

Chemical Interactions Activity Sheet for Students 16.3c

Student Name: _____

Alien Periodic Table *(ICP.6.4, 6.5)*

Question for Analysis

How can characteristics of the periodic table of elements be modeled?

Key Concepts

- **Atom** – the smallest component of an element, characterized by a sharing of the chemical properties of the element
- **Atomic Number** – the number of protons in the nucleus of an atom, which determines the chemical properties of an element and its place in the periodic table
- **Atomic Mass** – the mass of a single atom of a chemical element
- **Periodic Table of Elements** – A chart of the chemical elements that displays them in rows horizontally in order of increasing atomic number and vertically according to similarity of the chemical properties of their atoms

Periodic Trends Introduction

An alien community has been discovered and they have a different way of representing the elements on their planet. What would we do if we don't know the atomic number of the element? What if we don't know what type of properties are being represented? How can we make predictions? Can you break the Alien Code?

Background

Most physical science and chemistry textbooks report a wealth of numerical data to identify periodic trends in the properties of the elements. Ionization energies, atomic radii, electronegativity, and electron affinities – all are dutifully tabulated and graphed. But what do all the numbers mean? The Modern Periodic Table is based on Periodic Law. This Law states that, physical and chemical properties of elements are a function of their atomic numbers. By using

Periodic Law, we can find a variety of trends in both physical and chemical properties. Within each group, all the elements in that column will be exactly the same in some way (the Key Similarity) AND must also share some feature that changes regularly as you move down the group (the Varying Trait). Similarly, within each period, all the elements in the row must be exactly the same as you move across the period (the Key Similarity) AND must also share some feature that changes regularly as you move across the row (the Varying Trait).

Activity Overview

In this activity, you will use the 40 cards and construct an Alien Periodic Table. You will arrange the Aliens in some logical pattern so that they form an organized regular block. The resulting table is visually impressive and clearly the meaning of periodic trends.

Materials

- 40 alien pictures
- Glue
- Scissors
- Crayons, colored pencils, or markers
- Large sheet of construction paper

Procedure

1. Color each of the Aliens in the alien pictures.
2. Cut out each of the Aliens.
3. Arrange the pictures into eight families or groups.
4. Arrange the families into five periods.
5. Glue the Aliens onto the Alien Periodic Table. They must be glued on in their groups and periods

Discussion Questions

1. What trends (Key Similarities and Varying Traits) did you use to distinguish the eight families?

2. What trends (Key Similarities and Varying Traits) did you use to distinguish the five periods?

3. What did this activity teach you about the periodic table? Response must include a minimum of 50 words



