



Chemistry

Name: _____

Section _____

PERIODIC TABLE

Date: _____

Development of the Periodic Table Lab

Lab #11

Pre-Lab Discussion:

Your research team has been working to find out if there are patterns in the known elements or if their chemical and physical properties are random. You have assembled all the known data about each element, a total of six properties for every element. You have put this data on a set of 23 cards and are now trying to organize the elements based on their properties to see if any patterns emerge.

Research Question:

How did the early developers create the Periodic Table of the Elements?

Materials:

23 element cards: each card has 6 properties and one element has not yet been discovered

Method:

1. Examine the evidence. List the six properties your research team has placed on the cards.

a _____ b _____ c _____

d _____ e _____ f _____

2. Dmitri Mendeleev arranged the elements in order of increasing atomic mass to make one continuous row. Why did he use atomic mass?

Which of the three properties in Step 1 could be used to arrange your elements in one row?

3. Place your elements in one long row using one of the properties identified in Step 2. Look at your result and identify other properties that repeat at regular intervals.
4. When Mendeleev made one long row, he noticed that some properties repeated every eighth element. He decided to break up his long row into a table with repeating properties.
5. Try several arrangements of your elements and see if you can develop a 'best' table. Remember, you have one missing card.
6. Once you have your best table, describe the pattern that you see for all six properties in the Data Collection and Processing section on the next page. You may find that describing the patterns is more difficult than it sounds.

Data Collection and Processing:

Property 1: _____

Property 2: _____

Property 3: _____

Property 4: _____

Property 5: _____

Property 6: _____

Conclusions and Evaluations:

1. Use your “periodic table” to predict the properties of the missing element. (Mendeleev did this for three elements.) You can exactly predict all 6 properties if you are careful.

a _____ b _____ c _____

d _____ e _____ f _____

2. Have your instructor approve your final table, then scramble and return the cards to the bag.

Applications:

1. What did YOU (personally) learn?

2. How can any idea, principle, or activity in this lab be used in the real world?
