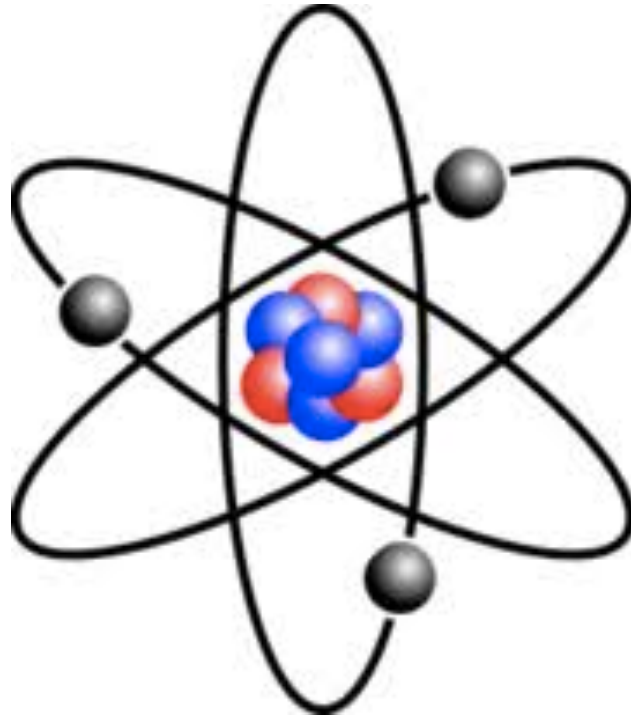
Biology 10/28/2013

- Warm up
- Review Ch 1 Exam
- 6.1: Atoms and Their Interactions
- Kool Aid Chemistry Mini Lab

Homework Due (Wed/Thurs):

6.1 Assessment (pg 151, #1-5)

6.1 Atoms and Their Interactions



Periodic Table of the Elements

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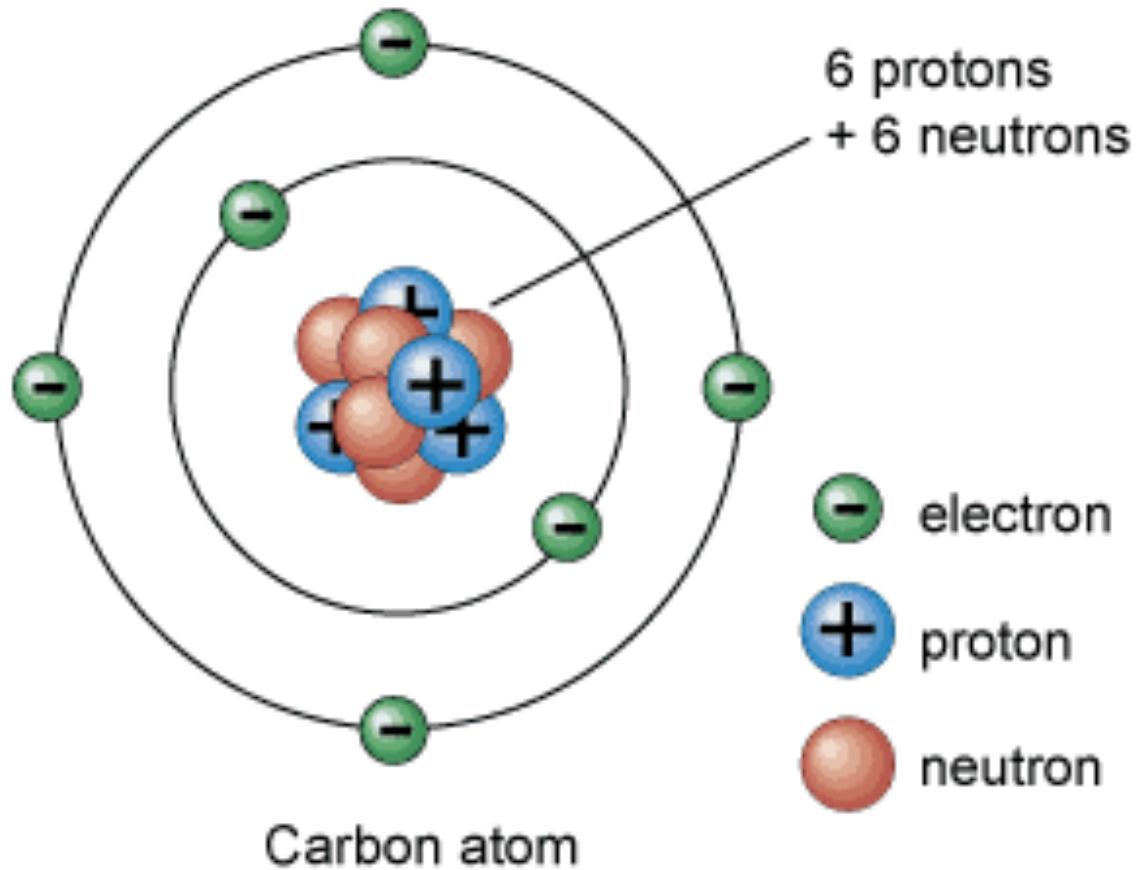
1 H																	2 He
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55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Unq	105 Unp	106 Unh	107 Uns	108 Uno	109 Une	110 Unn								

