

Elements and the Periodic Table

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Introduction to Atoms



What is the structure of an atom?

- Atoms are made of even smaller particles called protons, neutrons, and electrons.

How are the elements described in terms of their atoms?

- An element can be identified by the number of protons in the nucleus of its atoms.

Why are models useful for understanding atoms?

- Because atoms are so small, scientists create models to describe them.

Organizing the Elements



How did Mendeleev discover the pattern that led to the periodic table?

- He noticed that a pattern of properties appeared when he arranged the elements in order of increasing atomic mass.

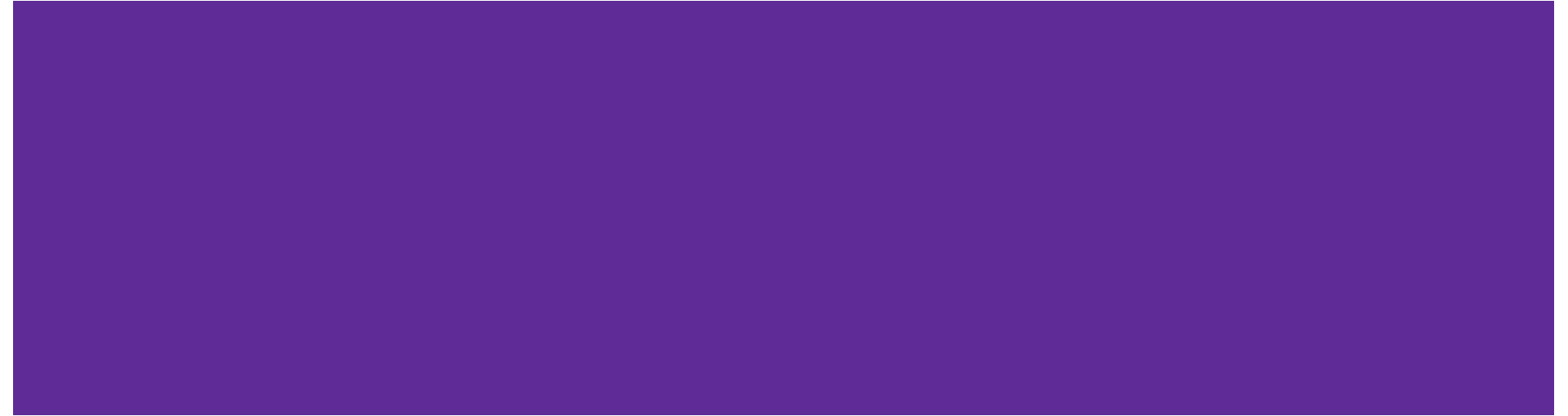
What data about elements is found in the periodic table?

- Each square includes the element's atomic number, chemical symbol or atomic symbol, name, and atomic mass.

How is the organization of the periodic table useful for predicting the properties of elements?

- The properties of an element can be predicted from its location in the periodic table.

Metals



What are the physical properties of metals?

- The physical properties of metals include shininess, malleability, ductility, and conductivity.

How does the reactivity of metals change across the periodic table?

- The reactivity of metals tends to decrease as you move from left to right across the periodic table.

How are the elements that follow uranium in the periodic table produced?

- Elements that follow uranium are made--or synthesized--when nuclear particles are forced to crash into one another.

Nonmetals and Metalloids



What are the properties of nonmetals?

- Most nonmetals are poor conductors of electricity and heat and are reactive with other elements.
- Solid nonmetals are dull and brittle,

How are the metalloids useful?

- The most useful property of the metalloids is their varying ability to conduct electricity.

Elements From Stardust



How are elements created in stars?

- Nuclear fusion, which occurs in stars on a huge scale, combines smaller nuclei into larger nuclei, creating heavier elements.

What are the results of fusion in large stars?

- A supernova provides enough energy for the nuclear fusion reactions that create the heaviest elements.