Unit 5: Organic Compounds

review of basic chemistry

atom: the basic unit of matter, smallest unit of an elemt
that shows properties of elemt,
can't be broken down smaller & still be elemt

subatomic particles:
proton, neutron, electron
proton: + charge, found in nucleus of atom
neutron: no charge, found in nucl of atom
electron: - charge, found in electron cloud, orbitals, shells
E levels

element: substance that can't be broken into simpler form
and still show properties of elemt
H, O, C, He

istope: atoms of an elemt where there are diff #s of neutron
radioisotopes are unstable, nuclei break down at
constant rate over time

mixture: 2 or more elemts physically mixed together
what is a nonchemical example of a mixture?
what is a solution? solute? solvent?

compound: 2 or more elemts chemically combined
example?
molecule: smallest unit of a compd

bonding
why do atoms interact?
what types of atoms do not interact?
how active an elemt is depends on # of electrons and how many are needed to fill outermost E level

ion: a charged atom, charged b/c it has given up or gained an electron
ex: H+, Na+, Cl-
ionic bond: when one elemt gives up one or more e-, one elemt takes one or more e-
this creates 2 ions of opposite charges, attraction of charges holds elemts together

covalent bond: when e- are shared btw atoms
the e- circle around nuclei of both atoms holding them together
covalent bonds are very strong, can be hard to break them

sometimes e- are not shared equally in a covalent bond and b/c of the rapid movemt of e-, both of these result in parts of the molecule having a slight charge, which means it is polar
if there is a charge, they can attract other molecules to them - this is called van der Waals forces

water is a polar molecule

oxygen, being bigger has a stronger pull on the H e- and they are more likely to be found circling around the O

b/c H_2O is polar, it attracts other H_2O molecules

H tends to be + and is attracted to other - parts of molecule

this is called H bonding

pH refers to how acidic or basic (alkaline) a substance is

this relates to concentration of H^+ and OH^- in a solution

if there is a greater conc of H^+: acidic

if there is a greater conc of OH^-: basic

pH scale: 0-14 7=neutral, equal conc of H^+ & OH^-

0-6: acidic 8-14: basic

living org function best in near neutral pH

acids can burn, alkalis can burn

organic compds: have C, H, O as base
make up living organisms, made by living organisms
97% of compds making up living organisms are composed of 6 elements: SPONCH

biochemistry: study of organic compds, study of chemistry of living organisms

why is C the basic molecule?
C tends to form covalent bonds, creates strong molecules
C also tends to form 4 bonds with other atoms or it can form double & triple bonds

molecular formula: tells # of atoms of ea. elemt
does not tell how atoms are arranged
H_2O, CO_2, NaCl

structural formula: shows how atoms are arranged, shows where bonds are formed

there are 4 main classes of organic compds:
carbohydrates, lipids, proteins, nucleic acids