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|  | What is Life? |
| Matter consists of chemical \_\_\_\_\_\_\_\_\_\_\_ in pure form and in combinations called compounds  A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a substance that consists of two or more elements in a fixed ratio.  Examples of compounds? What’s a molecule? How are they different?  A change in characteristics when elements combine to form a compound is an example of: |
| Twenty-five chemical elements are essential for \_\_\_\_\_\_\_\_.  Four elements make up 96% of living matter.   * 1. 3.   2. 4.   Most of the remaining 4% of an organism’s weight consists of:   1. 3. 2. 4.   **\_\_\_\_\_\_\_\_\_\_\_ elements** are required by an organism but only in minute quantities.  Examples of trace elements and functions: |
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|  | An element’s properties depend on the structure of its atoms  Atoms are composed of even smaller parts called *subatomic particles*.   * Two subatomic particles, **\_\_\_\_\_\_\_\_\_\_\_** and **\_\_\_\_\_\_\_\_\_\_**, are packed together to form a dense core, the **atomic \_\_\_\_\_\_\_\_\_\_\_**, at the center of an atom. * **\_\_\_\_\_\_\_\_\_\_\_\_** can be visualized as forming a cloud of negative charge around the nucleus.   Each electron has one unit of \_\_\_\_\_\_\_\_\_\_\_ charge, each proton has one unit of \_\_\_\_\_\_\_ charge, and neutrons are electrically neutral.  The mass of a neutron and a proton are almost \_\_\_\_\_\_\_\_\_\_\_\_. The **\_\_\_\_\_\_\_\_\_\_\_\_,** is used  to measure the masses of subatomic particles, atoms, and molecules.  How much do we say each subatomic particle weighs?    What information does the atomic number provide?  What information does the atomic mass provide? |
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|  | **Atomic Variations**  Two atoms of the same element that differ in the number of \_\_\_\_\_\_\_\_ are called **isotopes.**  In nature, an element occurs as a mixture of isotopes. Carbon as an example.    What is a **radioactive isotope?** What happens when they decay? |
| Electron configuration influences the chemical behavior of an atom.  *Simplified models of the atom greatly distort the atom’s relative dimensions.*  When two elements interact during a chemical reaction, it is actually their \_\_\_\_\_\_\_\_\_ that are involved.  Electrons have \_\_\_\_\_\_\_\_\_\_\_\_ energy because of their positions relative to the nucleus. |
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|  | The different states of potential energy of the electrons of an atom are called **electron shells.**   * + The first shell, closest to the nucleus, has the \_\_\_\_\_\_\_\_\_\_ potential energy.   + Electrons in outer shells have \_\_\_\_\_\_\_\_ potential energy.   + Electrons can change their position only if they \_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_ a quantity of energy that matches the difference in potential energy between the two levels.   The chemical behavior of an atom is determined by its electron configuration—the  distribution of electrons in its electron shells.  Going left to right on the periodic table, what happens to the number of electrons and the number of protons?  The first electron shell can hold only \_\_\_\_\_\_\_ electrons.  The second shell can hold up to \_\_\_\_\_\_\_\_\_ electrons.  The chemical behavior of an atom depends mostly on the number of electrons in its outermost  shell, the **\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_.** Electrons in the valence shell are known as **\_\_\_\_\_\_\_\_\_\_\_ electrons.**  The paths of electrons are often portrayed as concentric paths, like planets orbiting the sun. In reality, an electron occupies a more complex three-dimensional space, an **orbital.**  The reactivity of atoms arises from the presence of unpaired electrons in one or more orbitals of their valence shells. |
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|  | Practice some Electron Distribution Diagrams (Lewis Dot Structures)  Lithium. Carbon Oxygen. Neon |