- hydrogen
- alkali metals
- alkali earth metals
- transition metals
- poor metals
- nonmetals
- noble gases
- rare earth metals

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Vocabulary

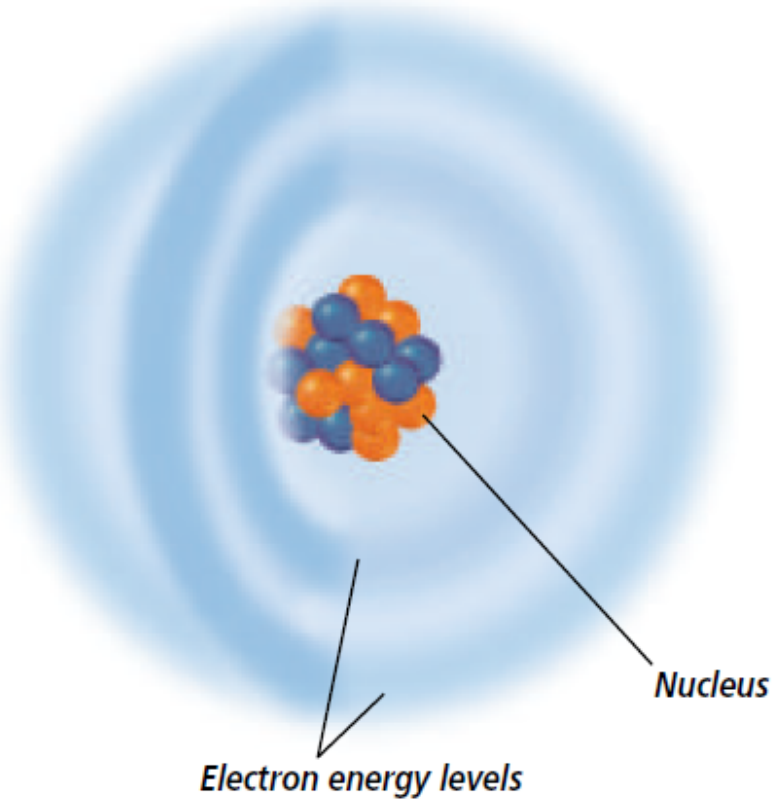
- Element:
 - A substance that can't be broken down into simpler chemical substances
- Atom:
 - Basic building blocks of all matter.
- Nucleus:
 - The center of an atom. Comprised of protons (+) and neutrons (neutral).
 - Electrons orbit the nucleus in “electron shells”:
2, 8, 18 $2(n_2)$.



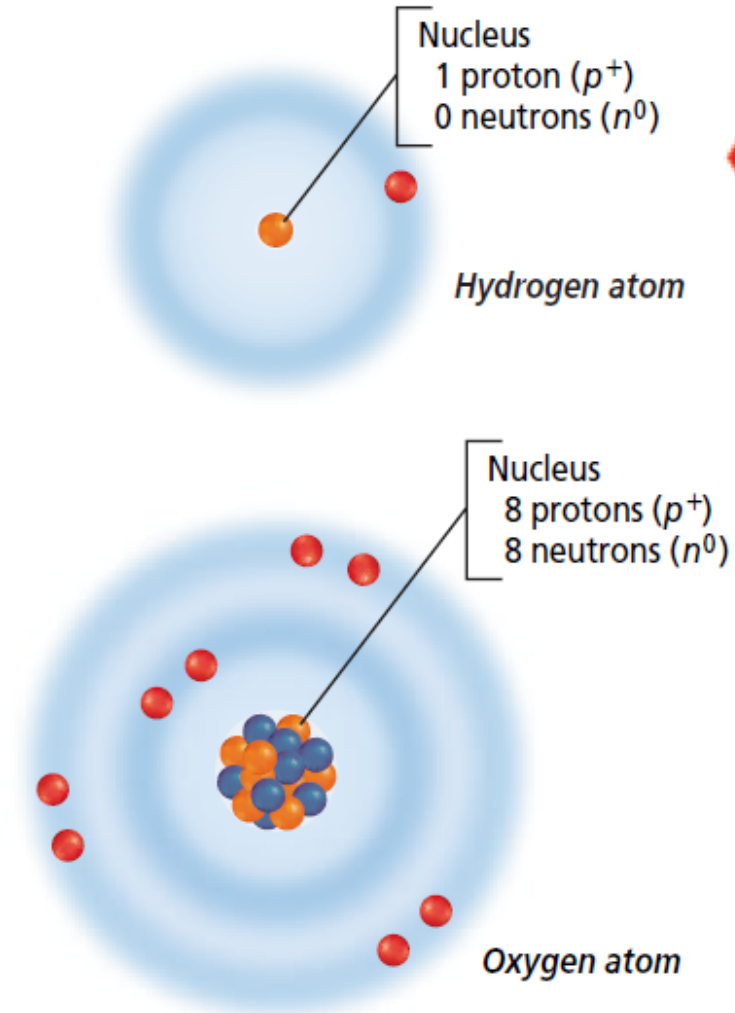
Electron shells: 2, 8, 18 ... $2(n^2)$.

