Biology: Unit 2 Review **Name**_____

Atoms, Elements, Bonds

1. Match each vocabulary term with the appropriate definition

___1 **Element**	A. The smallest, simplest unit of matter
___2 **Atom**	B. A type of bond in which electrons are transferred from one atom to another
___3 **Ion**	C. A type of bond in which electrons are shared between the bonded atoms.
___4 **Proton**	D. Orbits the nucleus of an atom. Made up of a negative charge.
___5 **Neutron**	E. A substance that is made up of only one type of atom
___6 **Electron**	F. A value for an element you can get from the periodic table. Always equal to the number of protons in an atom.
___7 **Valence electrons**	G. Found in the nucleus of an atom. Has a neutral charge.
___8 **Atomic number**	H. A value for an element you can get from the periodic table. Equal to the number of protons and neutrons added together.
___9 **Mass number**	I. An atom that has a positive or negative charge due to having an unequal number of protons and neutrons
___10 **Ionic bond**	J. Found in the nucleus of an atom. Has a positive charge
___11 **Covalent bond**	K. The electrons in the outermost shell of an atom. These electrons are involved in bonding

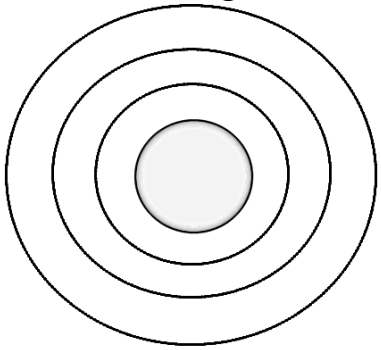
2. What are the 6 elements that are known as the "elements of life"?

3. Determine the number of each particle type and complete the Bohr diagram for an atom of $^{27}_{13}Al$ (aluminum)

Atomic Number = _____ Protons= _____

Mass Number = _____ Neutrons = _____

Electrons = _____



4. In general, how many valence electrons does each atom want to have? What are the exceptions?

5. What is meant by the HONC-1234 Rule when it comes to bonding?

Properties of Water

1. Match each vocabulary term with the appropriate definition

___1 **Polarity**	A. the attraction between water molecules and other substances.
___2 **Hydrogen bonding**	B. caused by the cohesive property of water. Minimizes the surface area of a liquid. When drops of a liquid with high surface tension are placed on a surface, they tend to bead together.
___3 **Cohesion**	C. the attraction between molecules of water
___4 **Adhesion**	D. the amount of heat energy needed to raise the temperature of 1 gram of a substance by 1 degree Celsius.
___5 **hydrophobic**	E. the amount of mass in a certain amount of space (volume)
___6 **hydrophilic**	F. relates to the symmetry of a molecule. A molecule is polar if it is NOT symmetrical. Water is polar
___7 **surface tension**	G. the ability of a liquid to rise up in narrow spaces without the assistance of, and in opposition to, external forces like gravity.
___8 **universal solvent**	H. the attractive forces found between water molecules as well as in other molecules containing Hydrogen and Nitrogen, Oxygen, or Fluorine.
___9 **specific heat capacity**	I. water is known as the universal solvent because it can dissolve more substances than any other liquid due to its unique properties
___10 **density**	J. refers to a substance that is attracted to and mixes well with water
___11 **capillary action**	K. refers to a substance that is attracted to and does not mix well with water

2. Identify the property of water that best explains why the following scenarios occur (use the vocab word bank above):

a. Water forms drops as it comes out of a faucet. _____

b. A water balloon does not pop when a flame is put to it for minutes. _____

c. You can make Kool-Aid, coffee, ice tea, and lemonade, all using tap water.

_____

d. An ice layer forms on top of lakes, and insulates the water beneath. _____

e. You step in a shallow puddle. The water climbs your jeans until your ankles feel wet.

_____

f. If two water molecules come in close contact a(n) _____ forms between them. (Hint: this bond is WEAK).

g. If one were to separate the H and O in a water molecule what type of bond would have to be split? _____. (Hint: this bond is STRONG).

Acids, Bases, pH

1. What type of ions do acids form when dissolved in water?

2. What type of ions do bases form when dissolved in water?

3. The pH scale ranges from 0-14.
   a. Which pH values correspond with an acidic substance?

   b. A neutral substance?

   c. A basic substance?

4. What is a buffer? What is its role in maintaining homeostasis in the body?

Monomers, Polymers, Macromolecules

Match each vocabulary term with the appropriate definition

___1 **monomer**	A. made up of amino acids. May be structural or function in transport, movement, defense or cell regulation
___2 **polymer**	B. the small, building blocks of larger molecules
___3 **Dehydration synthesis**	C. Made up of monosaccharides. Provide immediate energy and store energy
___4 **hydrolysis**	D. made up of nucleotides. Contain the hereditary information and control cell activities by directing protein synthesis
___5 **carbohydrate**	E. the general term for a large molecule
___6 **lipid**	F. a type of macromolecule. Functions include: store energy, insulate, cushion organs, control the development and function of cells, make up cell membranes
___7 **protein**	G. a type of protein that helps speed up reactions. It is not used in the reaction so it can be reused.
___8 **nucleic acid**	H. a type of reaction that connects two monomers together to create a larger molecule.
___9 **enzyme**	I. a type of reaction in which polymers are broken apart into monomers by the addition of water