

Unit 3 Matter Notes

1. Introduction	1. The structure of matter-
2. What is matter?	2. Any object or substance that has mass and takes up space.
3. What are atoms?	3. Atoms are tiny particles that make up all matter AND the smallest particle of an element.
4. Describe the nucleus. Interesting fact: the smallest nucleus is located in a light hydrogen atom; the largest- uranium.	4. The nucleus is at the center of the atom. The nucleus contains neutrons and protons. The nucleus spins
5. What are protons?	5. Protons have a positive electric charge, have a mass of 1, and how many protons determine the element.
6. What are neutrons?	6. Neutrons have no electric charge and have a mass of 1; located in the nucleus.
7. What are electrons?	7. Electrons have a negative electric charge; have a mass of almost 0; electrons fly around the nucleus almost at the speed of light when in orbit.
8. Where is the electron cloud located?	8. The electron cloud is located on the outside of the atom; commonly referred as the electron cloud.
9. What are ions?	9. Ions are atoms with an extra or missing electron. When ions have a (an): <ul style="list-style-type: none"> • extra electron, the charge is negative • A missing electron, the charge is positive <p>Remember that normal atoms have the same number of electrons and protons</p>
10. What are elements?	10. Elements are substances made from just one kind of an atom. <ul style="list-style-type: none"> • There are 90 different types of elements in nature. • More than 20 elements are man made.
11. How are elements organized?	11. The Periodic Table of Elements organizes the elements using a systematic method.
12. What is the Periodic Table of Elements?	12. The periodic table is an arrangement of elements according to their atomic numbers.
13. What is an atomic number?	13. An atomic number is the number of PROTONS in the nucleus.
14. What is a chemical symbol?	14. The first letter is always an upper case and the others are lower case.

15. What is atomic mass?	15. Atomic mass is: <ul style="list-style-type: none"> • Based on the average number of stable isotopes • Protons + Neutrons
16. How are metals and non metals arranged on the Periodic Table?	16. Non metals are located on the right and metals on the left.
17. What are ionic bonds?	17. Ionic bonds are formed by the attraction between two oppositely charged ions. <ul style="list-style-type: none"> • Usually occurs between positive metals and negative nonmetals. • Common example: table salt
18. What are covalent bonds?	18. Covalent bonds are bonds in which atoms share electrons. <ul style="list-style-type: none"> • H₂O is an example
19. What is a molecule?	19. A molecule is two or more atoms joined by covalent bonds.
20. What are metallic bonds?	20. Metallic bonds take place when metals bonds with metals. In metallic bonds, electrons are shared among many atoms. <ul style="list-style-type: none"> •
21. What are characteristics of metallic bonds?	21. <ul style="list-style-type: none"> • High boiling points • Good conductors of electricity • Requires much energy to break apart (usually)
22. What is a compound?	22. A compound is made of two or more elements that are chemically combined. Includes the bonded stuff (molecules, ionic compounds)
23. What is a formula?–	23. A formula lists how many of each element that makes up a compound. H ₂ O = 2 Atoms of Hydrogen and 1 atom of Oxygen <ul style="list-style-type: none"> • subscript – small number that shows how many of each element are in a compound
C ₆ H ₁₂ O ₆ = glucose	How many carbon atoms? Hydrogen atoms? Oxygen atoms?
24. What are mixtures?	24. Mixtures are combinations of substances that are NOT bonded.
25. What is a heterogeneous mixture?	25. A MIXTURE is a combination of two or more substances that are not chemically united and do not exist in fixed proportions to each other. Most natural substances are mixtures
26. What Is a homogeneous mixture?	26. Homogeneous mixture is when substances are mixed evenly throughout the solution. *Many homogeneous mixtures are commonly referred to as solutions.
27. What are the parts of a solution?	27. Parts of a solution include: <ul style="list-style-type: none"> ❖ solute – substance being dissolved ❖ solvent – substance in which the solute dissolves