Figure 6.2

Electrons move rapidly around nuclei composed of protons and neutrons.



A An atom has a nucleus and electrons in energy levels.

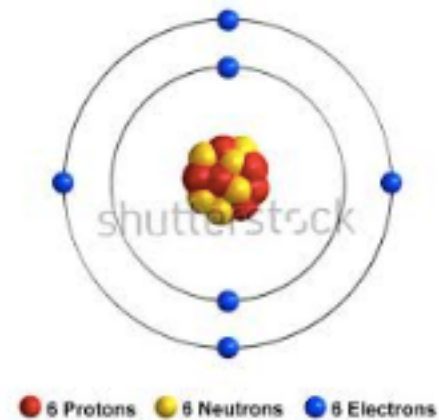
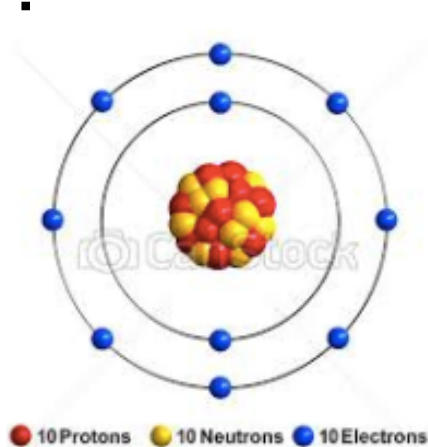


B Hydrogen, the simplest atom, has just one electron in its first energy level and one proton in its nucleus.

C Oxygen has two electrons in its first energy level and six electrons in the second level.

Comprehension Check

1. Neon has 10 protons. How many electron shells will it have?
2. Carbon has 6 protons. How many electrons does its second energy level have?



