

Name _____

The Ever-Expanding Periodic Table: Evolution Over Time

Short Answer Key

1. Dmitri Mendeleev's periodic table arrangement was based on atomic mass, and he introduced the concept of periodic law, which states that elements with similar properties recur at regular intervals when arranged by atomic mass. He organized the elements into rows and columns and left gaps for undiscovered elements, predicting their properties based on the periodicity he observed.
2. Henry Moseley played a crucial role in reorganizing the periodic table by proposing that atomic number should determine the elements' order. This reordering was significant because it aligned the elements with their chemical properties more accurately than atomic mass. Moseley's work resolved inconsistencies in earlier versions of the table and laid the foundation for the modern periodic table.
3. The discovery of noble gases contributed to the expansion and understanding of the periodic table by adding chemically inert gases such as helium, neon, and argon. These gases filled a gap in the table and expanded our knowledge of elemental properties. They also led to a better understanding of atomic structure and chemical reactivity.
4. Adding new elements to the periodic table as atomic numbers increase beyond uranium presents challenges in naming and organizing these elements. It requires confirmation through experimental evidence and the establishment of criteria for official recognition. As atomic numbers increase, elements become increasingly unstable and short-lived, making their study and identification challenging.
5. The modern periodic table is organized by atomic number, reflecting the number of protons in an atom's nucleus. It is divided into groups (columns) and periods (rows). Elements within the same group share similar chemical properties because they have the same number of valence electrons. The periodic table provides a systematic framework for categorizing and comprehending the elements.

