

Name _____

The Significance of Atomic Number and Atomic Mass

Short Answer Key

1. Elements are arranged on the periodic table by increasing atomic number because it reflects the number of protons in the nucleus, which is unique to each element and determines its identity and chemical behavior.
2. The atomic mass takes into account the abundance of isotopes in an element. Isotopes that are more abundant contribute more to the atomic mass, while less abundant isotopes have a smaller impact.
3. Atomic mass = $(12.000 \text{ amu} + 13.003 \text{ amu}) / 2 = 12.502 \text{ amu}$
4. Elements with higher atomic numbers generally have more massive atoms due to the increased number of protons, neutrons, and electrons. For example, the atomic mass of carbon (atomic number 6) is lower than that of iron (atomic number 26).
5. Atomic mass is essential in chemical calculations because it helps determine the amount of a substance needed for reactions and provides a basis for comparing elements' behaviors in chemical reactions.