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Discuss

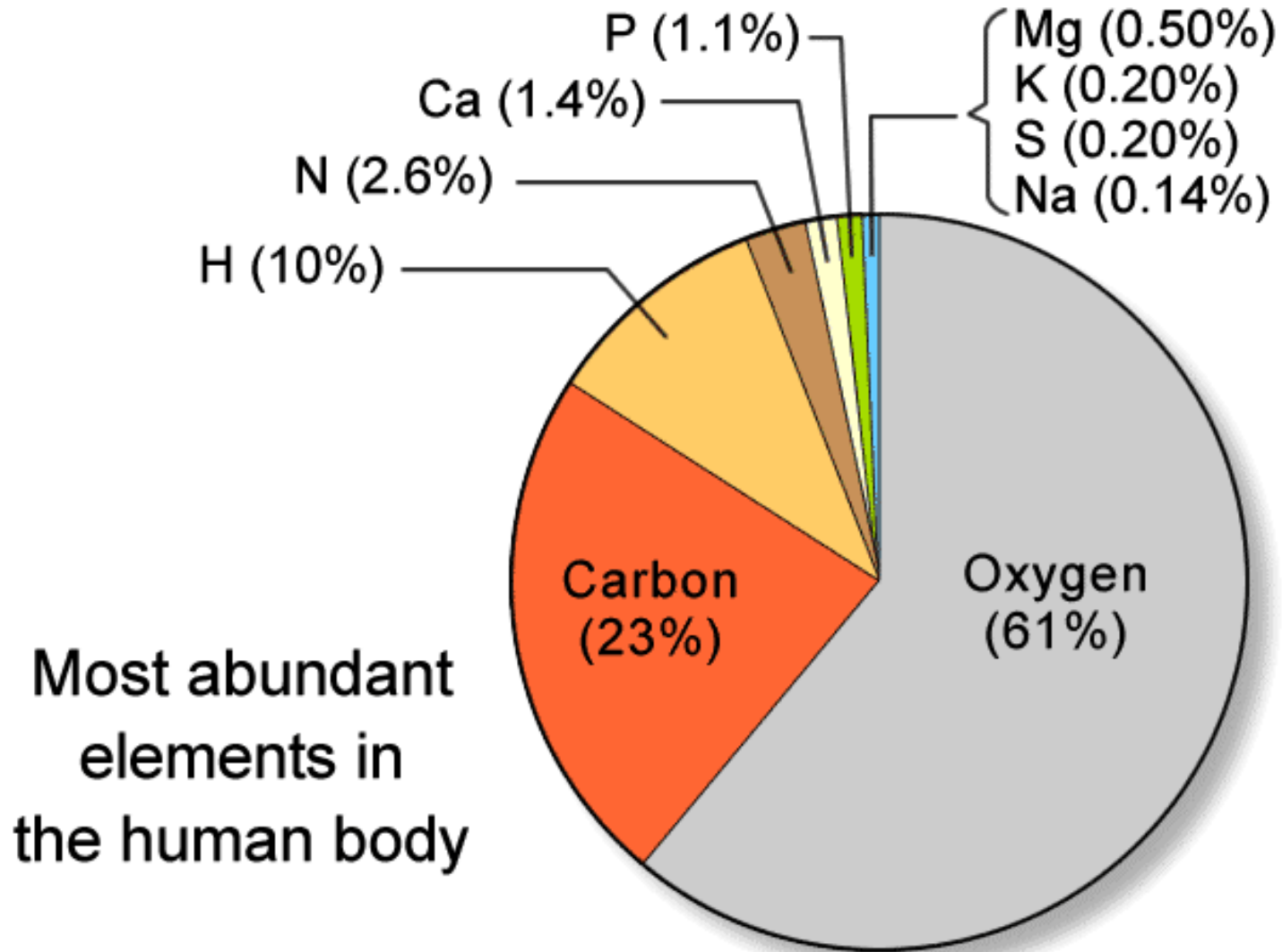


Table 6.1 Some Elements That Make Up the Human Body

Element	Symbol	Percent By Mass in Human Body	Element	Symbol	Percent By Mass in Human Body
Oxygen	O	65.0	Iron	Fe	trace
Carbon	C	18.5	Zinc	Zn	trace
Hydrogen	H	9.5	Copper	Cu	trace
Nitrogen	N	3.3	Iodine	I	trace
Calcium	Ca	1.5	Manganese	Mn	trace
Phosphorus	P	1.0	Boron	B	trace
Potassium	K	0.4	Chromium	Cr	trace
Sulfur	S	0.3	Molybdenum	Mo	trace
Sodium	Na	0.2	Cobalt	Co	trace
Chlorine	Cl	0.2	Selenium	Se	trace
Magnesium	Mg	0.1	Fluorine	F	trace

Elements in Cell Metabolism

*Metabolism: All the chemical reactions that take place inside an organism**

- Mammals use Iodine (I) to produce hormones
- Plants use magnesium (Mg) to form chlorophyll



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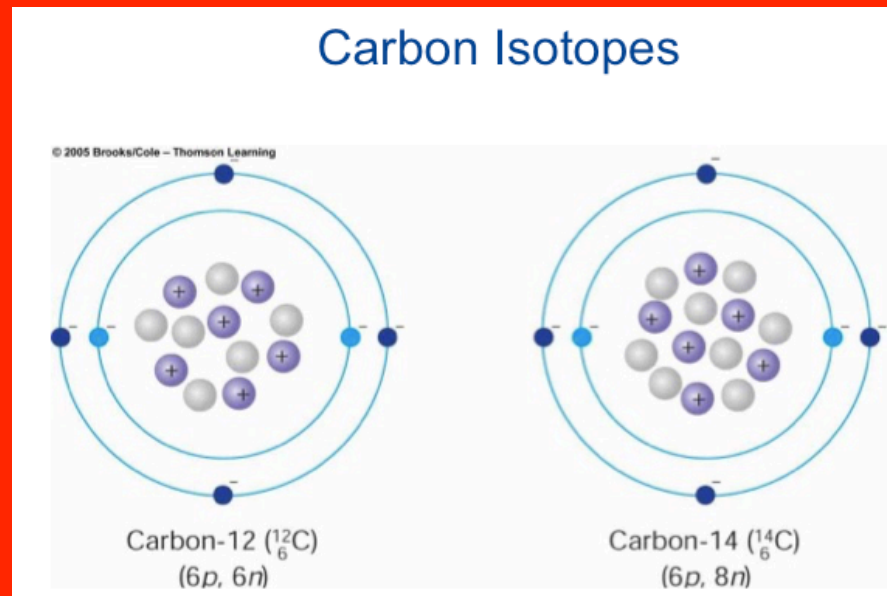
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Isotopes

Atoms of the same element that have different numbers of neutrons.

