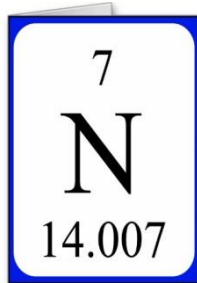


STUDY GUIDE: Matter, Atoms, Physical/Chemical Changes

1. A physical change does **not create a new substance**.
2. An example of a physical change is **melting ice cubes to liquid form. It is still H₂O**
3. A chemical change does **create a new substance that cannot be undone**.
4. An example of a chemical change is **burning a block of wood**.
5. Table sugar (C₁₂H₂₂O₁₁) and Salt (NaCl) are examples of **compounds**.
6. Mass is the measurement of how much **matter** an object contains.
7. All elements are composed of extremely small particles called **atoms**.
8. Elements cannot be broken down **chemically** into other substances.
9. Matter is anything that **takes up space** and has **mass**.
10. Several substances together that are NOT chemically combined are classified as **a mixture**.
11. Heating a liquid is part of its **physical** property.
12. If a gas easily catches fire, it is called combustibility. This is an example of a **chemical** property.
13. Write down two common chemical formulas.

NaCl (Table Salt) and CO₂ (Carbon Dioxide)

14. Vegetable soup is classified as a **heterogeneous mixture**.
15. Malleability: **the physical property which means the ability of something to be shaped, flattened or hammered. (think tin foil)**
16. Proton has a **positive (+)** charge.
17. Neutron has a **neutral charge**.
18. Electron has a **negative (-)** charge.
19. Where is most of the mass of an atom? **In the nucleus**
20. Where is most of the volume of an atom? **In the electron cloud or valence shells**.



21. In the compound CO₂ (carbon dioxide), how many elements are there? **2: carbon and oxygen**
22. In the compound CO₂ (carbon dioxide), how many atoms are there? **3 total. 1 carbon atom and 2 oxygen atoms**

23. What is the atomic mass of Nitrogen (N)? 14.007 or approx. 14

24. What is the atomic number of Nitrogen (N)? 7

25. How many protons? 7 Electrons? 7 Neutrons? 7

Atomic number tells you the # of protons and # of electrons (same number)

Atomic mass MINUS atomic number = number of neutrons

$$14 - 7 = 7$$