Name:
Date:

Periodic Table Analogy

Introduction

In 1869, Dmitri Mendeleev developed a periodic table of the known elements. Mendeleev was able to use his periodic table to predict the characteristic properties of undiscovered elements. In this experiment, you will develop a periodic table and use your table to predict the properties of a missing "element."

Your instructor has given you 23 of the 24 rectangular pieces ("elements") contained in this kit. Each piece (element) has six properties. Your goal is to develop a periodic table such that there is a pattern to each property. From the patterns discovered you can predict the location and properties of the missing piece.

Part I: What properties can you find?

Examine the pieces carefully and list the general properties you find on each card in the spaces provided below. You should find six.

1._____

2._____

3._____

4._____

5._____

6._____

Part II: Which properties do all elements have in common?

As you have learned, Mendeleev used atomic weight to place the elements in a continuous row. He noticed that some properties recurred with every eighth element. So then he moved the elements into rows of eight so that similar properties fell into columns. <u>Which three properties listed above could be used to place the "element" pieces in a continuous row (which three properties are characteristic of all of the pieces)?</u>

1._____

2._____

3._____

Part III: Try to Find the Patterns

Now, try placing the pieces in order by using the three properties listed above (part II). Then look carefully for patterns in the remaining properties. If you do find that some properties recur along the row at regular intervals, organize the pieces into a chart so that the properties fall into rows and columns. When you have found the best chart, <u>list the pattern for each property in the space provided.</u>

Property 1_____

Property 2_____

Property 3_____

Property 4_____

Property 5_____

Property 6_____

Part IV: What is the Missing Piece?

One piece (element) is missing from your kit. From your arrangement in your chart, try to predict the properties of the missing piece. <u>List the properties of the missing piece below</u>. <u>Draw a picture of the missing piece on the template provided.</u>
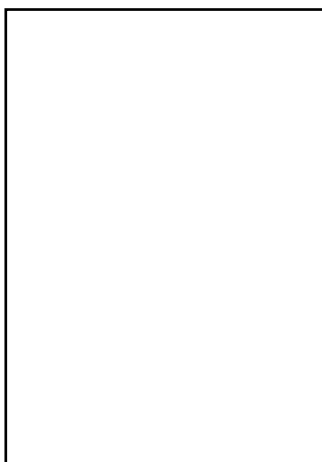
Property 1 _____

Property 2_____

Property 3_____

Property 4_____

Property 5_____

Property 6_____