- Creates unstable nucleus; can be radioactive



Comprehension Check

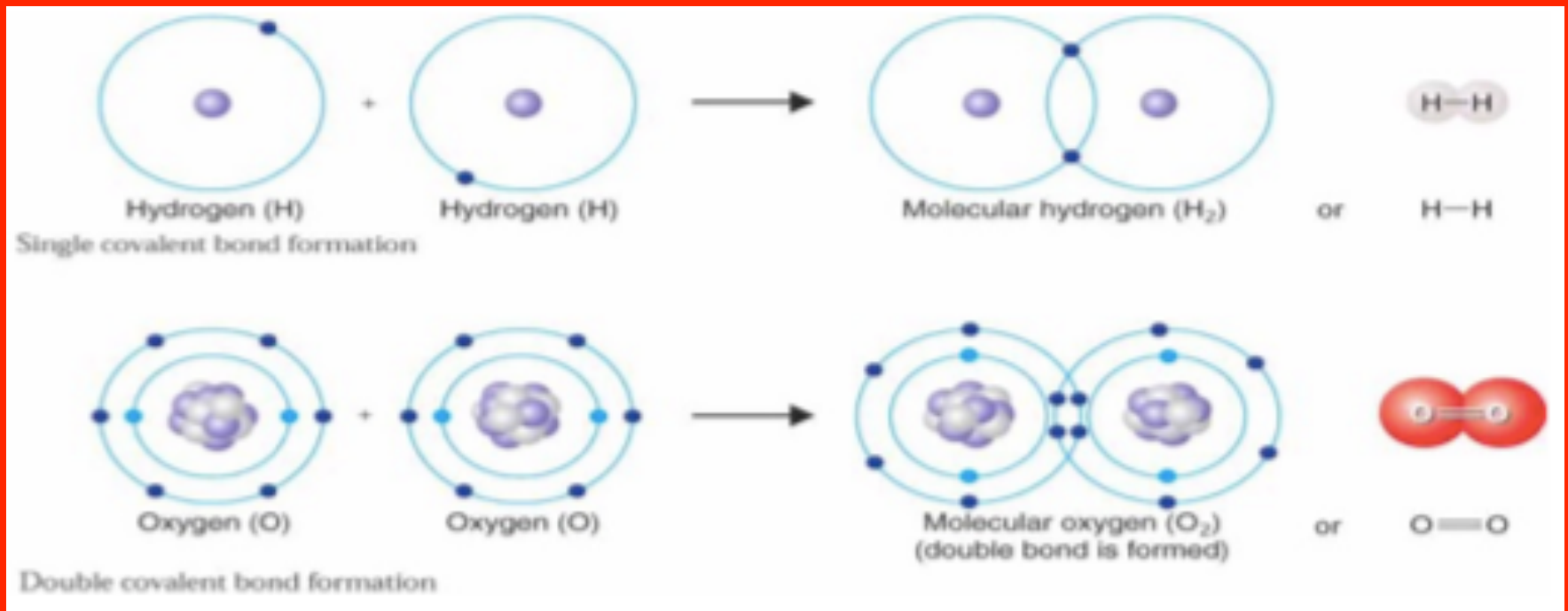
- An isotope of an element contains the same number of _____ and _____, but has a different number of _____.

Compounds and Molecules

- A ***molecule*** is formed when two or more atoms join together chemically.
 - Ex: H₂O, O₂, CO₂
- A ***compound*** is a molecule that contains at least two different elements.
- All compounds are molecules but not all molecules are compounds.

