**Ch. 2: The Chemical Context of Life**

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| **Question** | **Notes** | | | | | |
| 1. What is the difference between **MATTER** & **ENERGY**? | **Matter** | | | **Energy** | | |
| 1. What is the difference between **an ELEMENT** & a **COMPOUND**? | **Element**   * What 6 elements are key to life? * What are **trace elements?** | **Compound** | | | **Molecule**  **-**What are 4 organic macromolecules of life? | |
| 1. Recall the structure of an **ATOM**. | * What are **isotopes**? | | | | | |
| 1. Why are **CHEMICAL BONDS** important for life?  * Description * Examples * Relative strength | **Covalent**  **Polar**  **02_13PolarCovalentBonds-L.jpg**  **Non-polar**  02_10a | | **Ionic** | | | **Hydrogen**  **02_16HydrogenBond-L.jpg** |
| 1. What are components of **CHEMICAL REACTIONS**? |  | | | | | |
| 1. What are **ACIDS**, **BASES**, and **pH**? |  | | | | | |

**JIGSAW EXPERT GROUP 1:**

**Matter vs. Energy**

1. What is matter?
2. What are examples of matter?
3. What is Energy?
4. What are examples/types of energy?

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**JIGSAW EXPERT GROUP 2:**

**Elements vs Compounds vs Molecules**

1. What is an element?
2. What are examples of elements?
3. What are the 6 “elements of life?”
4. What are trace elements?
5. What are compounds?
6. What are examples of compounds?
7. What are molecules?
8. What are the 4 organic macromolecules of life?

**JIGSAW EXPERT GROUP 3:**

**Atoms and Isotopes and Reactions**

1. What are atoms?
2. What are the subatomic parts of an atom, their location, and their charges?
3. What are isotopes?
4. What are bonds?
5. What are the parts of a chemical reaction?
6. How do you write a basic equation?
7. What is chemical equilibrium?

**JIGSAW EXPERT GROUP 4:**

**Covalent vs Ionic vs Hydrogen Bonds**

1. Rank each bond type from strongest (generally) to weakest.
2. What are covalent bonds? (strong or weak?)
3. What are polar covalent bonds? An example?
4. What are non-polar covalent bonds? An example?
5. What are ionic bonds? (strong or weak?) An example?
6. What are Hydrogen bonds? (strong or weak?)
7. What are Van der Waals Interactions? Example in nature?

**JIGSAW EXPERT GROUP 5:**

**Acids, Bases, and pH**

1. What is pH?
2. Describe/explain the pH scale. (discuss log scale)
3. What is an acid? (discuss Hydrogen ions, value on pH scale, properties)
4. What is a base? (discuss Hydrogen ions, value on pH scale, properties)
5. What is neutral?
6. Why does pH matter?