Covalent Bonds

- Bond created by two atoms sharing electrons

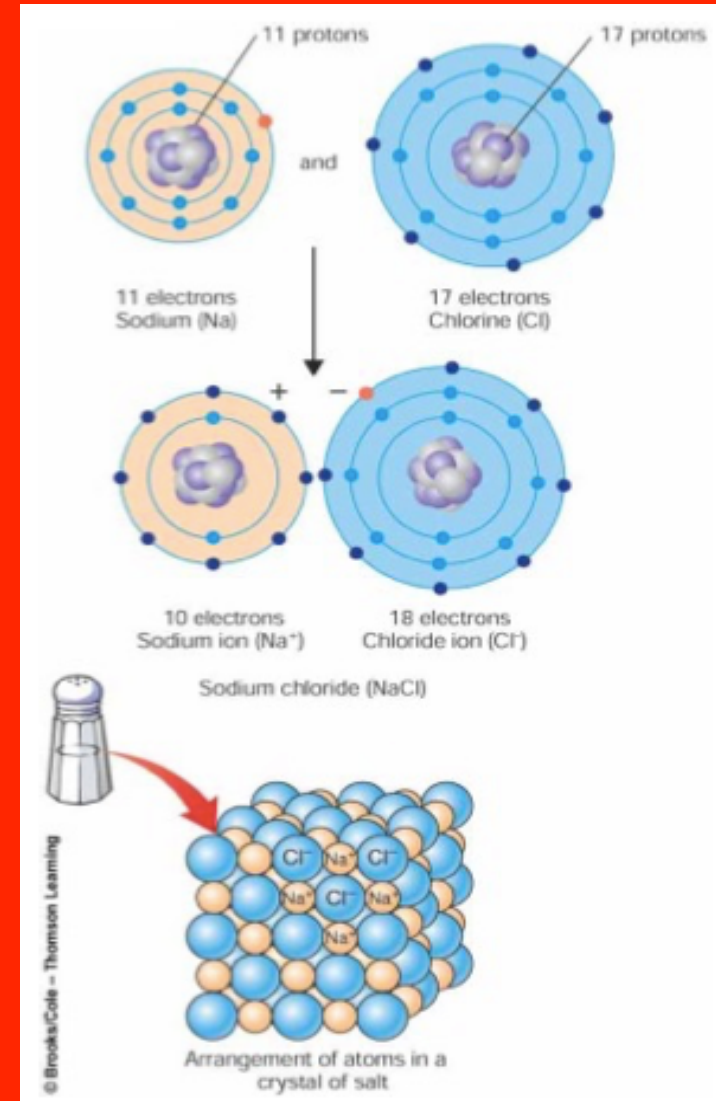


Number of Covalent bonds

Atom	Symbol	Covalent Bonds
Hydrogen	H	1
Oxygen	O	2
Carbon	C	4
Nitrogen	N	3
Phosphorus	P	5
Sulfur	S	2

Ionic Bond

- Ion: Results when an atom gains or loses an electron, creating a net charge
- Ionic bond: Bond between two ions of opposite charge



Comprehension Check

- How many covalent bonds can a carbon atom make?
- What is the difference between covalent and ionic bonds?
- What is the difference between a compound and a molecule?

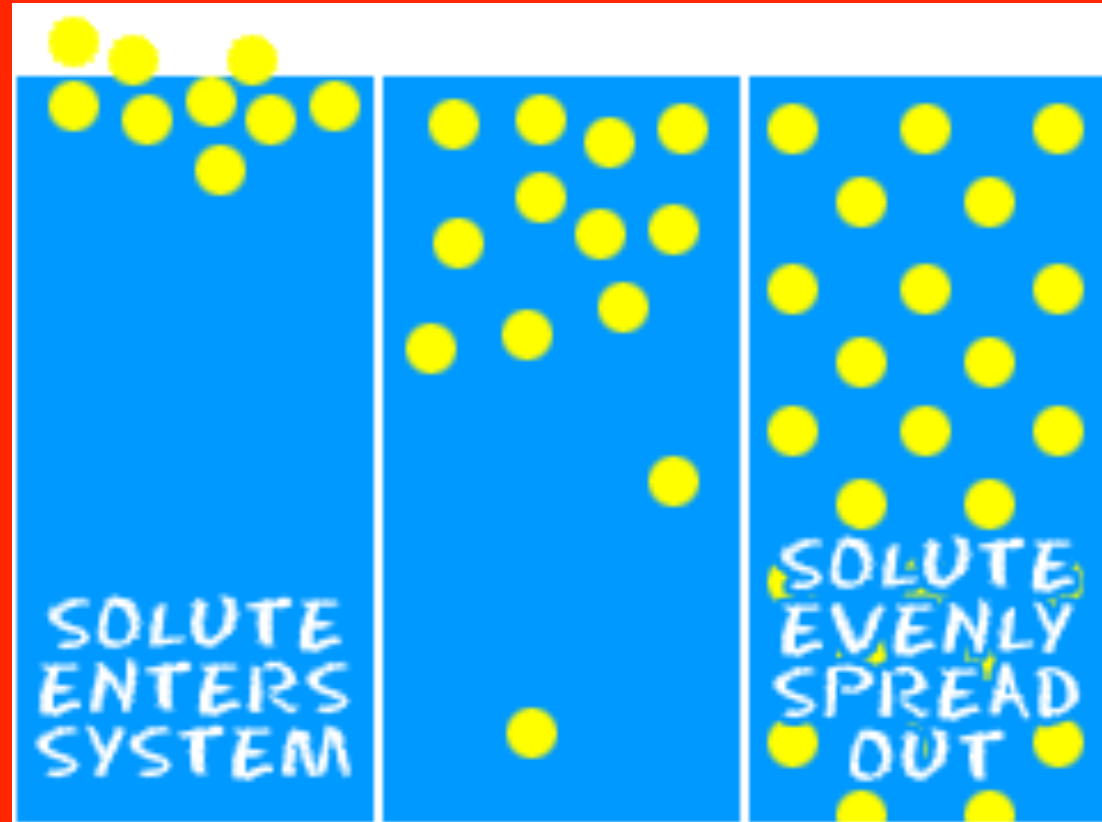
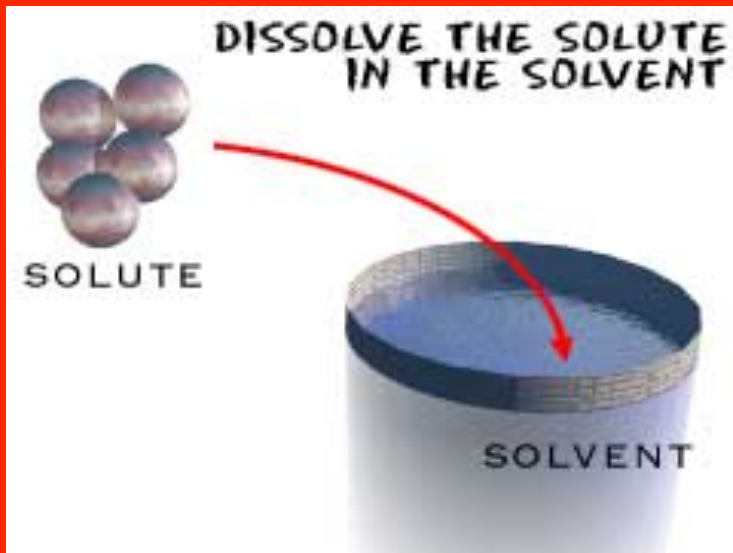
Mixture vs. Solution



Mixture: Individual components retain their own properties

-Ex: Sand and sugar

Solution

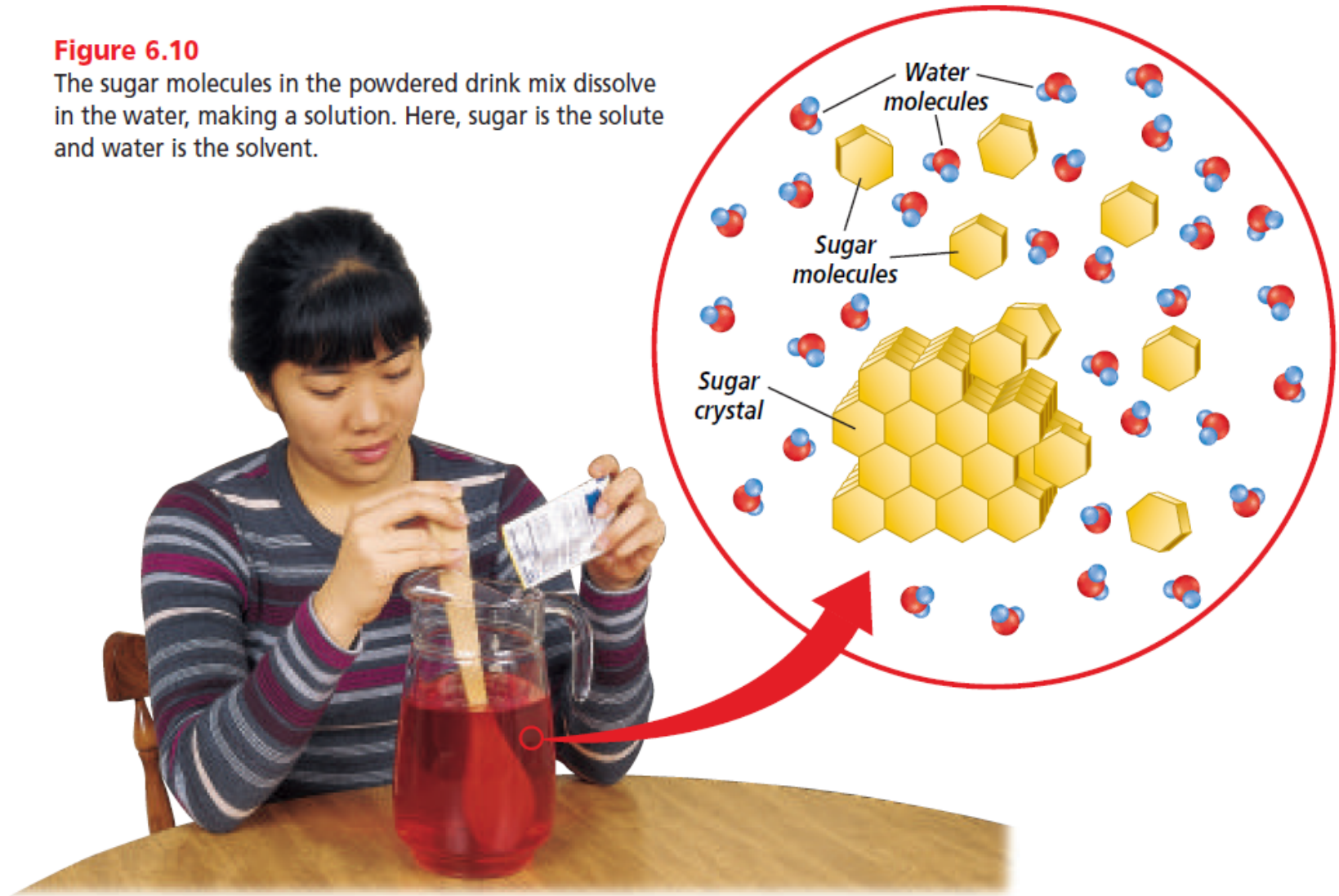


A mixture in which one or more substances (solutes) are distributed evenly in another substance (solvent).

Mixture vs. Solution

Figure 6.10

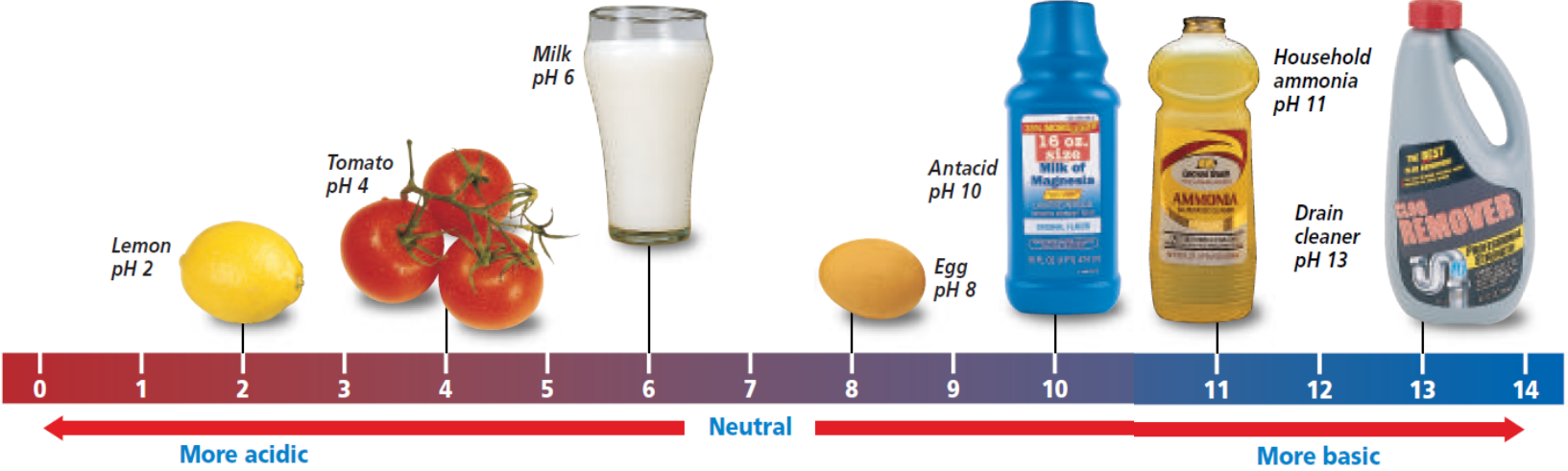
The sugar molecules in the powdered drink mix dissolve in the water, making a solution. Here, sugar is the solute and water is the solvent.



Acids & Bases

- Acid:
 - Any substance that forms hydrogen ions (H^+) in water.
 - pH below 7
- Base:
 - Any substance that forms hydroxide ions (OH^-) in water.
 - pH above 7

pH Scale



Comprehension Check

- What's the difference between a mixture and a solution?
- What is the name of the scale used to measure acids and bases?